Plant macro remains from the 1st and 2nd Cent. A.D. in Roman Oedenburg/Biesheim-Kunheim (F). Methodological aspects and insights into local nutrition, agricultural practices, import and the natural environment.

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1. INTRODUCTION

1.1. Framework of the project

The present study is part of a joint research project on the Roman settlement Oedenburg/Biesheim-Kunheim. It focuses on the archaeobotanical investigation of the Roman-period structures in the civil settlement excavated between 1999 and 2005.

In 1998 an extensive excavation program was initiated at the site of Oedenburg/Biesheim-Kunheim under the direction of M. Reddé (École Pratique des Hautes Études, IV^{e} section Paris, France) and H.U. Nuber (University of Freiburg in Breisgau, Germany). The initial team was joined in 1999 by the University of Basel, Switzerland. It is within the scope of this tri-national excavation program that archaeobiological analyses were undertaken at the Institute of Prehistory and Archaeological Science (IPAS) of the University of Basel. The archaeobiological part of the project (archaeobotany and archaeozoology) was directed by Prof. S. Jacomet and Prof. J. Schibler. Funding was obtained from the EUCOR Learning and Teaching Mobility (ELTEM) project of the University of Basel. An additional grant was obtained from the Freiwillige Akademische Gesellschaft, Basel (CH).

For a detailed summary of the archaeological research, we refer to publications and the unpublished excavation reports (Nuber and Reddé 2002, Reddé *et al*. 2005, Ville de Biesheim 2001, Reddé 1999, Reddé*.* 2000, Reddé 2001, Reddé 2002, Reddé 2003, Reddé 2004, Reddé 2005). The final publication of the site consists of two monographs: Oedenburg I. Les camps julio-claudienne (Reddé 2009) and Oedenburg II. L'agglomération civile (Reddé in press).

1.2. The site Oedenburg/Biesheim-Kunheim

The Roman archaeological site Oedenburg is located in the plains of the river Rhine among the Vosges Mountains and the Black Forest, between the current communities Biesheim and Kunheim in Alsace (F) (Fig. 1). The settlement was founded at the beginning of the 1st Cent. A.D. on an important communication axis, along the Roman road leading from *Augusta Raurica*/Augst or *Epomanduo-durum*/Mandeure to *Argentorate*/Strasbourg via *Cambete*/Kembs. The identification of Roman Oedenburg as *Argentovaria* is hypothesized (Schucany in press). *Argentovaria* is mentioned by *Ptolemaeus* as the polis of the Rauraci (Reddé *et al*. 2005). The Rauraci were the indigenous population occupying the southern Upper Rhine region and part of the Hochrhein area. Oedenburg lies in the northern part of their territory. So far, there is no certainty concerning the identification of Oedenburg as *Argentovaria* as no inscription is found (Reddé *et al.* 2005).

The Roman settlement area covers a surface of about 200 hectares; its chronology extends from the 1st Cent. A.D. to the beginning of the 5th Cent. A.D. Through aerial photography, geomagnetic studies, and an extensive excavation program, the archaeology of the site is well known and intensively studied (Figs. 2 and 3). In addition, a systematic sampling strategy for archaeobiological research was carried out in all areas of excavation; this implied sampling of all well-preserved excavated structures. Bulk samples were taken from different stratigraphical units within a structure, taking into account spatial and chronological variation of plant distribution within one structure (see section 1 and Table 1a, b, c of Volume II). The majority of soil samples were processed in the field laboratory operated in Biesheim (F), in the vicinity of the site.

Fig. 1 Geographical location of Oedenburg (after Nuber 2001)

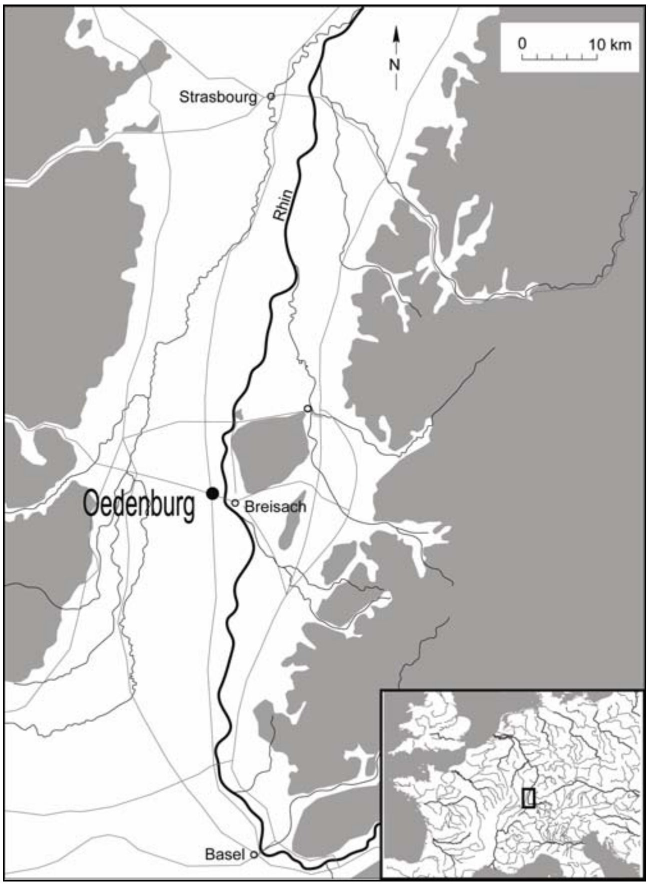
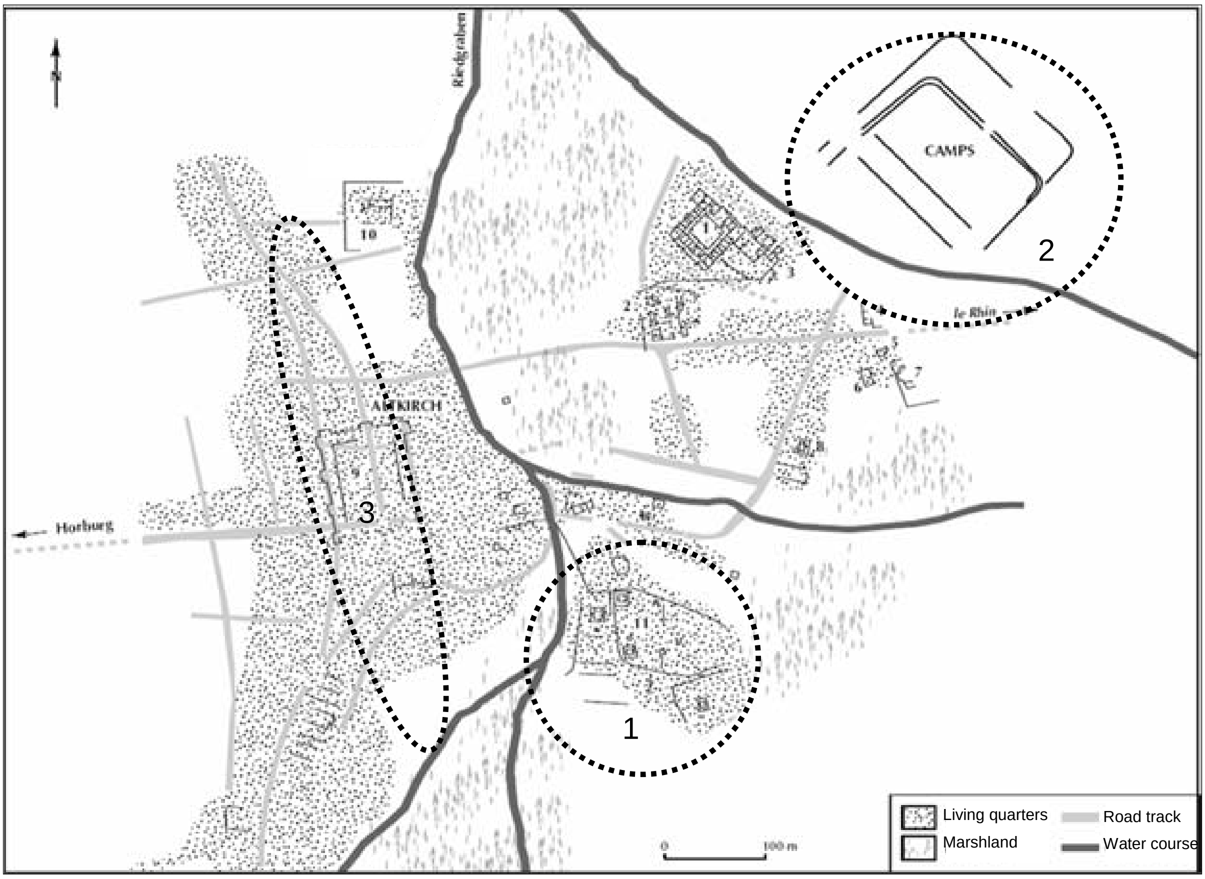


Fig. 2 Aerial photograph of the settlement area (Reddé in press, Fig 5.1 p. 380)

Figure 3. Interpretation of geo-magnetical prospection of the site Oedenburg/Biesheim-Kunheim (F) (after drawing M. Reddé in Reddé *et al.* 2005, Fig. 6, p. 223), indicating the three main localities: 1) the temple complex, 2) the military installations to the east of the modern canal and 3) the road running North-South (3)



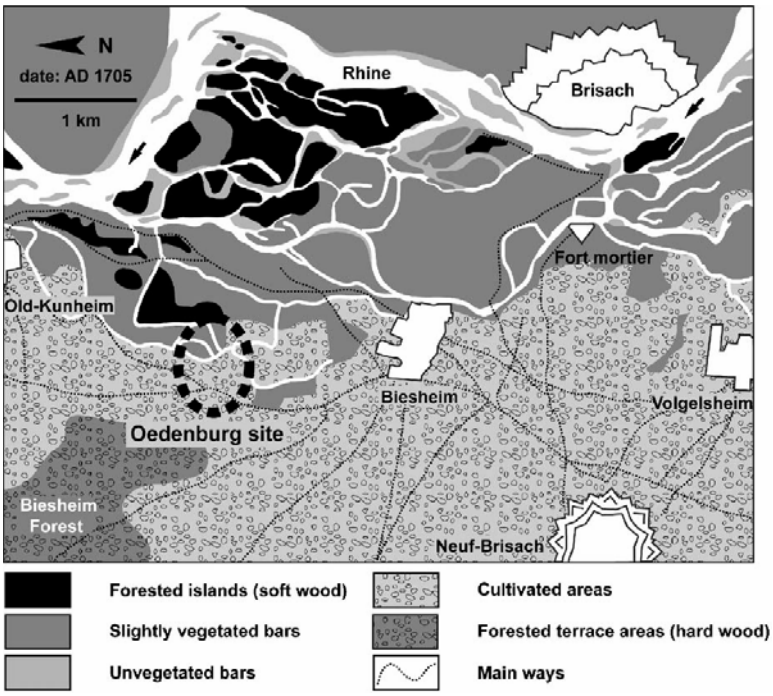
The civil agglomeration of Oedenburg developed around three localities: a temple complex (1); military installations to the east of the modern canal (2); a road running North-South (3) (Reddé in press, see Fig. 3). The temple complex very likely represents the first building activities at the site; it was in use during the settlement's entire occupation history and always remained at the southern periphery of the site (see Fig. 3). No living quarters were encountered here. To the East of the settlement area, two military camps were successively installed at the same location (see Fig. 3); the first military camp was erected around 20 A.D. and deserted around 30 A.D., the second military camp was built in the 40s and deserted around 70 A.D. (Reddé 2009). Adjacent and to the west of these military installations a handicraft quarter arose. This quarter continued to exist after the cessation of military occupation. In this area no living quarters have been found. It seems that living quarters were concentrated along the road running North-South, at a distance to the areas prone to flooding (see Fig. 3).

Today, Oedenburg is situated about two kilometres to the East of the river Rhine, and extends over its alluvial terraces and lower plains. Many palaeochannels run through the settlement area some of which are still active today (Fig. 4). Consequently the majority of the excavated archaeological layers are at present located below the current groundwater level. This has resulted in the excellent preservation of very large amounts of organic remains through waterlogging.

The sampling strategy for archaeobiological research, advised to the archaeologists, was one of total sampling. However, the actual sampling strategies have been fairly inconsistent. There are several reasons for this: first of all, archaeobiological samples were collected over seven excavation seasons and field archaeologists have rotated over these seasons; secondly the emphasis of the sampling program was on those structures located under the current water level and thirdly, samples were more frequently taken after recognition of plant macro remains within a deposit, thus judgment sampling. In the studied areas a total amount of 986 samples were taken (Civil East (342), Civil South (287), Military camps (96), Temple complex (131), Surroundings of the temple complex (128), BK08 (2)). The selection of samples for this study was based on the following criteria: located in the civil agglomeration, from structures where waterlogging took place and from structures that could be dated. In total 363 samples or 37% of all samples were studied (see section 2.1 and 2.2 of this Volume). In the following study, we have analysed 315 samples from 90 structures in different areas of the Roman settlement (see section 2.2 of this Volume, Tabs. 7.1a, 7.1b, 7.1c). The emphasis of the present study lies on the waterlogged structures of the civil agglomeration (see section 2.2 of this Volume and chapter 1 of Volume II), in addition some samples from the 1st Cent. A.D. military camps were investigated (see section 2.1 of this volume and Reddé 2009, p.45-168).

In the following, the archaeology of each investigated area for a better understanding of the results is summarised. Within the civil agglomeration we distinguish between three areas of excavation and refer to them as follows: Civil East; Temple complex; Surroundings of the temple complex.

Fig. 4 Map of the Rhine floodplain in the 18th Cent. A.D. (Ollive *et al.* 2006, p. 30)



Civil East

Civil East designates the zone to the west of and adjacent to the military camp (see section 2.2 of this Volume, Fig. 7.1). Excavations were carried out in this zone in the summers of 1999 to 2002 under the direction of M. Reddé. Civil East represents an area of handicraft activities; it is marked by the confluence of two palaeochannels and is located in marshland. These days, the majority of the archaeological structures are located below the groundwater level. The latter has resulted in the recovery of a very large amount of organic remains such as leather, wooden posts, wooden artefacts, wattle and wickerwork and many waterlogged plant macro remains such as twigs, branches, wood-chips and seeds/fruits.

Two successive phases of occupation are distinguished in this area. Phase 1 is contemporary with and influenced by the military occupation; it starts in the 2nd Decennium A.D. and lasts till the end of the 1st Cent. A.D. It is characterised by a series of pits dug in a very moist zone; no living quarters are found. Palaeohydrological studies have demonstrated that human occupation in Phase 1 coincided with flooding of the Rhine. The latter involved a continuous re-organisation of the area in order to control the excess water. At least three flood events could be dated after the first human occupation in this area (1st Cent. A.D.) and before the installation of the road track at the end of 1st, beginning of 2nd Cent. A.D. (Reddé *et al.* 2005, Ollive *et al.* 2006). At that time, the inhabitants constructed layers of clay, twigs, branches and planks to manage the very wet and boggy areas. Phase 2 is marked by the reorganisation of this area and lasts till the beginning of the 3rd Cent. A.D. The reorganisation of the area implies the installation of a new road track and the construction of large public buildings bordering this road. These constructions are possibly linked to the welcoming of travellers and the activities on the river (Reddé in press, p. 525-526).

In the area Civil East a total of 342 samples from 64 structures were taken. In this area of excavation, the emphasis of sampling was placed on waterlogged structures; the sampled structures represent less than 10 % of the total number of excavated structures. In this study we integrated 143 samples from 26 structures. As mentioned above samples were selected from dateable structures where waterlogging took place. Structures integrated in the archaeobotanical analysis and belonging to phase 1 are: 11 pits and 8 very organic layers of twigs and branches. In total 105 samples were analysed (see section 2.2 of this Volume, Tab. 7.1a and Fig. 7.9). Structures integrated in the archaeobotanical analysis comprise 5 pits. In total 34 samples were analysed (see section 2.2 of this Volume, Tab. 7.1a and Fig. 7.9). Another 4 samples from 2 structures dated as “Roman” are also included.

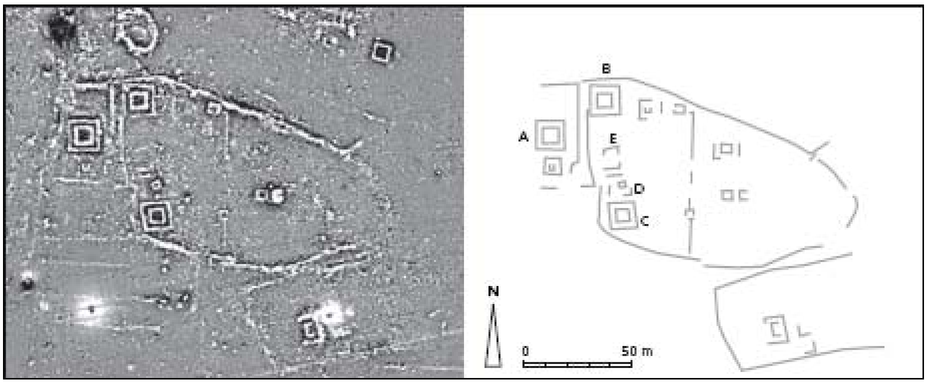
Temple complex

The temple complex represents an enclosed area of temples in the southern part of the settlement area (see section 2.2 of this Volume, Fig. 7.1); it is located in a marshy area and bordered by a small stream, the Riedgraben. Geomagnetic survey established the outline of several Gallo-Roman temples and the existence of one large complex of temples enclosed by a ditch (see Fig. 5). In this complex, excavations were undertaken in the summers of 2003, 2004 and 2005 and directed by C. Schucany and P.-A. Schwarz. In the temple complex five phases are distinguished (Schucany and Schwarz in press). The phases correspond to building and reorganisation activities and are dated as follows:

Phase 1 (ca 3/4 to ca 75/80 A.D.), Phase 2 (ca 75/80 to 120 A.D.), Phase 3 (120 to 130/140 A.D.), Phase 4 (130/140 to 160/170 A.D.) and Phase 5 (from 160/170 A.D. onwards). For the main analysis the fine chronology (phases) was not considered (see section 2.2 of this Volume). This is partly due to the poverty of archaeobotanical remains within most of the samples while – in contrast to the area Civil East and the Surroundings of the temple complex- most of the structures were situated on dry land. To ease intra-site comparison we constructed a chronological framework which consists of structures belonging to the 1st Cent. A.D. (Temple complex Phase 1), structures belonging to the 2nd Cent. A.D. (Temple complex phases 2 to 4) and structures no more precisely dated than "Roman" (see section 2.2 of this Volume, p. 31).

In the temple complex a total of 131 samples from 60 structures were taken. 128 samples from 57 structures were analysed, 101 samples from 36 structures were integrated in this study, the remaining 27 samples did not yield plant remains. In this area of excavation, the emphasis of sampling was placed on promising structures in both waterlogged and dry sediments (Schucany and Schwarz in press, p. 62); the analysed structures represent approximately 25 % of all excavated structures. Structures integrated in the archaeobotanical analysis and belonging to phase 1 come from five layers, a ditch, a vessel and two postholes. In total 40 samples are analysed of which 31 originate from waterlogged deposits, 9 from dry deposits (see section 2.2 of this Volume, Tab. 7.1b). Structures integrated in the archaeobotanical analysis and belonging to phases 2 to 4 come from a pit, 8 layers, a ditch and 11 postholes. In total 42 samples are analysed of which 6 originate from waterlogged deposits, 36 from dry deposits (see section 2.2 of this Volume, Tab. 7.1b). Structures integrated in the archaeobotanical analysis and belonging to phase 5 come from a ditch. In total 15 samples are analysed (see section 2.2 of this Volume, Tab. 7.1b). Another 4 samples from 4 structures dated as Roman and located in dry deposits are also included.

Fig. 5 Geomagnetic image of the temple complex with interpretation (Drawing Schucany in Schucany and Schwarz in press, Fig. 2.21, p.68)



Surroundings of the temple complex

This refers to the area to the north of the temple complex (see section 2.2 of this Volume, Fig. 7.1). In the summers of 2003 and 2005, excavations were undertaken under the direction of M. Reddé. The first human installations in this zone of occupation date between 10 and 60 A.D. They are contemporary with the military occupation of the settlement and have a clear civilian character (Reddé in press, p. 35-55). It involves the provision of a wharf along the Riedgraben, living quarters built in half-timber and the construction of new roads. At the end of the 1st Cent. A.D. most of the buildings were destroyed by fire. The beginning of the 2nd Cent. A.D. marks a new phase, the area is reorganised and a profane extension of the sanctuary is installed for the use of pilgrims (Reddé in press, p. 361-377). This includes a large quadrangular basin with drainage channel, a monumental stone-built well, a bath complex and at least one temple. The area appears to be abandoned during the course of the 4th Cent. A.D.

In the surroundings of the temple complex a total of 128 samples from 30 structures were taken. 62 samples from 23 structures were analysed. In this area of excavation, the emphasis of sampling was placed on waterlogged structures; about 5% of the excavated structures is sampled. Structures integrated in the archaeobotanical analysis and belonging to the 1st Cent. A.D. come from 3 pits and 5 layers. In total 11 samples are analysed (see section 2.2 of this Volume, Tab. 7.1c). All other structures are dated as 'Roman not specified'. It consists of 4 pits, 7 layers, a basin, a vessel content and 2 trenches. They represent 51 analysed samples (see Tab. 7.1c of chapter 2.2).

In addition, four more samples from two other locations within the civil agglomeration were studied as they yielded well-preserved waterlogged remains. Two of these samples originate from a well in the area 'Civil South', which lies immediately south of Civil East (see section 2.2 of this Volume, marked BK02-05 in Fig. 7.1 and Tab. 7.1a). The fill of the well is dated to the 1st Cent. A.D.; the well is part of an area of handicraft activity. The remaining two samples originate from a trial trench dug for palaeohydrological studies (see section 2.2 of this Volume, marked BK02-08 in Fig. 7.1 and Tab 7.1c). They are dated no more precisely than Roman period.

1st Cent. A.D. military camps

The Julio-Claudian military camps are located on a flood-prone and well-drained late glacial gravel terrace which formed a small island at the beginning of the 1st Cent. A.D. (see Fig. 3 and 4) (Reddé 2009, p. 51). The enclosing ditches of two partly overlapping camps were established through geomagnetic survey and aerial photography. The internal organization of the military installations remains largely unexplored. Neither rising structures nor trampled horizons were found, only cut features, such as pits and ditches, are observed. Both camps were constructed of wood and earth. During the Tiberian period, the first military camp (camp B) was built; it was abandoned in the 30s. At the beginning or middle of the 40s a new camp (camp A) was built, and shortly after 70 A.D., deserted. Afterwards this spot remained undeveloped. It is thought that a connection to the civil agglomeration existed, however no remains of a bridge or wharf are found. They were possibly destroyed by the construction of the modern supply channel in the 18th and 19th centuries.

In the military camps a total of 96 samples from 52 structures were taken (which is 5 % of all excavated structures). As the present study focuses on waterlogged features, only very few samples have been investigated. Structures integrated in the archaeobotanical analysis comprise three samples from two pits from camp B and two samples from one pit in camp A (see section 2.1 of this Volume, Tab. 9.1).

1.3. Aims of the archaeobotanical analysis

In the northern Alpine foreland many Roman sites have been archaeobotanically analysed. There are however few sites that have been both so intensively studied and possess the extraordinary conditions of preservation of waterlogged plant macro remains as found at Oedenburg. In this respect, the material under study showed great potential for the knowledge of Roman archaeobotany. The plant macro remains recovered from Oedenburg are plentiful and very diverse which enables many different research questions and implicates that the material is far from exhausted. While the excavations were still ongoing at the start of this project, the aims of this project changed slightly when new findings were recorded or old findings were re-interpreted. At the beginning of the project the main aims of the archaeobotanical investigation were defined as follows: to examine the state of research of plant use in the Upper Rhine region and adjacent areas; to explore methodological aspects such as the problems encountered when processing strongly compacted organic waterlogged sediments and the determination of the ideal subsample size when analysing rich waterlogged sediments; to analyse the plant assemblages from 1st and 2nd Cent. A.D. structures with special consideration of the function of these structures and of the origin of the recorded plant remains; to discuss the role of plants in the late Roman period by means of the plant assemblage of a 4th Cent. A.D. well. Nevertheless, some of these aims needed to be reconsidered because of the following reasons. Due to the embryonic phase (at that time) of the database ARBOL of the archaeobotany lab, a detailed regional comparison was not possible, a less extended comparison is however included in section 2.2 of Volume I. Much time was invested in the testing of subsample sizes for the analysis of waterlogged plant remains studying no more material than necessary. After due consideration, it was decided to retain the manuscript from the finalised form of this doctoral thesis. After excavation the 4th Cent. A.D. Roman well was re-dated to the 1st Cent. A.D. No other 4th Cent. A.D. structures were sampled and/or analysed. During the 2004 and 2005 excavation season remarkable plant macro remains were found in the temple complex. While these represented rare findings, it was decided to make a detailed comparison of plant macro remains found within sacred areas.

In the end we defined the aims as follows:

- to determine the plant spectrum of the 1st and 2nd Cent. A.D. structures in the Roman civil settlement with the emphasis on the waterlogged plant remains
- to investigate the origin of plant remains (local cultivation versus import)
- to add to the interpretation of the archaeological structures
- to contribute to the reconstruction of the natural environment of the settlement in Roman times
- to compare the spectrum of economic plants found in Oedenburg with those found on other Roman sites in the adjacent region and consequently detect the status of the site within this region
- to test existing pre-treatment techniques used for the gentle processing of very compacted organic sediments with special consideration of the consequences of these methods on the waterlogged plant macro remains

1.4. Structure of the thesis

This thesis consists of two volumes. The first volume includes the main text; the second volume includes catalogues and tables.

In Volume I there are four chapters. In the following 2nd chapter four research papers are bundled. In 2.1 archaeobotanical analyses carried out on some samples from the 1st Cent. A.D. military camps are presented. This text 'Pflanzliche Ernährung' is written as part of the final publication of the joint research project 'Oedenburg I. Les camps militaires julio-claudiens' (Vandorpe and Jacomet 2009). Section 2.2 presents the main archaeobotanical analysis of the Roman civil settlement. This text '*Plant economy and environment*' is written as part of the final publication of the joint research project 'Oedenburg II. L'agglomération civile' (Vandorpe and Jacomet in press). In 2.3 a methodological question is addressed, in particular the problems encountered when sieving highly organic and compacted sediments from waterlogged structures. The results of some experiments on soil treatment before sieving and their influence on the plant macro remains are presented. This resulted in the paper '*Comparing different pre-treatment methods for strongly compacted organic sediments prior to wet-sieving: a case study on Roman waterlogged deposits'* (Vandorpe and Jacomet 2007). In 2.4 the remarkable assemblage of plant macro remains found in the temple complex during the 2004 and 2005 excavation season are described. It resulted in the paper '*Remains of burnt vegetable offerings in the temple area of Roman Oedenburg (Biesheim-Kunheim, Alsace, France) – first results*' (Vandorpe and Jacomet in press). In chapter three the main results of analysis are summarised, and some themes using the key words in the title of this theses are expanded. Chapter four includes all cited literature from chapters one and three.

Volume II consists also of four chapters. In chapter one, titled catalogue of structures, all archaeobotanically analysed structures from the three main areas of excavation within the civil agglomeration are described. For each structure we made an information sheet which contains: an archaeological description of the structure, a date when available, a table with the analysed samples their volume and their type of analysis, a detailed description of the organic fraction of the sample and its archaeobotanical assemblage, the classification of the structure as interpreted in chapter 2.2 of Volume I and a reference to the publication/unpublished excavation report from which the information was taken. For many of the structures a drawing or photograph is included (see information sheet). The order of structures is constituted as follows: by excavation area, by year of excavation, by number of structure. This chapter is conceived as additional information to chapter 2.2 as this information is included in other parts of the book to which this chapter belongs (Reddé in press). Chapter two of Volume II presents the catalogue of plant remains. Chapter three contains the illustrations or plates mentioned in the catalogue of plant remains. In chapter four six tables are included. Tables 1a, 1b, and 1c summarise the raw data from all archaeobotanical analyses conducted in Oedenburg. Tables 2a, b and c summarise the semi-quantitative data which is the starting point of all analyses included in section 2.2 of Volume I.

2. RESEARCH PAPERS

2.1. Vandorpe P. and Jacomet S. (2009) Pflanzliche Ernährung. In: M. Reddé (ed.), Oedenburg I. Les camps militaires julio-claudiens. Mainz, Monographien des Römisch-Germanischen Zentralmuseums 79, p. 365-368.

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CHAPITRE 9 : PFLANZLICHE ERNÄHRUNG

Die Untersuchung der pflanzlichen Reste aus den Grabungen im Militärlager der römischen Siedlung Oedenburg/Biesheim-Kunheim ermöglicht einen Einblick in die pflanzliche Ernährung des Militärs. Die nachgewiesenen Pflanzenreste aus verschiedenen Gruben des Militärlagers stammen aus Mineralbodenerhaltung und wurden überwiegend in mineralisiertem Zustand[1] geborgen. Es handelt sich vor allem um kleinsamige Nahrungspflanzen. Andere Wildpflanzen wie etwa Unkräuter wurden nur sehr wenige gefunden. Ersteres Kriterium gibt starke Hinweise auf die Präsenz von Fäkalien[2]. Die Analysen der Klein- und Gross-Tierknochen aus denselben Strukturen deuten in dieselbe Richtung.
Verschiedene Strukturen wurden während den Grabungen im Militärlager beprobt. Alle Bodenproben wurden mittels Halbflotation (wash-over) geschlämmt. Die botanischen Reste wurden mit Hilfe einer Stereolupe Wild M3Z bei 6- bis 40-facher Vergrösserung ausgelesen und nach den am Institut für Prähistorische und Naturwissenschaftliche Archäologie der Universität Basel (IPNA) üblichen Methoden bestimmt und analysiert.
Die pflanzlichen Reste der hier vorgestellten Ergebnisse stammen von fünf Proben aus den drei folgenden Strukturen:

1. Grube (S 487[3]) im Bereich des Osttors des Lagers B (**Abb. 4.70**)
2. zwei Gruben (S 691[4] vom Lager A und S 692[5] vom Lager B) im Bereich des Nordtors des Lagers A (**Abb. 4.5**).

Die Ergebnisse der Analysen sind in der Tabelle **Abb. 9.1** zusammengefasst. Im Ganzen wurden 1597 Pflanzenreste (ohne Holzkohle) ausgelesen. 97 % der Reste waren mineralisiert erhalten, 3 % verkohlt. Die Fundkonzentration der Pflanzenreste lag zwischen 27 und 66 Stück pro Liter. Die Erhaltung der Pflanzenreste war – wie bei mineralisierten Resten üblich – mässig, weshalb 260 Reste nicht näher bestimmbar waren. Insgesamt konnten 23 Taxa bestimmt werden, wovon 14 Taxa den Nutzpflanzen zugeordnet werden können.

[1] Mineralisierung des organischen Materials findet statt, wenn hohe Konzentrationen an Phosphat (z.B. im Latrinenbereich) vorhanden sind: F. J. Green, Phosphatic Mineralization of Seeds from Archaeological Sites. Journal of Archaeological Science 6, 1979, 279-284. – Ausführlich siehe dazu S. Jacomet, Und zum Dessert Granatapfel – Ergebnisse der archäobotanischen Untersuchungen. In: A. Hagendorn / H. W. Doppler / A. Huber / H. Hüster-Plogmann / S. Jacomet / C. Meyer-Freuler / B. Pfäffli / J. Schibler, Zur Frühzeit von Vindonissa. Auswertung der Holzbauten der Grabung Windisch-Breite 1996-1998. Veröffentlichungen der Gesellschaft pro Vindonissa 18/1 (Brugg 2003) 173-229.

[2] Für eine Übersicht S. Jacomet / C. Wagner, Mineralisierte Pflanzenreste aus einer römischen Latrine des Kastell-Vicus (Zurzach). In: R. Hänggi / C. Doswald / K. Roth-Rubi (Hrsg.) Die frühen römischen Kastelle und der Kastell-Vicus von Tenedo-Zurzach. Aargauische Kantonsarchäologie (Brugg 1994) 321-343. – Neu dazu ausführlich: S. Jacomet 2003 (Anm. 1), 173ff.

[3] Zwei Proben aus dem unteren Bereich der Grube (Brunnen?) wurden analysiert.

[4] Von dieser Grube wurden zwei Proben analysiert, eine ist ein Topfinhalt, die andere stammt von der Grubenfüllung.

[5] Eine Probe aus der Füllung dieser Grube wurde untersucht.

Unter den Nutzpflanzen sind vor allem Nahrungspflanzen vertreten: Getreide, Hülsenfrüchte, Nüsse, Früchte und Gewürze.

Das Getreidespektrum umfasst hauptsächlich Hirsen (Rispenhirse (*Panicum miliaceum*) und weitere Hirsen mit nicht näher bestimmbaren Früchten (*Panicum/Setaria*). Andere, grösserfrüchtige Getreidearten sind eher selten. Bestimmbar waren Gerste (*Hordeum vulgare*) und Nacktweizen (*Triticum* cf. *aestivum/durum/turgidum*). Diese Getreidearten sind in römischen Siedlungen nördlich der Alpen häufig vertreten. Auffällig ist jedoch das Fehlen von Spelzweizen wie Dinkel oder Emmer, welche in der Zivilsiedlung sehr häufig nachgewiesen sind[6].

Die Getreidereste machen ungefähr 9 % der Pflanzenreste aus. Es handelt sich dabei fast ausschliesslich um bespelzte Körner von Gerste und Rispenhirse. Ihre mangelhafte Bestimmbarkeit liegt wahrscheinlich an der Art und Erhaltung der untersuchten Befunde. Körner der grossfrüchtigen Getreidearten erhalten sich sehr schlecht in Fäkaliengruben, weil sie durch den Verdauungsprozess stark in Mitleidenschaft gezogen (vor allem fragmentiert) werden. Viel besser repräsentiert sind kleinfrüchtige Getreidearten wie Hirsen, welche den Verdauungstrakt ganz passieren[7].

Hülsenfrüchte waren zusammen mit Getreide ein wichtiger Bestandteil der römischen Grundnahrung. Die Menge an Hülsenfrüchten ist trotz den schlechten Erhaltungsbedingungen eher gross, obwohl sie bei der Darmpassage ebenfalls stark in Mitleidenschaft gezogen werden; allerdings bleiben des Öfteren die massivsten Teile, nämlich der Nabel, erhalten, was sie gut bestimmbar macht[8]. Im Militärlager machen Hülsenfrüchte 12 % der pflanzlichen Reste aus. Es wurden Linse (*Lens culinaris*), Ackerbohne (*Vicia faba*) und Linsenwicke (*Vicia ervilia*) gefunden.

Die Gewürzpflanzen machen nur einen kleinen Teil des Pflanzenspektrums aus. Es wurden vor allem Teilfrüchte von Koriander (*Coriandrum sativum*) gefunden, ferner noch einige von Dill (*Anethum graveolens*) und Sellerie (*Apium graveolens*). Diese drei Arten stellen die am häufigsten genutzten Gewürze in der Römerzeit dar.

Mit 55 % der Pflanzenreste sind die Obstarten am zahlreichsten nachgewiesen worden. Feige (*Ficus carica*), Traube (*Vitis vinifera*), Apfel/Birne (*Malus/Pyrus*) und andere nicht näher bestimmbare Kernobstartige wurden gefunden. Dieses Fundspektrum, hauptsächlich kleinsamige Obstarten, ist sehr typisch für Fäkaliengruben. Das Fehlen von vielen der grossfrüchtigen Obstarten wie Kirschen, Schlehen, Pfirsiche etc. ist zum Teil der Tatsache zuzuschreiben, dass sie den Darmtrakt nicht passieren. Kirschen werden allerdings anderenorts häufig gefunden.

Die Wildpflanzen sind mit 9 Taxa vertreten. Viele der Wildpflanzen konnten nicht bis auf die Art bestimmt werden und erlauben deswegen nur sehr beschränkte Aussagen über die Umgebung des Lagers. Die wenigen bestimmbaren Unkräuter beinhalten Ackerunkräuter von Wintergetreide (Acker-Steinsame (cf *Buglossoides arvensis*), Feldsalat (*Valerianella* sp.) und Ruderalpflanzen (Ampferknöterich (*Polygonum persicaria/lapathifolium*), Zwergholunder (*Sambucus ebulus*), Acker-Hellerkraut (*Thlaspi arvense*). Es ist sehr wahrscheinlich, dass die meisten dieser Unkräuter i.w.S. als Verunreinigung des Getreides in die Fäkaliengrube gelangt sind.

6 Siehe dazu M. Reddé / H. U. Nuber / S. Jacomet / J. Schibler / S. Schucany / P.-A. Schwarz / F. Ginella / M. Joly / S. Plouin / H. Hüster-Plogmann / Ch. Petit / L. Popovitch / A. Schlumbaum / P. Vandorpe / B. Viroulet / L. Wick / J.-J. Wolf / B. Gissinger / V. Ollive / J. Pellissier, Oedenburg, une agglomération d'époque romaine sur le Rhin supérieur. Gallia 62, 2005, 215-277 bes. 252f. – P. Vandorpe, Plant macro remains from the 1st and 2nd C AD in Roman Oedenburg/Biesheim-Kunheim (F). Methodological aspects and insights into local nutrition, agricultural practices, import and the natural environment. Unpublizierte Dissertation, Universität Basel.

7 S. Jacomet / C. Wagner 1994 (Anm. 2), 321ff – S. Jacomet 2003 (Anm. 1), 173ff.

8 S. Jacomet 2003 (Anm. 1), Abb. 133, 206f.

Probe Nr	BK21034	BK21035	BK311006	BK311011	BK311012	
Struktur Nr	**487**	**487**	**691**	**692**	**691**	
Volumen Probe	4	10	6	7	Topfinhalt	
Mineralisierte Reste						**Getreide**
Hordeum vulgare - Körner bespelzt	.	1	.	.	1	Gerste
Panicum miliaceum	.	.	1	39	8	Rispenhirse
Panicum/Setaria	.	.	24	46	16	Hirsen
						Hülsenfrüchte
Lens culinaris	6	41	3	16	4	Linse
cf *Lens culinaris*	.	18	.	2	2	cf Linse
Vicia faba - Hilum Fragment	3	1	2	.	3	Ackerbohne
Vicia ervilia	.	1	.	.	.	Linsenwicke
Fabaceae	13	34	6	13	17	unbest. Hülsenfrüchte
						Obst und Nüsse
cf *Corylus avellana*	.	.	1	.	.	cf Haselnuss
Ficus carica	20	144	32	168	67	Feige
cf *Ficus carica*	.	.	.	9	.	cf Feige
Malus/Pyrus	2	16	26	15	41	Apfel/Birne
Maloidea/Prunoidea	.	3	.	11	34	Kernobstartige
Vitis vinifera	45	177	1	51	4	Traube
						Gewürze
Anethum graveolens	1	1	.	.	.	Dill
Apium graveolens	.	.	.	1	1	Sellerie
Coriandrum sativum - Teilfrucht	.	5	.	5	4	Koriander
cf Coriandrum sativum - Teilfrucht	1	.	.	.	.	cf Koriander
Coriandrum sativum - Frucht	.	.	.	1	1	Koriander
						Varia
Apiaceae	.	3	5	8	3	Doldengewächse
Brassicaceae	.	.	1	1	.	Kohlgewächse
cf *Buglossoides arvensis*	.	.	.	1	1	cf Acker-Steinsame
Chenopodiaceae	1	.	2	19	.	Meldengewächse
Cichorium endivia/intybus	.	.	.	2	.	Endivie/Wegwarte
cf *Festuca*	.	.	1	.	.	cf Schwingel
Galium sp	1	1	.	.	1	Labkraut
Papaver sp	.	.	.	.	10	Mohn
Poaceae	.	1	.	2	10	Süssgräser
Polygonaceae	.	.	.	1	.	Knöterichgewächse
Polygonum persicaria/lapathifolium	.	.	.	2	.	Ampfer-/Persischer Knöterich
Sambucus ebulus	.	1	.	.	.	Zwergholunder
Setaria sp	.	.	.	1	11	Borstenhirse
Thlaspi arvense	.	1	.	.	.	Acker-Täschelkraut
Trifoliae	.	.	.	15	.	Hülsenfrucht-Kleeartige
Valerianella sp	.	.	.	1	.	Feldsalat
Viciae	.	2	.	.	.	Hülsenfrucht (Vicia Typ)
Indeterminata - Samen/Früchte	4	16	96	27	90	
Indeterminata - pflanzl. Reste	.	.	.	2	.	
Verkohlte Reste						**Getreide**
Hordeum vulgare	.	.	1	.	.	Gerste
Panicum miliaceum	3	2	.	.	.	Rispenhirse
Triticum cf aestivum/durum/turgidum	1	.	.	.	.	cf Nacktweizen
Cerealia	.	.	3	.	.	unbest. Getreide
						Hülsenfrüchte
Fabaceae	.	1	.	1	.	unbest. Hülsenfrüchte
Lens culinaris	.	.	.	1	.	Linse
						Nüsse
Corylus avellana	.	.	3	.	1	Haselnuss
						Varia
Galium sp	.	1	.	.	.	Labkraut
Trifoliae	.	.	.	1	.	Hülsenfrucht-Kleeartige
Indeterminata - AVO	5	5	.	.	.	
Indeterminata - Samen/Früchten	2	2	3	.	8	
Gesamtsumme	**108**	**478**	**211**	**462**	**338**	
Konzentration	**27**	**48**	**35**	**66**		

Abb. 9.1 Ergebnisse der archäobotanische Untersuchungen von ausgewählten Proben des Militärlagers.

Die Erhaltung und Zusammensetzung der Pflanzenreste aus den Gruben im Militärlager weist eindeutig auf die Präsenz von Fäkalien hin. Hinweise auf andere Abfälle fehlen in den Gruben hingegen fast völlig[9]. Die Pflanzenreste aus Fäkalien ermöglichen einen guten Einblick in die Essgewohnheiten des römischen Militärs, jedoch sind in Latrinenbereichen die Nahrungskomponenten verhältnismässig schwierig abzuschätzen, da kleinsamige Nahrungspflanzen übervertreten sind. Grossfrüchtige Nahrungspflanzen werden hingegen kaum nachgewiesen, weil sie meist durch den Einfluss des Verdauungsprozesses unkenntlich geworden sind. Alles in allem ist damit zu rechnen, dass Getreide und Hülsenfrüchte der Hauptbestandteil der pflanzlichen Ernährung waren; sie waren reichlich gewürzt. Daneben wurde auch Obst sehr oft konsumiert.
Zwischen den verschiedenen Strukturen wurden keine grossen Unterschiede beobachtet. In S 487 wurden vor allem Obst und Hülsenfrüchte aber kaum Getreidekörner gefunden. In S 691 ist die Mehrheit der Reste unbestimmbar, sowohl aus dem Topfinhalt als auch aus der Verfüllung; es gab nur geringe Mengen an Nutzpflanzen. S 692 lieferte die höchste Konzentration an pflanzlichen Resten, vor allem Getreide, Obst und Wildpflanzen wurden häufig gefunden.
Im Vergleich zu dem von der zivilen Siedlung bekannten Pflanzenspektrum[10] ist das Spektrum der Pflanzen im Militärlager eher klein, was aber größtenteils mit dem Erhaltungszustand zusammenhängt. Es wurden auch keine neuen Pflanzenarten nachgewiesen.
Das Pflanzenspektrum entspricht dem üblichen Bild in römischen Militäranlagen nördlich der Alpen[11], wie zum Beispiel im Kastellvicus vom Zurzach, der auch im 1. Jh. n. Chr. besiedelt war[12]. Daneben sind in Militäranlagen des 1. Jh. n. Chr. oft auch grössere Mengen an exotischen[13] Pflanzenarten wie zB Oliven (*Olea europapaea*)[14], Granatapfel (*Punica granatum*)[15], Mandeln (*Amygdalus communis*) und Reis (Oryza sativa)[16] gefunden worden. In Oedenburg hingegen wurden exotische Pflanzen vor allem in feucht erhaltenen Strukturen in der Zivilsiedlung nachgewiesen und nicht im Militärlager selber. Letzteres kann man den unterschiedlichen Erhaltungsbedingungen zuschreiben.

9 Die wenigen verkohlten Reste könnten ein Hinweis auf das Entsorgen von Herdfeuerabfall in die Gruben sein. Solches wurde oft zur Bindung des Geruchs in Latrinen eingebracht.

10 M. Reddé et al. 2005 (Anm. 6), 215ff.

11 Siehe dazu die Vergleichstabelle in S. Jacomet 2003 (Anm. 1), Abb. 147, 224ff.

12 S. Jacomet / C. Wagner 1994 (Anm. 2), 321ff.

13 Mit exotischen Pflanzen sind hier Pflanzen gemeint, die infolge der Klimabedingungen nicht vor Ort wachsen können und deswegen als importiert angesehen werden müssen.

14 Im Legionslager von Oberaden: D. Kučan, Die Pflanzenreste aus dem römischen Militärlager Oberaden. In: Das Römerlager in Oberaden 3. Bodenaltertümer Westfalens 28 (Münster 1992) 237-265.

15 In Windisch Breite (Vindonissa), allerdings vorlagerzeitlich: S. Jacomet 2003 (Anm. 1) 173ff.

16 Im Legionslager von Neuss (Novaesium): K. H. Knörzer, Römerzeitliche Pflanzenfunde aus Neuss. Novaesium 4. Limesforschungen 10 (Berlin 1970). – Siehe dazu auch K. H. Knörzer, Über Funde römischer Importfrüchte in Novaesium (Neuss/Rh.). Bonner Jahrb. 166, 1966, 433-443.

2.2. Vandorpe Patricia and Jacomet Stefanie (in press) Plant economy and environment. In: M. Reddé (ed.) Oedenburg II. L’agglomération civile. Mainz, Monographien des Römisch-Germanischen Zentralmuseums.

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CHAPTER 7: PLANT ECONOMY AND ENVIRONMENT

INTRODUCTION: CURRENT STATUS, AIMS OF RESEARCH

Up to now archaeobotanical research has been conducted on various Roman settlements in the Alsace (F) and the North of Switzerland. Only few of these settlements have been the subject of a large systematic sampling and analysing program. Among the well-studied sites are the Roman vici of Oberwinterthur[1] and Eschenz[2], the pre-legionary and legionary camp phases in Vindonissa[3], the colonia in Augst[4] and the Roman villa in Biberist[5]. And so the current status of Roman archaeobotany in the area is more than average[6]. Yet the representation of plant macro remains is strongly dependent on the conditions of preservation. The majority of investigated sites are located in dry deposits[7], where plant macro remains can only preserve through charring or mineralisation[8]. Only few archaeological sites are situated under the current water table[9]. The latter enables the preservation of not carbonised (plus/minus unaltered) vegetative material through waterlogging of the soil. This often results in the recovery of an abundance of organic remains. Given that the majority of archaeological structures in the Roman civil settlement of Oedenburg/Biesheim-

1 C. Jacquat, Römerzeitliche Pflanzenfunde aus Oberwinterthur (Kanton Zürich, Schweiz). In: J. Rychener / P. Albertin, Beiträge zum römischen VITUDURUM - Oberwintherthur 2. Ber. Zürcher Denkmalpflege, Monograph. 2 (Zürich 1986) 241-264. – M. Kühn pers. comm.

2 F. Feigenwinter, Die Pflanzenfunde aus der Latrine. In: V. Jauch (ed.) Eschenz - Tasgetium. Römische Abwasserkanäle und Latrinen. Arch. Thurgau 5, 1997, 21-28. – B. Pollmann, Archäobotanische Makrorestanalysen und molekulararchäologische Untersuchungen an botanischen Funden aus dem römischen vicus Tasgetium (Eschenz/ Kanton Thurgau/ CH). Master Thesis, University of Basel.

3 S. Jacomet, Und zum Dessert Granatapfel - Ergebnisse der archäobotanischen Untersuchungen. In: A. Hagendorn / H. W. Doppler / A. Huber / H. Hüster Plogmann / S. Jacomet / C. Meyer-Freuler / B. Pfäffli / J. Schibler, Zur Frühzeit von Vindonissa. Auswertung der Holzbauten der Grabung Windsich-Breite 1996-1998, 1. Veröffentl. Ges. Pro Vindonissa XVIII (Brugg 2003) 173ff.

4 M. Dick, Verkohlte Samen und Früchte aus zwei holzkohlereichen Schichten von Augst (Augusta Rauricorum; Forum und Insula 23). Jahresber. Augst u. Kaiseraugst 10, 1998, 347-350. – S. Jacomet / M. Bavaud, Verkohlte Pflanzenreste aus dem Bereich des Grabmonumentes (Rundbau) beim Osttor von Augusta Raurica: Ergebnisse der Nachgrabungen von 1991. Jahresber. Augst u. Kaiseraugst 13, 1992, 103-111. – M. Petrucci-Bavaud, Pflanzliche Speisebeigaben in den Brandgräbern. In: C. Haeffelé (ed.) Die römischen Gräber an der Rheinstrasse 46 des Nordwestgräberfeldes von Augusta Raurica, Jahresber. Augst u. Kaiseraugst 18, 1996, 253-259. – M. Petrucci-Bavaud, Archäobotanische Untersuchungen im Bereich der Herdstelle im Raum B6 und von Gruben in Raum B11. In: H. Sütterlin (ed.) Kastelen 2. Die älteren Steinbauten in den Insulae 1 und 2 von Augusta Raurica. Forsch. Augst 22 (Augst 1999) 165-184. – M. Petrucci-Bavaud, Archäobotanische Untersuchungen von ausgewählten Befunden in der Insula 1. In: H. Sütterlin (ed.) Kastelen 2 (footnote 4) – S. Jacomet, Ein römerzeitlicher verkohlter Getreidevorrat aus dem 3. Jahrhundert n. Chr. von Augusta Raurica (Kaiseraugst AG, Grabung »Adler«, 1990.05). Jahresber. Augst u. Kaiseraugst 21, 2000, 225-230. – S. Jacomet / M. Petrucci-Bavaud, Archäobotanische Untersuchung der Kulturschichten der Holzbauperiode. In: P.-A. Schwarz (ed.) Die prähistorischen Siedlungsreste und die frühkaiserzeitlichen Holzbauten auf dem Kastelenplateau. Die Ergebnisse der Grabungen 1991-1995.51 sowie 1979-1980.55 und 1980.53 im Areal der Insulae 1, 2, 5 und 6 von Augusta Raurica. Forsch. Augst 21 (Augst 2004) 241-299.

5 S. Jacomet / M. Petrucci-Bavaud / M. Kühn, Samen und Früchte. In: C. Schucany (ed.) Die römische Villa von Biberist-Spitalhof/ SO (Grabungen 1982, 1983, 1986-1989). Untersuchungen im Wirtschaftsteil und Überlegungen zum Umland. Ausgr. u. Forsch. 4 (Remshalden 2006) 579-624 / 877-916 (Tabellen).

6 See S. Jacomet / C. Brombacher, Geschichte der Flora in der Regio Basiliensis seit 7500 Jahren: Ergebnisse von Untersuchungen pflanzlicher Makroreste aus archäologischen Ausgrabungen. Mitt. der Naturforsch. Ges. beider Basel 11, 2009, 27-106. and the literature cited.

7 Desiccation of plant remains is not possible in our climate, for an overview of conditions of preservation we refer to S. Jacomet / A. Kreuz, Archäobotanik. Aufgaben, Methoden und Ergebnisse vegetations- und agrargeschichtlicher Forschungen. Eugen Ulmer (Stuttgart 1999) 57ff.

8 Conditions of preservation are discussed below.

9 e.g. the Roman vici in Eschenz and Oberwinterthur, or –on other sites– deposits in wells.

Kunheim (Alsace, Dép. Haut-Rhin 68, France) are located under the current water table and that more than 300 samples from 87 structures are studied, its investigation is an extremely important contribution to the Roman archaeobotanical research for the provinces north of the Alps[10].
The main objectives of our investigation are 1) to determine the plant spectrum available to the inhabitants of Roman Oedenburg; 2) to contribute to the interpretation of the archaeological structures through the botanical composition of the samples. Based on the plant spectrum we aimed to reconstruct the natural environment of the settlement[11], to detect chronological and/or spatial trends across the settlement as well as to highlight aspects of agriculture, trade and other cultural activities.

MATERIAL AND METHODS

Origin and date of the samples

The archaeobotanical investigation includes the analyses of the Roman-period structures in the civil settlement excavated between 1999 and 2005. The studied samples originate from the three main areas of excavation. They will be referred to as follows (**fig. 7.1**):
– »Civil East« (**tab. 1a**)
– »Temple complex« (**tab. 1b**)
– »Surroundings of the temple complex« (**tab. 1c**)

– »Civil east« (**fig. 7.1**): refers to the excavated area of field BK 04. In this area two successive phases are distinguished. Phase 1 is dated from the second decennium AD to the end of the 1st Cent. AD. This phase is contemporary with and linked to the military occupation. The archaeology is characterised by various pits located in a humid area in between natural palaeochannels; no evidence of living quarters has been found within this area of excavation. Phase II is connected to a reorganisation of the area. It is »marked« by the construction of a new road track. This new road was lined with large public buildings and living quarters. The latter are connected to the activities of river crossing and the receiving of travellers. Phase II ends around the beginning of the 3rd Cent. AD.
– »Temple complex« (**fig. 7.1**): this refers to the complex of cultic buildings where different types of offerings were deposited; this area of excavation is situated southeast of Altkirch in a marshy area which is bordered by a small stream, the Riedgraben, to the west. The complex, excavated by the team of the University of Basel, starts chronologically at the beginning of the 1st decennium AD and develops steadily; numerous offerings and architectural repairs are established, until the mid-3rd Cent. AD (for details, see Chapter 2, particularly **fig. 2.22; 2.46; 2.65; 2.89; 2.117**).
– »Surroundings of the temple complex« (**fig. 7.1**): this refers to the area to the north of the Temple complex. At the beginning of its occupation, between 10 and 60 AD and contemporary with the military occupation of the camps, the area is marked by civilian facilities: including the establishment of wharves

10 Funding was obtained from the EUCOR Learning and Teaching Mobility (ELTEM) project of the University of Basel. An additional grant was obtained from the Freiwillige Akademische Gesellschaft, Basel (Switzerland).

11 The reconstruction of the natural environment was dealt with in L. Wick / A. Schlumbaum, Die natürliche Vegetation. In: M. Reddé (ed.) Oedenburg I. Les camps militaires julio-claudiens. Verlag des Römisch-Germanischen Zentralmuseum (Mainz 2009) 37-43.

along the Riedgraben, of roads, and of living quarters. In a second phase, no later than the beginning of the 2nd Cent. AD, a profane extension of the sanctuary is installed for the use of pilgrims: this includes baths, basins and wells. At least one temple (F) was built outside the precincts of the Temple complex. The area appears to be abandoned during the course of the 4th Cent. AD.

Besides the three main fields of excavation discussed in this chapter, samples from two other locations within the civil settlement are included. For our main analysis, we have allocated these samples to one of the other areas of excavation as the number of studied samples in these two locations is too low for spatial comparison. The first two samples originate from a well in the area BK 02-05-02 »Civil South« (**fig. 7.1**). This part of the civil settlement was excavated in 2002[12] and lies immediately to the south of »Civil East«. It concerns an area of artisan activity. Due to safety hazards and time restrictions the well is not excavated entirely and therefore its contextual evidence is not clear. Dendrochronological study dates it to the 1st Cent. AD. The results of this pit are integrated in the analysis of the area Civil East (**tab. 1a**).

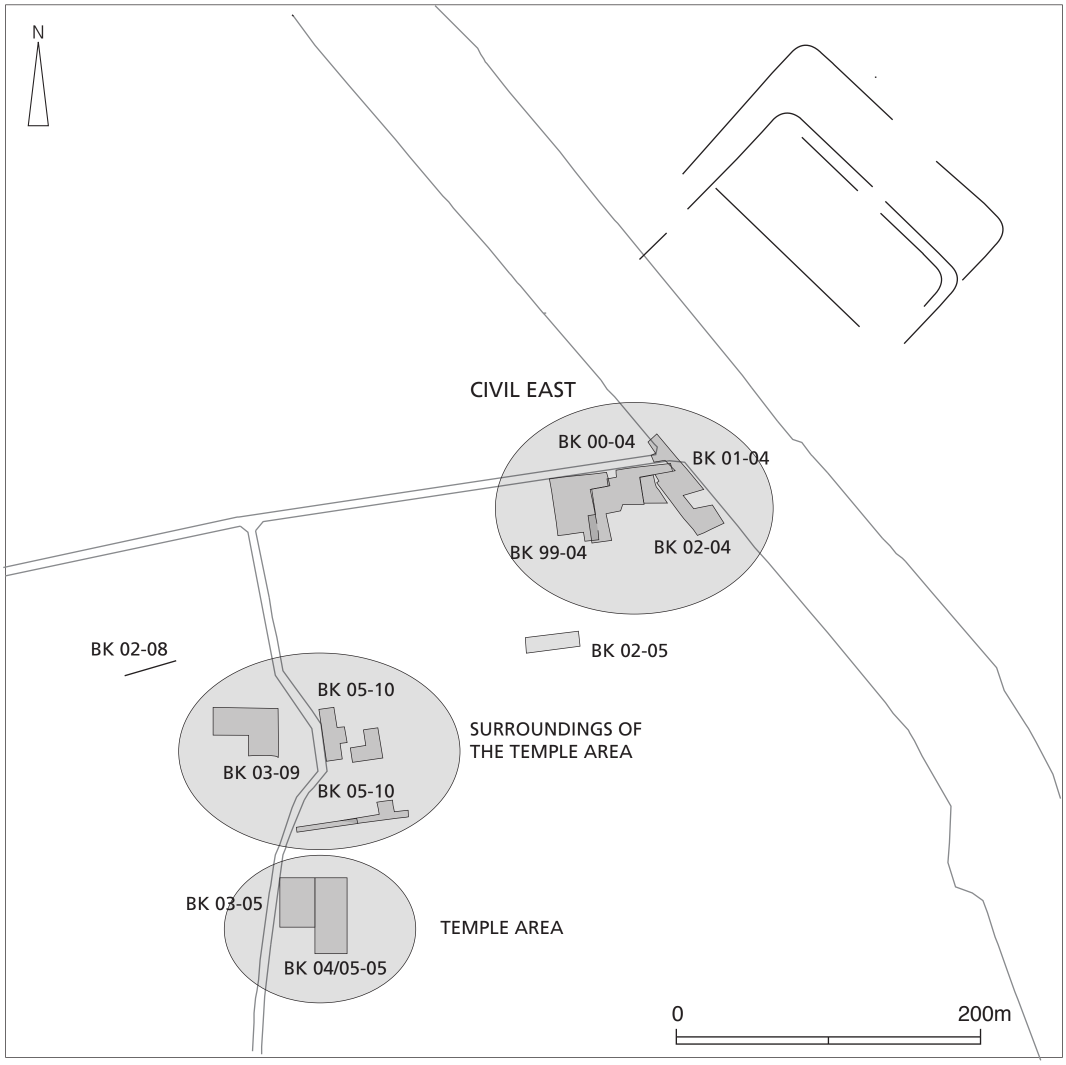

Fig. 7.1 Map of the Roman settlement indicating the fields of excavation (after M. Reddé et al. 2005 fig. 8).

12 Excavations in the area Civil South were directed C. Schucany and P.-A. Schwarz (Universität Basel).

Civil East		Structure	Preservation	Samples studied	Volume (ml)
1st Cent. AD (Horizon 1)	Pit	BK 99-04-01	W	9	47000
		BK 99-04-86	W	3	19000
		BK 00/01-04-24	W	34	232000
		BK 01-04-02	W	2	8000
		BK 01-04-08	W	1	7000
		BK 01-04-14	W	1	5500
		BK 01-04-15	W	1	13000
		BK 01-04-25	W	4	58000
		BK 01-04-27	W	7	41000
		BK 01-04-33	W	1	16000
		BK 01-04-73	W	4	33000
	Total pits 1st Cent. AD (N)	11		67	479500
	Layer	BK 01-04-50	W	14	83500
		BK 01-04-71	W	2	7000
		BK 01-04-72	W	4	33000
		BK 02-04-55	W	10	97000
		BK 02-04-64	W	2	22000
		BK 02-04-65	W	1	6000
		BK 02-04-67	W	2	14000
		BK 02-04-78	W	3	26000
	Total layers 1st Cent. AD (N)	8		38	288500
Total 1st Cent. AD		19		107	784500
2nd Cent. AD (Horizon 2)	Pit	BK 01-04-38	W	21	150000
		BK 02-04-15	W	6	30000
		BK 02-04-18	W	3	11000
		BK 02-04-42	W	3	8000
		BK 00-04-53	W	1	8000
	Total pits 2nd Cent. AD (N)	5		34	207000
Total 2nd Cent. AD		5		34	207000
Roman	Pit	BK 02-04-40	W	3	17000
	Trench	BK 02-04-1004	W	1	14000
Total Roman		2		6	44000
Total structures Civil East		26		143	1035500
Total structures Civil South		BK 02-05-140	W	2	16500
Total		27		145	1052000

Table 1a Overview of the studied structures in the area Civil East (BK 04).

Temple complex		Structure	Preservation	Samples studied	Volume (ml)
3/4 to 75/80 AD (Phase 1)	Layer	BK 03-05-53	W	8	49000
		BK 03-05-56	W	6	32000
		BK 04-05-32	W	3	9000
		BK 04-05-17	D	5	36000
		BK 04-05-19	D	3	22000
	Total layers 1st Cent. AD (N)	5		25	148000
	Ditch	BK 04/05-05-49	W	12	65000
	Vessel	BK 05-05-180	D	1	7000
	Posthole	BK 04-05-138	W	1	6000
		BK 04-05-139	W	1	4000
	Total postholes 1st Cent. AD (N)	2		2	10000
Total 3/4 to 75/80 AD (Phase 1)		9		40	230000
2nd Cent. AD (Phases 2-4)	Pit	BK 05-05-160/219	D	9	140000
	Layer	BK 04-05-17	D	2	12000
		BK 04-05-19	D	1	6000
		BK 03-05-38	W	1	8000
		BK 03-05-39	W	1	5000
		BK 03-05-75	W	2	6000
		BK 04-05-02	W	1	5000
		BK 04-05-50	D	8	319000
		BK 05-05-211	D	1	9800
	Total layers 2nd Cent. AD (N)	8		17	370800
	Ditch	BK 04-05-137	D	1	6000
	Vessel	BK 05-05-180	D	1	6000
	Posthole	BK 03-05-65	W	1	5500
		BK 04-05-63	D	1	6000
		BK 04-05-80	D	1	6000
		BK 04-05-83	D	1	4000
		BK 04-05-84	D	1	5000
		BK 04-05-86	D	1	8000
		BK 04-05-88	D	1	1000
		BK 04-05-123	D	1	9000
		BK 04-05-135	D	1	8000
		BK 04-05-106	D	4	16200
		BK 05-05-174	D	1	12000
	Total Postholes 2nd Cent. AD (N)	11		14	80700
Total 2nd Cent. AD (Phases 2-4)		22		42	603500
2nd - 4th Cent. AD	Ditch	BK 03-05-16	W	15	124500
Roman	Ditch	BK 04-05-12	D	1	6000
		BK 04-05-92	D	1	4000
	Total ditches Roman (N)	2		2	10000
	Layer	BK 04-05-66	D	1	4000
		BK 04-05-70	D	1	4000
	Total layers Roman (N)	2		2	8000
Total Roman		4		4	18000
Total		36		101	976000

Table 1b Overview of the studied structures in the Temple complex (BK 05).

<table>
<tr><th colspan="2">Surroundings of the temple complex</th><th>Structure</th><th>Preservation</th><th>Samples studied</th><th>Volume (ml)</th></tr>
<tr><td rowspan="10">1st Cent. AD</td><td rowspan="3">Pit</td><td>BK 03-09-29</td><td>W</td><td>1</td><td>8000</td></tr>
<tr><td>BK 03-09-193</td><td>W</td><td>1</td><td>6000</td></tr>
<tr><td>BK 03-09-194</td><td>W</td><td>2</td><td>12000</td></tr>
<tr><td>Total pits 1st Cent. AD (N)</td><td colspan="2">3</td><td>4</td><td>26000</td></tr>
<tr><td rowspan="5">Layer</td><td>BK 05-10-168</td><td>W</td><td>1</td><td>10000</td></tr>
<tr><td>BK 03-09-212</td><td>W</td><td>1</td><td>5000</td></tr>
<tr><td>BK 05-10-310</td><td>W</td><td>1</td><td>8000</td></tr>
<tr><td>BK 03-09-163</td><td>W</td><td>1</td><td>20500</td></tr>
<tr><td>BK 03-09-166</td><td>W</td><td>3</td><td>27000</td></tr>
<tr><td>Total layers 1st Cent. AD (N)</td><td colspan="2">5</td><td>7</td><td>70500</td></tr>
<tr><td colspan="2">Total 1st Cent. AD</td><td colspan="2">8</td><td>11</td><td>96500</td></tr>
<tr><td rowspan="18">Roman</td><td rowspan="4">Pit</td><td>BK 03-09-89</td><td>W</td><td>1</td><td>22500</td></tr>
<tr><td>BK 03-09-90</td><td>W</td><td>1</td><td>4500</td></tr>
<tr><td>BK 03-09-129</td><td>W</td><td>1</td><td>5000</td></tr>
<tr><td>BK 05-10-161</td><td>W</td><td>1</td><td>30000</td></tr>
<tr><td>Total pits Roman (N)</td><td colspan="2">4</td><td>4</td><td>62000</td></tr>
<tr><td rowspan="7">Layer</td><td>BK 03-09-67</td><td>W</td><td>1</td><td>3000</td></tr>
<tr><td>BK 03-09-74</td><td>W</td><td>6</td><td>35000</td></tr>
<tr><td>BK 03-09-151</td><td>W</td><td>5</td><td>32000</td></tr>
<tr><td>BK 03-09-215</td><td>W</td><td>1</td><td>?</td></tr>
<tr><td>BK 03-09-Son26</td><td>W</td><td>15</td><td>88000</td></tr>
<tr><td>BK 05-10-149</td><td>W</td><td>2</td><td>40000</td></tr>
<tr><td>BK 05-10-308</td><td>W</td><td>1</td><td>12000</td></tr>
<tr><td>Total layers Roman (N)</td><td colspan="2">7</td><td>31</td><td>210000</td></tr>
<tr><td>Basin</td><td>BK 05-10-son19</td><td>W</td><td>13</td><td>65800</td></tr>
<tr><td>Pot content</td><td>BK 05-10-400</td><td>W</td><td>1</td><td>14000</td></tr>
<tr><td rowspan="2">Trench</td><td>BK 03-09-Son2</td><td>W</td><td>1</td><td>5000</td></tr>
<tr><td>BK 03-09-Son5</td><td>W</td><td>1</td><td>19000</td></tr>
<tr><td>Total Trenches Roman (N)</td><td colspan="2">2</td><td>2</td><td>24000</td></tr>
<tr><td colspan="2">Total Roman</td><td colspan="2">15</td><td>51</td><td>375800</td></tr>
<tr><td colspan="2">Total Surroundings of the temple complex</td><td colspan="2">23</td><td>62</td><td>472300</td></tr>
<tr><td colspan="2">Total structures BK 08</td><td>BK 02-08</td><td>W</td><td>2</td><td>13000</td></tr>
<tr><td colspan="2">Total</td><td>24</td><td></td><td>64</td><td>485300</td></tr>
</table>

Table 1c Overview of the studied structures in the Surroundings of the temple complex (BK 09 and BK 10).

The second pair of samples originate from a machine trench (BK 08) dug for palaeohydrological investigations (**fig. 7.1**)[13]. Two samples are taken from a deposit dated to the Roman period. The results of these samples are integrated in the analysis of the Surroundings of the temple area (**tab. 1c**).

Tables 1a, 1b and **1c** give an overview of the analysed structures for each area of excavation. These tables include date, type of context, preservation, the number of analysed samples and the volume of processed sediment for each structure separately. In total 310 samples taken in 87 structures are included in the

[13] Excavations in Trench BK 08 were conducted by C. Fortuné.

present study. This coincides with 2513.3 litres of processed soil. In practice, many more soil samples have been taken, processed and partially analysed (more than 700). They involve among others samples taken within the military camp[14]. The majority of studied samples are recovered from waterlogged deposits, except for 49 samples from 24 structures taken in dry deposits in the temple complex.

As listed in **Tables 1a, 1b** and **1c**, a structure is defined through a certain »code«. The different numbers within this code refer to the field of excavation, the year of excavation and the number of the structure. For example BK 01-04-24 represents structure 24 in field 04 dug in the year 2001. In the following we use the word »structure« for a very wide range of contexts ranging from pits, postholes, layers to ditches.

Chronological framework

For the main analysis of our data, we constructed a chronological framework. This framework consists of structures belonging to the 1st Cent. AD; those belonging to the 2nd Cent. AD; and those which could not be dated more precisely than to the Roman period. It is likely that the majority of structures classified as »Roman« belong to the 1st and 2nd Cent. AD, it can not be excluded however that they date to the 3rd Cent. AD. In the areas Civil East and Surroundings of the temple complex, these time horizons (1st and 2nd Cent. AD) are also used by the archaeologists. In the temple complex however, the five chronological phases distinguished by the archaeologists do not correspond entirely with our framework. In order to facilitate intra-site comparison, we therefore grouped those structures from the temple complex belonging to phase 1 with those of the 1st Cent. AD; the structures belonging to phases 2 to 4 are classified with those dated to the 2nd Cent. AD. As the end of phase 1 (from 3/4 AD to 75/80 AD) coincides with the abandonment of the military camp, this division seemed appropriate for comparison between the different areas of excavation. **Figure 7.2** shows the number of samples studied in each area of excavation for the different time horizons.

Methods of analysis

The majority of samples were processed in the field laboratory operated in Biesheim (F), in the near vicinity of the site[15]. Additional sieving was carried out in the laboratory of the IPAS (Institute of Prehistory and Archaeological Science) of the University of Basel. All archaeobiological samples have been processed using »semi-flotation« as described by Hosch and Zibulski[16] or »wash-over« previously described by Kenward and Hall[17] in order to separate the organic from the inorganic material. Sieves of mesh sizes 4 mm, 1 mm and 0.35 mm were used, as these have proven most appropriate for collecting the majority of organic material. In the field laboratory the inorganic fractions were sorted. The study of the organic material was carried out both in the field laboratory and in the laboratory of the IPAS in Basel (CH).

[14] For details on the archaeobotanical results of the military camp see P. Vandorpe / S. Jacomet, Pflanzliche Ernährung. In: M. Reddé (ed.) Oedenburg I (footnote 11) 365-368.

[15] The processing of samples in the field laboratory was undertaken by Fr. Ginella, Br. Andres, C. Heitz, C. Malnasi, A. Springer, J. Kissling, W. Muñoz and P. Koch.

[16] S. Hosch / P. Zibulski, The influence of inconsistent wet-sieving procedures on the macroremains concentration in waterlogged sediments. Journal Arch. Scien. 30, 2003, 849-857.

[17] H. K. Kenward / A. R. Hall / A. K. C. Jones, A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits. Scien. and Arch. 22, 1980, 3-15.

	Year	N° of samples analysed			Method	Org. fraction considered (in mm)	Quantification	Done by
		Civil East	Temple complex	Surroundings of Temple complex				
FIELD SEASON	1999	4			rapid screening	4, 1	semi-quantified	S. Jacomet / M.Klee
	2000	14			full analysis	4, 1	fully quantified	S. Jacomet / M.Klee
		3			rapid screening	4, 1	semi-quantified	S. Jacomet / M.Klee
	2001	33			rapid screening	4, 1, 0.35	semi-quantified	S. Jacomet
	2002	32			full analysis	4, 1	fully quantified	P. Vandorpe / S. Jacomet
	2003		34	38	rapid screening	4, 1	semi-quantified	P. Vandorpe
	2004		50		rapid screening	4, 1	semi-quantified	P. Vandorpe
	2005		21	21	rapid screening	4, 1	semi-quantified	P. Vandorpe
Total		86	105	59				
ADDITIONAL ANALYSIS		4			full analysis	4, 1	fully quantified	practical course for students
		12	16	1	full analysis	4, 1, 0.35	fully quantified	P. Vandorpe
		65		4	rapid screening	4, 1	semi-quantified	P. Vandorpe
Total		81	16	5				
Total samples analysed			352*					

* This number of samples differs from the total of analysed samples included in this text while some samples have been analysed twice (rapid screening and full analysis), in addition those samples that did not yield plant macrofossils are not mentioned in the current text.

Table 7.2 Overview of archaeobotanical analysis.

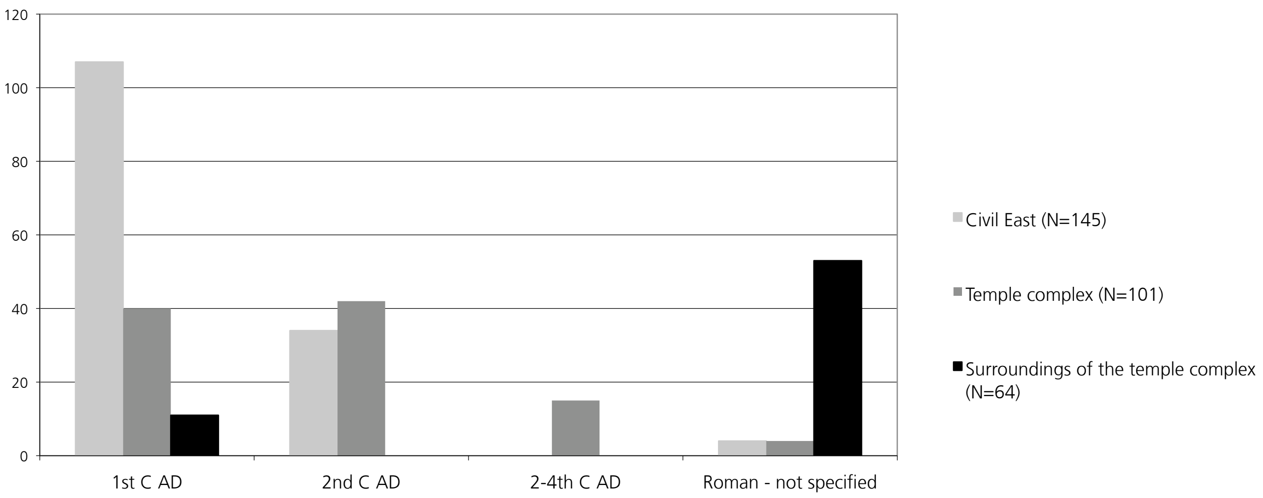

Fig. 7.2 Number of samples studied in each area of excavation for the different time horizons.

Table 2 gives an overview of the archaeobotanical analyses. The majority of the analyses have been undertaken during and as part of the fieldwork[18]. Additionally, full-quantitative analyses have been fulfilled for the study of specific questions[19]. As can be inferred from **Table 2**, the majority of samples have been analysed using rapid screening of the 4 mm and 1 mm organic fraction. We opted for rapid screening as it allowed us to consider a large amount of samples within a short period of time[20]. This method of analysis consists of screening the entire 4mm organic fraction and a subsample of the 1mm organic fraction for the presence of plant macro remains[21]. The abundance of archaeological and/or ecological material (charcoal, waterlogged wood, insects, plants etc.) is estimated by eye and recorded. The presence of plant macrofossils is registered using a binocular microscope. Their abundance is semi-quantified using a five-point-scale (1=present, 2=2 – 10 items, 3=11 – 50 items, 4=51 – 500 items, 5=>500 items).

Plant macrofossils were identified using a binocular microscope of the type Wild M3Z with magnification x6.5 to x40. The identification is completed using the modern reference collection of the IPAS. In addition, several seed atlases and publications were consulted[22]. The botanical nomenclature of wild plants follows the Flora Europaea; the nomenclature of cultural plants follows Zohary and Hopf[23].

To interpret and detect similarities/differences in the plant spectrum, we decided to work with ubiquity of species within the samples. The ubiquity of each plant taxon is calculated on the basis of presence-absence data[24]. Each type of preservation is considered separately. As waterlogged plant remains can not preserve in dry deposits, the ubiquity of waterlogged plant species is calculated only taking into account samples located in waterlogged deposits. These include 261 samples. For charred and mineralised plant remains, all deposits are considered. Hence the ubiquity of species was calculated based on 310 samples.

To interpret and detect similarities/differences between archaeological deposits (discussed below), we use the semi-quantitative recording of plant species (see appendix). This data gives a better reflection of the composition of the samples.

18 The analyses have varied a great deal according to excavation season. This is largely due to the time and budget available in every season.

19 P. Vandorpe / S. Jacomet, Comparing different pre-treatment methods for strongly compacted organic sediments prior to wet-sieving: a case study on Roman waterlogged deposits. Env. Arch. 12, 2007, 207-214. – P. Vandorpe / S. Jacomet, Remains of burnt vegetable offerings in the temple area of Roman Oedenburg (Biesheim-Kunheim, Alsace , France) – first results. In: J. Wiethold (ed.) Travaux d'archéobotanique (à la mémoire de Karen Lunstrom Baudais). Bibracte (Glux-en-Glenne in press).

20 Rapid screening is a good alternative for archaeobotanical analysis, this is already stated by Hall and Kenward for medieval plant assemblages. See A. R. Hall / H. K. Kenward, Environmental evidence from the Colonia: General Accident and Rougier Street. Arch. York 14/6, 1990, 289-434. – H. K. Kenward / A. R. Hall, Biological evidence from Anglo-Scandinavian deposits at 16-22 Coppergate. Arch.York 14/7, 1995, 435-479. – H. K. Kenward / A. R. Hall, Enhancing Bioarchaeological Interpretation Using Indicator Groups: Stable Manure as a Paradigm. Journal Arch. Scien. 24, 1997, 663-673.

21 Preceding examination of the different fractions of the samples has shown that most of the plant macrofossils (seeds and fruits) are found in the 4 mm and 1 mm fraction, only occasionally new species were found in the 0.35 mm fraction.

22 W. Beijerinck, Zadenatlas der Nederlandsche Flora. H. Veenman & Zonen (Wageningen 1947) 316. – G. Berggren, Atlas of Seeds and small fruits of Nortwest-European plant species (Sweden, Norway, Denmark, East Fennoscandia and Iceland) with morphological descriptions. Part 2 Cyperaceae. Swedish Natural Science Research Council (Stockholm 1969) 68. – G. Berggren, Atlas of Seeds and small fruits of Nortwest-European plant species (Sweden, Norway, Denmark, East Fennoscandia and Iceland) with morphological descriptions. Part 3 Saliacaceae - Cruciferae. Swedish Natural Science Research Council (Stockholm 1981) 260. – A.-L. Anderberg, Atlas of seeds and small fruits of Northwest-European plant species with morphological descriptions. Part 4: Resedaceae - Umbelliferae. Risbergs Tryckeri AB (Uddevalla 1994) 281. – K.-H. Knörzer, Römerzeitliche Pflanzenfunde aus Neuss. Gebrüder Mann (Berlin 1970) 162. – K.-H. Knörzer, Römerzeitliche Pflanzenfunde aus Xanten. Rheinland-Verlag GmbH (Köln 1981) 176. – H.-P. Stika, Römerzeitliche Pflanzenreste aus Baden-Württemberg. Konrad Theiss Verlag (Stuttgart 1996) 207.

23 D. Zohary / M. Hopf, Domestication of Plants in the Old World. The origin and spread of cultivated plants in West Asia, Europe and the Nile Valley. Clarendon Press (Oxford 2000) 279.

24 As the data is recorded in many different ways (i.e. fully quantified, semi-quantified and presence-absence) we had to simplify and unify the data in order to make / allow comparisons/ conclusions.

RESULTS 1: THE PLANT SPECTRUM

Preservation

In the archaeological layers of Roman Oedenburg plant macro remains are recorded in three different states of preservation, namely through waterlogging, charring and mineralisation[25]. In total 303 different plant taxa are identified. As expected in waterlogged deposits, seeds and fruits are predominantly preserved not carbonised (un-altered). Mineralised and charred plant macro remains represent only rare admixtures in the plant assemblage (see below).
Waterlogging occurs when anaerobic conditions are created by the long-time exclusion of air due to the presence of groundwater. These conditions prohibit the decay of otherwise perishable materials. Waterlogged plant remains are recovered from all structures in the civil settlement located under the present ground water table. Of the 303 plant taxa, the large majority (N=297) are found in a waterlogged state of preservation.
Charred plant remains are preserved through the slow carbonisation under reducing conditions. They are recovered from almost all structures both in dry and waterlogged deposits in the civil settlement, though in very small amounts. Of the 303 plant taxa, 58 are found charred. They include above all edible plants.
Mineralisation occurs when plant material is converted into an inorganic substance. The main components in this process are high concentrations of phosphate, calcium and changing groundwater condition. Through decay of plant material a cavity is created, the surrounding soil acts as mould, and the original material is reproduced by the mineral infillings. Green[26] argues that mineralised plant remains are mostly recovered from cess pits and garderobes, while high concentrations of phosphate are present. Mineralised plant remains are found in a large number of structures. All are located in waterlogged deposits, especially in the area Civil East. In the temple complex no mineralised plant macro remains are recorded. Of the 303 plant taxa, 57 are preserved through mineralisation. They include primarily edible plants.

The presence of mineralised plant remains in waterlogged conditions is not widespread, or to be more precise not known[27]. Kenward and Hall[28] claim that organic decay and groundwater movement are important and necessary factors in the process of mineralisation. As a consequence in pure waterlogged deposits, mineralisation does not take place. They come to this conclusion studying the Anglo-Scandinavian Coppergate (York, GB) samples as hardly any mineralised remains are found. Carruthers[29] reports the finding of two adjacent medieval faecal deposits at Jennings Yard (GB), where one deposit yields preservation through waterlogging and no mineralised remains, the other originates from dry deposits and yielded charred and mineralised remains. Kühn[30] observes similar findings in two medieval ditches in Schloss Hallwyl (CH). This illustrates anew the theory prompted by Kenward and Hall[31]. Nevertheless, in Roman Oedenburg mineralised plant remains are found in waterlogged conditions. These mineralised remains are characterised

[25] For an extended overview of different conditions of preservation of especially Roman plant remains, we refer to S. Jacomet 2003 (footnote 3), 173-229 on results of Windisch-Breite. Mineralised plant remains in particular have been largely discussed.

[26] F. J. Green, Phosphatic mineralization of seeds from archaeological sites. Journal Arch. Scien. 6, 1979, 279-284.

[27] A. Kreuz, Spätlatènezeitliche verkohlte und mineralisierte Pflanzenfunde von Hanau-Mittelbuchen. Germania 76, 1998, 865-873.

[28] H. K. Kenward / A. R. Hall 1995 (footnote 20), 435ff.

[29] W. Carruthers, Carbonised, mineralised and waterlogged plant remains. In: Hawkes J.W. / Heaton M.J. (eds.) Jennings Yard, Windsor. Wessex Arch. Report 3, 1993, 82-90.

by an orange to black colour and a very hard configuration. Some seeds and fruits seem to have only partially been mineralised. Experiments have shown that mineralisation can rapidly take place under favourable circumstances[32]. Hence there are several possibilities for the presence of the mineralised remains: first of all, the seeds and fruits originate from secondary deposits and thus are mineralised in a different area; secondly as the water level fluctuated severely in this area and mineralisation can be very rapid, they are likely to have formed in one of the periods where the water level was rather low.

Archaeological structures preserved in waterlogged environments are very valuable. Usually a different and much smaller spectrum of plant material is recovered from sites located in dry deposits in comparison to sites located in waterlogged deposits[33]. As Carruthers[34] affirms, the preservation of waterlogged plant assemblages, as with some mineralised plant assemblages, is unaffected by human intervention. This contrasts with charred plant assemblages, which are usually a direct result of human activity and thus often biased in their composition[35]. However, the main agent in the composition of plant assemblages remains the human selection process. It is clear that most samples represent mixtures of natural deposits and human activities.

Further the conditions of preservation have a direct influence on the representation of plant species. As cited by Van der Veen[36] »the mode of preservation is an indicative factor in the occurrence of plant species as the type of plant foods is strongly correlated to the type of preservation encountered«. This implicates that certain plant taxa only preserve through charring (e.g. garlic), others only unaltered in waterlogged deposits (e.g. bottle gourd).

The plant spectrum

In total, 303 plant taxa are identified through the study of seeds and fruits[37]. The majority of which are waterlogged (292); 57 are recovered mineralised; 58 are charred. The plant species recovered include cultivated plants[38] as well as wild plants[39]. The wild plants gathered for consumption are listed together with the cultivated plants according to their use. The wild weeds are grouped according to the actualistic grouping/principle described by Ellenberg[40]. Information on habitats was taken from Hanf[41] and Oberdorfer[42].

30 M. Kuhn pers.comm.
31 H. K. Kenward / A. R. Hall 1995 (footnote 20), 435ff.
32 W. Carruthers, Mineralised plant remains. In: A. J. Lawson (ed.) Potterne 1982-5: Animal husbandry in later prehistoric Wiltshire. Wessex Arch. Report 17, 2000, 72-84.
33 S. Jacomet / A. Kreuz 1999 (footnote 7), 57-62. – exceptions may be burnt destruction layers see e.g. Windisch Breite HP 2 in S. Jacomet 2003 (footnote 3), 173ff or Novaesium in K.-H. Knörzer 1970 (footnote 22).
34 W. Carruthers 2000 (footnote 32), 72-84.
35 These observations do not include events as destruction by fire, and intentional burning for offering, for basics we refer to U. Willerding, Präsenz, Erhaltung und Repräsentanz von Pflanzenresten in archäologischem Fundgut. In: W. A. van Zeist / K. Wasylikowa / K.-E. Behre (eds.) Progress in Old World Palaeoethnobotany. Rotterdam (Balkema 1991) 25-51 among others.
36 M. Van der Veen / A. Livarda / A. Hill, The Archaeobotany of Roman Britain: Current State and Identification of Research Priorities. Britannia XXXVIII, 2007, 181-210.
37 To calculate the total of plant taxa, the following principles were pursued: fully identified species; plant items identified to genus when no other species from that genus are found; families when no other species or genera from that family occur; cf. identifications when no fully identified specimens are present.
38 When we talk about »cultivated plants« we mean cultivars, which are plant species genetically and morphologically different of wild plants.
39 The economic or cultural and gathered plants have been the subject of a previous publication – see Vandorpe / Jacomet in M. Reddé / H. U. Nuber / S. Jacomet / J. Schibler / C. Schucany / P.-A. Schwarz / G. Seitz / F. Ginella / M. Joly / S. Plouin / H. Hüster Plogmann / C. Petit / L. Popovitch / A. Schlumbaum / P. Vandorpe / B. Viroulet / L. Wick / J.-J. Wolf / B. Gissinger / V. Ollive / J. Pellisier, Oedenburg, une agglomération d'époque romaine sur le Rhin supérieur. Gallia 62, 2005, 252-257.
40 H. Ellenberg, Vegetation ecology of Central Europe. Cambridge University Press (Cambridge 1988) 731. – H. Ellenberg, Zeigerwerte der Gefässpflanzen Mitteleuropas (3. Auflage). Scripta geobotanica 18 (Göttingen 1991) 7-122.
41 M. Hanf, Ackerunkräuter Europas mit ihren Keimlingen und Samen. BASF (Ludwigshafen 1982) 496.
42 E. Oberdorfer, Pflanzen-soziologische Exkursionsflora. Ulmer (Stuttgart 1994) 1050.

The plant spectrum is discussed by indicating the ubiquity of species within the studied samples based on presence/absence data. In **tables 3a, 3b** and **3c** the results of these calculations are summarised. For each plant species, ubiquity percentages are measured for the total number of samples, for the different areas of excavation, for the chronological phases and for the different types of contexts.
Figures 7.3, 7.4 and **7.5** visualise the ubiquity of plant groups in the studied samples according to type of preservation.

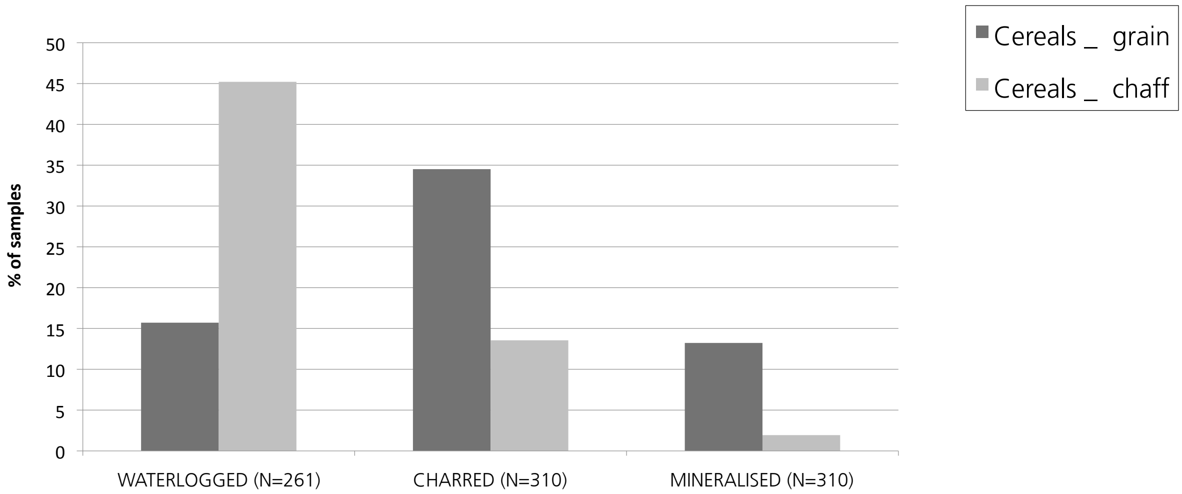

Fig. 7.3 Ubiquity of cereal grains and chaff in the studied samples according to type of preservation.

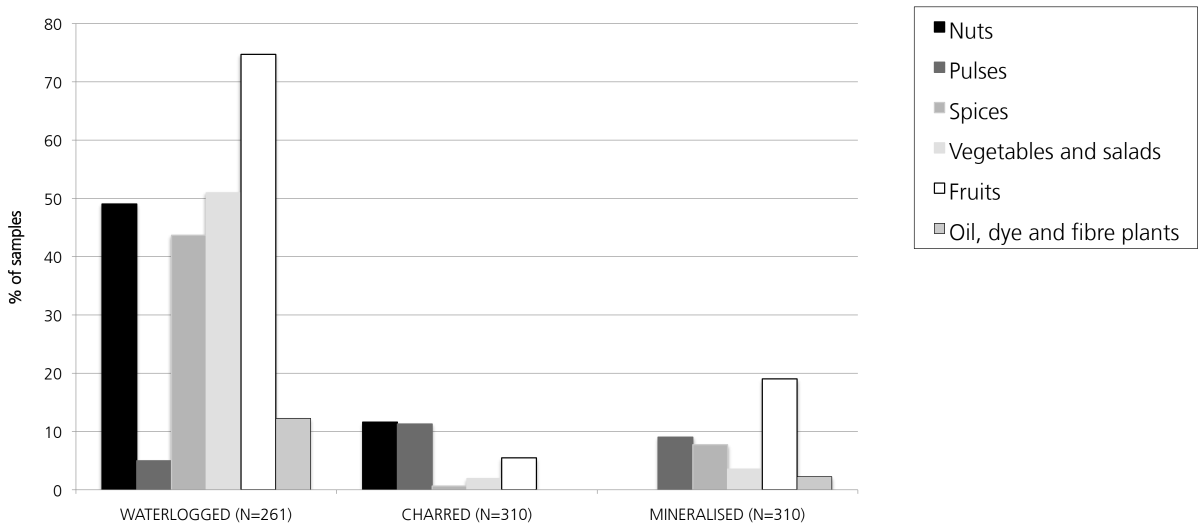

Fig. 7.4 Ubiquity of nuts, pulses, spices, vegetables and salads, fruits and oil dye and fibre plants in the studied samples according to type of preservation.

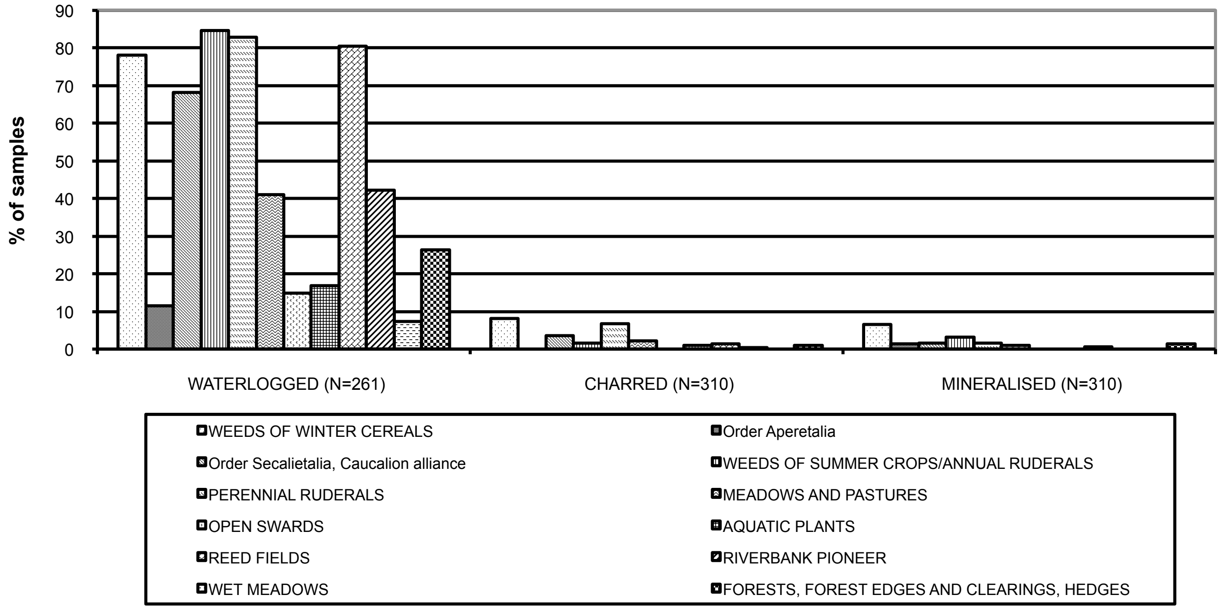

Fig. 7.5 Ubiquity of weeds groups in the samples according to type of preservation.

Cultivated and gathered plants

Nine cereal taxa are recorded, representing those cereals usually found within Roman settlements north of the Alps[43]. They include: oat (*Avena* sp.), barley (*Hordeum vulgare*), rye (*Secale cereale*), naked wheat (*Triticum aestivum/durum/turgidum*), einkorn (*Triticum monococcum*), emmer (*Triticum dicoccum*), spelt (*Triticum spelta*), broomcorn millet (*Panicum miliaceum*) and foxtail millet (*Setaria italica*). Cereals are an important part of the Roman diet. They are used to produce flower for flat bread or fermented bread and also for porridges. For each of these products, specific cereals are used and/or favoured[44].

The cereal remains are recovered in three states of preservation: waterlogged, charred and mineralised (**tab. 3a, 3b** and **3c; fig. 7.3**). The larger bulk of the cereal remains are recovered as waterlogged chaff remains (spikelet forks, glumes and rachis fragments). These are found in 45.2 % of the analysed samples. In addition waterlogged cereal testa fragments or »cereal bran« are found in large amounts[45]. As these

[43] S. Jacomet / J. Schibler / C. Maise / L. Wick / S. Deschler-Erb, Mensch und Umwelt. In: L. Flutsch / U. Niffeler / F. Rossi (eds.) Römische Zeit. Verlag Schweiz. Ges. für Ur- und Frühgeschichte (Basel 2002) 21-40.

[44] J. André, Essen und Trinken im alten Rom. Philipp Reclam jun. GmbH & Co. (Stuttgart 1998) 279.

[45] As the identification of these bran fragments is very time-consuming, we were not able to conduct more detailed

remains are usually restricted to latrine deposits, they are recorded in no more than 15.7 % of the samples. Charred and mineralised cereal remains (grains and chaff) represent only rare admixtures in the archaeological deposits. Nevertheless, charred cereal grains and chaff were recovered in 35.5 % and 13.5 % of the samples respectively, mineralised cereal grains and chaff in 13.2 % and 1.9 % of the samples respectively.

Glume wheats (emmer : *Triticum dicoccum*, spelt :*Triticum spelta* and einkorn :*Triticum monococcum*) constitute the majority of the cereal remains. They are mainly recovered as waterlogged chaff remains (in 34.5 % of the samples). Especially the highly organic layers within palaeochannels have yielded large amounts of chaff remains. The majority of glume wheats are found in the area Civil East. The most commonly recorded glume wheat is spelt. Its waterlogged glumes are found in 24.9 % of the samples, charred in 6.5 % of the samples[46]. It is slightly more common in the 1st Cent. AD than in the 2nd Cent. AD. Remains of spelt are found in pits, layers and a ditch. The second most frequent glume wheat is emmer. It was found in 13 % of the samples as waterlogged chaff remains, in 5.2 % of the samples as charred chaff remains. It is more common in the 2nd Cent. AD (in 17.5 % of the samples). It is found in pits and layers. The third glume wheat, einkorn is present in much smaller amounts than spelt or emmer wheat. It is part of the rare cereal taxa in Oedenburg. It was found in 3.8 % of the samples as waterlogged chaff, in 1.3 % as charred chaff. It is present in approximately the same amount of samples in the 1st and 2nd Cent. AD. It occurs in pits and layers.
Barley *(Hordeum vulgare* and *Hordeum* sp.*)*[47] is mainly recovered as waterlogged rachis fragments (in 10 % of the samples) and charred grains (in 10.6 % of the samples). It is much less recurrent than emmer or spelt. The waterlogged remains are almost solely found in layers, the charred remains are spread over the layers, pits and a ditch. In comparison to the glume wheats, remains of barley occur regularly in all three excavation areas.
Both broomcorn millet (*Panicum miliaceum*) and foxtail millet (*Setaria italica*) are present. They are recorded as waterlogged glumes and grains, charred grains and mineralised glumes and grains. Findings of millet originate from pits, layers, ditches and the basin, except mineralised millet remains which are found exclusively in one pit (BK 01-04-38). The distribution of broomcorn millet and foxtail millet differs; foxtail millet is recorded as a rare find (in less than 4 % of the samples) whereas broomcorn millet is one of the more common cereal species (e.g. waterlogged chaff in 29.1 % of the samples, mineralised grains in 10.3 % of the samples). Both millets are found in the 1st and 2nd Cent. AD, they are more frequent in the area Civil East and the Surroundings of the temple complex than in the Temple complex.

The remaining three cereal taxa, oats, rye and naked wheat, are rare in Roman Oedenburg. Oats (*Avena* sp.) occur primarily as charred grains (in 3.2 % of the samples) and are more frequently found in pits and in the

identifications than the group »cerealia«. For more detailed information on this subject we refer to C. Dickson, The identification of cereals from ancient bran fragments. Circaea 4, 1987, 95-102. – C. Dickson, Human coprolites. In: B. Bell / C. Dickson (eds.) Excavations at Warebeth (Stromness Cemetery) Broch, Orkney. Proc. Soc. Antiq. Scot., 1989, 115-131. – C. Dickson, The Roman army diet in Britain and Germany. In: U. Körber-Grohne / H. Küster (eds.) Archäobotanik. Symposium der Universität Hohenheim (Stuttgart) vom 11.-16-Juli 1988. J. Cramer (Berlin / Stuttgart 1989) 135-154. – C. Dickson, Experimental Processing and Cooking of Emmer and Spelt Wheats and the Roman Army Diet. In: D. E. Robinson (ed.) Experimentation and Reconstruction in Environmental Archaeology. Oxbow Books (Oxford 1990) 33-39 - C. Dickson, Memoirs of a Midden Mavis. – The study of ancient diets and environments from plant remains. Glasgow Naturalist 22, 1991, 65-76.

46 A possible explanation for the larger amounts of spelt in comparison to emmer could be the state of preservation of the cereal remains. My personal experience leads me to think that a badly preserved spelt glume is more easily recognised than a badly preserved emmer or einkorn glume.

47 We think that the majority of barley grains found in Roman Oedenburg are hulled as several charred grains were found with the glumes clearly visible. On the other hand, no clear findings of naked barley are recorded.

Table 3a Ubiquity of waterlogged plant species

	Total	Spatial			Chronology			Context					
		CIVIL EAST	TEMPLE COMPLEX	SURROUNDINGS	1st C AD	2nd C AD	Roman - not specified	Pit	Layer	Ditch	Posthole	Basin	Pot content
N of structures	63	27	12	24	35	10	18	25	31	2	3	1	1
N of samples	261	145	52	64	155	40	66	114	103	27	3	13	1
WATERLOGGED													
CEREALS _ grain													
Avena sativa/fatua	0.4	0.7			0.6			0.9					
Cerealia - Testa	13.8	21.4		7.8	13.5	25.0	7.6	25.4	6.8				
Panicum miliaceum	1.9	3.4			1.9	5.0		4.4					
Setaria italica	0.8	1.4				5.0		1.8					
Panicum/Setaria	1.1	2.1			1.3	2.5		1.8	1.0				
CEREALS _ chaff													
Hordeum vulgare - rachis	0.8	1.4			1.3			1.8					
Hordeum sp. - rachis	10.0	6.9	1.9	23.4	10.3		15.2	3.5	20.4	3.7			
Secale cereale - rachis	1.5			6.3	0.6		4.5		3.9				
Triticum dicoccon - glume	13.0	18.6		10.9	13.5	17.5	9.1	13.2	18.4				
Triticum monococcum - glume	3.8	6.2	1.9		5.2	5.0		3.5	5.8				
Triticum spelta - glume	24.9	33.8	3.8	21.9	26.5	25.0	21.2	27.2	31.1	7.4			
Glume wheats	34.5	47.6	1.9	31.3	39.4	32.5	24.2	41.2	40.8	3.7			
Panicum miliaceum - glume	29.1	31.7	5.8	42.2	31.0	17.5	31.8	29.8	35.9	11.1		15.4	
Setaria italica - glume	3.1	3.4		4.7	3.9		3.0	3.5	3.9				
Panicum/Setaria - glume	2.3	3.4		1.6	1.9	5.0	1.5	3.5	1.0			7.7	
NUTS													
Corylus avellana	43.3	44.8	32.7	48.4	43.9	55.0	34.8	50.0	41.7	40.7		15.4	
Juglans regia	21.1	26.2	7.7	20.3	16.8	47.5	15.2	28.1	13.6	14.8		38.5	
Pinus pinea	0.4			1.6			1.5		1.0				
PULSES													
Lens culinaris	1.1	2.1			0.6	5.0		2.6					
Pisum sativum	0.8	1.4			1.3			0.9	1.0				
Vicia faba	0.4	0.7				2.5		0.9					
Fabaceae	3.4	5.5		1.6	4.5	2.5	1.5	6.1	1.9				
SPICES													
Anethum graveolens	18.0	25.5		15.6	18.7	35.0	6.1	26.3	16.5				
Apium graveolens	26.8	37.9	3.8	20.3	31.6	37.5	9.1	44.7	16.5	7.4			
Carum carvi	0.8	1.4			0.6	2.5		1.8					
Coriandrum sativum	33.7	49.0	5.8	21.9	42.6	37.5	10.6	49.1	30.1	3.7			
Foeniculum vulgare	2.3	2.8		3.1	2.6	2.5	1.5	2.6	2.9				
Origanum vulgare	0.8	1.4			0.6	2.5		1.8					
cf *Petroselinum crispum*	0.4	0.7			0.6			0.9					
Pimpinella anisum	0.4	0.7			0.6			0.9					
cf *Piper nigrum*	0.4	0.7				2.5		0.9					
Piper nigrum	0.8	1.4			1.3			1.8					
cf *Ruta graveolens*	0.4	0.7			0.6			0.9					
Satureja hortensis	9.2	13.1		7.8	7.7	20.0	6.1	14.0	7.8				
VEGETABLES AND SALADS													
Amaranthus sp.	36.8	50.3	5.8	31.3	36.8	52.5	27.3	56.1	26.2	7.4		23.1	
Atriplex sp.	11.1	13.1	1.9	14.1	11.6	10.0	10.6	8.8	18.4				
Beta vulgaris	9.6	15.2	1.9	3.1	14.2	2.5	3.0	14.9	7.8				
Brassica cf *oleracea*	1.5	2.8			2.6			0.9	2.9				
Brassica rapa/nigra	1.9	2.8		1.6		7.5	3.0	3.5	1.0				
Brassica sp.	12.3	18.6	3.8	4.7	13.5	27.5		21.9	6.8				
Brassica/Sinapis	0.8	1.4			0.6	2.5		1.8					
Daucus carota	16.5	19.3	13.5	12.5	23.2	7.5	6.1	21.9	12.6	14.8		7.7	
Lagenaria siceraria	9.6	13.1	3.8	6.3	8.4	27.5	1.5	15.8	6.8				
Pastinaca sativa	0.8	1.4			1.3				1.9				
Portulaca oleracea	5.4	8.3		3.1	5.2	12.5	1.5	10.5	1.9				
FRUITS													
Cucumis melo	1.1	1.4		1.6	0.6	5.0		1.8	1.0				
Cucumis sativus	1.1	2.1				7.5		2.6					
Cucumis melo/sativa	10.3	15.2		7.8	7.1	37.5	1.5	18.4	5.8				
Ficus carica	42.5	57.2	19.2	28.1	47.7	67.5	15.2	65.8	27.2	25.9			100
Fragaria vesca	11.5	18.6		4.7	14.2	12.5	4.5	21.1	3.9			15.4	
Malus sylvestris/domestica	2.3	4.1			3.9			5.3					
Malus/Pyrus	29.5	44.8		18.8	32.9	42.5	13.6	49.1	19.4			7.7	
Pyrus sp.	26.8	40.7	3.8	14.1	25.8	55.0	12.1	45.6	13.6	3.7		23.1	
Morus sp.	7.3	12.4		1.6	0.6	42.5	1.5	15.8	1.0				
Olea europaea	5.0	8.3		1.6	3.9	17.5		9.6	1.9				
Physalis alkekengi	25.3	36.6	13.5	9.4	29.7	27.5	13.6	45.6	7.8	18.5		7.7	
Prunus avium/cerasus	23.8	38.6		9.4	23.9	52.5	6.1	49.1	5.8				
Prunus domestica	13.0	18.6		10.9	11.0	32.5	6.1	24.6	5.8				
Prunus domestica/insititia	7.3	9.0	3.8	6.3	6.5	12.5	6.1	12.3	1.0	7.4		15.4	
Prunus insititia	8.8	15.9			9.0	22.5		18.4	1.9				
Prunus persica	15.7	20.0	15.4	6.3	15.5	35.0	4.5	22.8	8.7	22.2			
Prunus spinosa	18.0	31.0		3.1	18.7	42.5	1.5	39.5	1.9				
Prunus sp.	14.9	21.4	1.9	10.9	18.7	12.5	7.6	25.4	8.7	3.7			
Rubus caesius	23.0	33.1	9.6	10.9	24.5	40.0	9.1	43.9	3.9	14.8		15.4	
Rubus fruticosus	14.2	22.8	1.9	4.7	14.8	27.5	4.5	28.9	2.9	3.7			
Rubus idaeus	9.2	16.6			13.5	7.5		21.1					
Rubus sp.	8.4	9.0	7.7	7.8	10.3	2.5	7.6	13.2	3.9	11.1			
Sambucus nigra/racemosa	39.5	27.6	73.1	39.1	32.9	47.5	50.0	35.1	26.2	96.3	33.3	61.5	100
Vitis vinifera	31.0	41.4	17.3	18.8	31.6	47.5	19.7	48.2	18.4	18.5		15.4	

Table 3b Ubiquity of waterlogged plant species (suite)

	Total	Spatial: CIVIL EAST	TEMPLE COMPLEX	SURROUNDINGS	Chronology: 1st C AD	2nd C AD	Roman - not specified	Context: Pit	Layer	Ditch	Posthole	Basin	Pot content
N of structures	63	27	12	24	35	10	18	25	31	2	3	1	1
N of samples	261	145	52	64	155	40	66	114	103	27	3	13	1
WATERLOGGED													
OIL, DYE AND FIBRE PLANTS													
Cannabis sativa	7.3	6.2	11.5	6.3	8.4	10.0	3.0	6.1	7.8	14.8			
Carthamus tinctorius	0.4			1.6	0.6				1.0				
cf *Isatis tinctoria*	0.4	0.7			0.6			0.9					
Linum usitatissimum	1.9	3.4			1.3	7.5		4.4					
Papaver somniferum	5.0	9.0			5.2	12.5		11.4					
WEEDS OF WINTER CEREALS													
Adonis sp.	4.6	7.6		1.6	4.5	10.0	1.5	7.9	2.9				
Agrostemma githago	40.6	49.7	7.7	46.9	44.5	42.5	30.3	48.2	44.7	11.1		15.4	
Anthemis arvensis	14.2	11.0	3.8	29.7	14.8	12.5	13.6	8.8	25.2	3.7			
Bromus arvensis Type	0.8	1.4			1.3			1.8					
Buglossoides arvensis	1.9	2.8		1.6	2.6		1.5	3.5	1.0				
Fallopia convolvulus	28.0	28.3	9.6	42.2	28.4	30.0	25.8	29.8	34.0	11.1	33.3		
Galium aparine	14.6	16.6	3.8	18.8	14.2	15.0	15.2	16.7	17.5	3.7			
Silene gallica	0.4	0.7				2.5		0.9					
Stachys annua/arvensis	0.4	0.7				2.5		0.9					
Valerianella locusta	0.4	0.7			0.6				1.0				
Valerianella rimosa	0.8	0.7		1.6	0.6		1.5	0.9	1.0				
Veronica hederifolia	0.4	0.7				2.5		0.9					
Viola tricolor	0.4	0.7			0.6			0.9					
Order Aperetalia_weeds of rather acidic/neutral soils													
Aphanes arvensis	0.4	0.7				2.5		0.9					
cf *Bromus secalinus*	0.4	0.7			0.6				1.0				
Camelina sativa	3.4	2.8		7.8	2.6	7.5	3.0	3.5	4.9				
Centaurea cyanus	2.3	4.1			3.9			2.6	2.9				
Papaver argemone	6.1	6.9		9.4	5.8	10.0	4.5	7.9	6.8				
Papaver dubium	1.9	1.4		4.7	1.3	2.5	3.0	1.8	2.9				
Raphanus raphanistrum	0.4	0.7			0.6				1.0				
Scleranthus sp. - capsule	0.4		1.9		0.6					3.7			
Order Secalietalia, Caucalion alliance_weeds of calcareous soils													
Ajuga chamaepitys	11.1	7.6	9.6	20.3	11.6	5.0	13.6	6.1	18.4	7.4		7.7	
Bupleurum rotundifolium	0.4	0.7			0.6			0.9					
Caucalis platycarpos	16.5	13.8	11.5	26.6	18.1	12.5	15.2	12.3	25.2	11.1			
Euphorbia exigua	0.4			1.6	0.6				1.0				
Galium spurium	4.2	6.2		3.1	5.2	5.0	1.5	6.1	3.9				
Glaucium corniculatum	1.9	0.7	1.9	4.7	1.3	5.0	1.5	0.9	3.9				
Myagrum perfoliatum	41.4	44.1	40.4	35.9	52.9	25.0	24.2	53.5	33.0	37.0	33.3	7.7	100
Nigella arvensis	0.8			3.1	1.3				1.9				
Orlaya grandiflora	7.3	9.7	1.9	6.3	9.0	5.0	4.5	7.0	10.7				
Ranunculus arvensis	5.0	6.2	1.9	4.7	4.5	10.0	3.0	7.9	2.9	3.7			
Scandix pecten-veneris	0.4	0.7			0.6				1.0				
Silene cf *dichotoma*	0.4			1.6	0.6				1.0				
Stachys annua	19.9	31.0		10.9	23.9	25.0	7.6	30.7	14.6			15.4	
Thymelaea passerina	0.8			3.1			3.0		1.9				
Torilis arvensis	0.4	0.7			0.6			0.9					
Vaccaria pyramidata	4.6	8.3			2.6	20.0		8.8	1.9				
Valerianella dentata	10.3	9.7	5.8	15.6	8.4	15.0	12.1	9.6	11.7	11.1		7.7	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS													
Aethusa cynapium	2.7	2.8		4.7	1.9	2.5	4.5	3.5	2.9				
Anagallis arvensis/foemina	18.0	22.1	3.8	20.3	18.1	30.0	10.6	24.6	17.5	3.7			
Arenaria serpyllifolia	6.1	9.0		4.7	7.1	10.0	1.5	9.6	4.9				
Atriplex/Chenopodium	7.7	13.8			10.3	10.0		12.3	5.8				
Capsella bursa-pastoris	2.3	3.4		1.6	2.6	2.5	1.5	4.4				7.7	
Chenopodium album	59.4	64.1	36.5	67.2	62.6	55.0	54.5	63.2	59.2	44.4	66.7	61.5	
Chenopodium ficifolium	0.4	0.7			0.6				1.0				
Chenopodium foliosum	0.4	0.7				2.5		0.9					
Chenopodium hybridum	46.4	45.5	32.7	59.4	46.5	47.5	45.5	54.4	43.7	44.4		15.4	
Chenopodium murale	6.1	9.7		3.1		35.0	3.0	12.3	1.9				
Chenopodium polyspermum	1.5	1.4	1.9	1.6	1.3	2.5	1.5	1.8	1.9				
Echinochloa crus-galli	0.8	1.4			1.3			1.8					
Euphorbia helioscopia	5.0	3.4	1.9	10.9	3.9	2.5	9.1	3.5	5.8	3.7		15.4	
Euphorbia platyphyllos	0.4			1.6	0.6				1.0				
Fumaria officinalis	1.1	2.1			1.9			1.8	1.0				
Fumaria sp.	13.0	3.4	30.8	20.3	12.3	5.0	19.7	5.3	14.6	44.4	33.3		
Galeopsis bifida	1.5	1.4		3.1	1.3		3.0	0.9	2.9				
Galeopsis ladanum	0.4	0.7			0.6				1.0				
Galeopsis sp.	10.3	7.6		25.0	8.4	10.0	15.2	7.0	17.5			7.7	
Galeopsis cf *speciosa*	0.4			1.6	0.6				1.0				
Galeopsis tetrahit	0.8		3.8		0.6		1.5			7.4			
Galeospis ladanum/segetum	0.4			1.6	0.6				1.0				
cf *Heliotropium europaeum*	0.4			1.6			1.5		1.0				
Heliotropium sp.	0.4	0.7			0.6			0.9					
Lamium amplexicaule/purpureum	2.3	2.8		3.1	1.3	7.5	1.5	2.6	2.9				
Malva sylvestris	3.1	4.1		3.1	1.3	10.0	3.0	5.3	1.9				
Mercurialis annua	6.5	2.1	19.2	6.3	2.6	2.5	18.2	2.6	2.9	29.6	33.3	7.7	100
Poa annua	3.1	5.5			3.2	7.5		6.1	1.0				

Table 3b Ubiquity of waterlogged plant species (suite)

		Spatial			Chronology			Context					
	Total	CIVIL EAST	TEMPLE COMPLEX	SURROUNDINGS	1st C AD	2nd C AD	Roman - not specified	Pit	Layer	Ditch	Posthole	Basin	Pot content
N of structures	63	27	12	24	35	10	18	25	31	2	3	1	1
N of samples	261	145	52	64	155	40	66	114	103	27	3	13	1
WATERLOGGED													
Polygonum lapathifolium/persicaria	37.2	46.2	15.4	34.4	45.2	25.0	25.8	43.9	38.8	11.1		30.8	
Polygonum persicaria	4.6	6.2	3.8	1.6	6.5	2.5	1.5	3.5	6.8	3.7			
Portulaca sp.	1.1	1.4		1.6	0.6	2.5	1.5	1.8	1.0				
Setaria verticillata/viridis	3.8	2.1		10.9	3.2	2.5	6.1	3.5	4.9			7.7	
Solanum nigrum	37.2	32.4	34.6	50.0	37.4	37.5	36.4	26.3	50.5	37.0		38.5	
Sonchus asper	5.7	8.3		4.7	6.5	7.5	3.0	8.8	4.9				
Sonchus asper/oleraceus	7.3	12.4		1.6	11.0	5.0		10.5	6.8				
Sonchus oleraceus	1.9	2.1		3.1	1.9	2.5	1.5	1.8	2.9				
Stachys cf *arvensis*	0.4		1.9		0.6				1.0				
Stellaria media	40.6	51.7	11.5	39.1	49.0	27.5	28.8	46.5	43.7	11.1		38.5	
Thlaspi arvense	26.8	29.7	15.4	29.7	32.9	27.5	12.1	31.6	26.2	22.2		7.7	
Urtica urens	20.7	24.8	11.5	18.8	26.5	15.0	10.6	28.1	15.5	11.1		23.1	
Verbena officinalis	8.0	6.2		18.8	6.5	5.0	13.6	7.0	10.7			15.4	
Xanthium strumarium	1.5			6.3	0.6		4.5		3.9				
PERENNIAL RUDERALS													
Agropyron repens	0.4	0.7			0.6				1.0				
Arctium lappa	1.5	2.8				10.0		3.5					
Arctium minus	0.4	0.7				2.5		0.9					
Arctium sp.	4.6	5.5	1.9	4.7	3.9	7.5	4.5	5.3	1.9	3.7		23.1	
Bryonia dioica	1.5	2.1		1.6	1.9		1.5	2.6	1.0				
Carduus crispus	0.4	0.7				2.5		0.9					
Cerastium arvense	0.4			1.6			1.5		1.0				
Chelidonium majus	4.2	4.1	1.9	6.3	2.6	7.5	6.1	6.1	1.9	3.7			100
cf *Chondrilla juncea*	0.4	0.7			0.6				1.0				
Cirsium sp.	9.6	12.4		10.9	11.0	7.5	7.6	11.4	11.7				
Cirsium/Carduus	9.6	9.7	7.7	10.9	12.3	5.0	6.1	9.6	10.7	7.4		7.7	
Conium maculatum	6.9	2.8		21.9	1.9	7.5	18.2	3.5	2.9			84.6	
Convolvulus arvensis	0.4	0.7			0.6			0.9					
Cruciata laevipes	0.4	0.7			0.6			0.9					
Dipsacus cf *fullonum*	0.4	0.7			0.6				1.0				
Fallopia dumetorum	0.4	0.7			0.6			0.9					
Hyoscyamus niger	14.9	11.0	13.5	25.0	14.8	12.5	16.7	13.2	18.4	18.5			
Lactuca serriola	0.4			1.6	0.6				1.0				
Lamium album	1.9	2.1		3.1		7.5	3.0	2.6	1.9				
Lapsana communis	7.3	7.6	1.9	10.9	7.7	7.5	6.1	8.8	8.7				
cf *Marrubium vulgare*	0.4	0.7			0.6			0.9					
Onopordum acanthium	2.3	2.8		3.1	3.9			2.6	2.9				
Plantago major	10.0	10.3	1.9	15.6	9.7	7.5	12.1	11.4	6.8	3.7		38.5	
Poa compressa	1.5	2.8			1.9	2.5		3.5					
Polygonum aviculare	32.2	34.5	15.4	40.6	32.3	30.0	33.3	29.8	35.0	22.2		61.5	
Potentilla anserina	4.2	5.5		4.7	4.5	2.5	4.5	7.0	2.9				
Ranunculus repens	36.0	27.6	51.9	42.2	36.1	17.5	47.0	26.3	38.8	59.3		61.5	
Reseda sp.	0.4	0.7			0.6			0.9					
Rumex conglomeratus - perianth	4.6	6.2		4.7	5.2	2.5	4.5	4.4	4.9			15.4	
Rumex crispus - tubercle	2.3	2.8		3.1	3.2		1.5	2.6	2.9				
Rumex obtusifolius - perianth	1.5	1.4		3.1	1.3		3.0	0.9	2.9				
Rumex obtusifolius	51.7	57.9	19.2	64.1	56.1	37.5	50.0	57.9	58.3	18.5		30.8	
Sambucus ebulus	23.0	15.9	44.2	21.9	22.6	12.5	30.3	16.7	22.3	55.6	33.3	15.4	
Saponaria cf *officinalis*	0.4	0.7			0.6			0.9					
Silene alba	1.5	2.8			1.3	5.0		2.6	1.0				
Urtica dioica	16.5	18.6	1.9	23.4	18.1	10.0	16.7	21.9	11.7	3.7		38.5	
MEADOWS AND PASTURES													
Achillea millefolium	1.1	2.1			1.9			2.6					
Agrostis sp.	1.9	3.4			2.6	2.5		4.4					
Ajuga reptans	7.7	9.0	9.6	3.1	12.3		1.5	4.4	12.6	3.7	33.3		
Anthriscus sp.	0.4	0.7			0.6				1.0				
Bromus cf *commutatus*	0.8	1.4			1.3			1.8					
Bromus hordeaceus	0.8	1.4			1.3			1.8					
Centaurea cf *jacea*	0.4	0.7			0.6			0.9					
Centaurea sp.	10.3	11.7	5.8	10.9	13.5	5.0	6.1	11.4	11.7	3.7		7.7	
Cichorium intybus	2.7	2.8		4.7	3.2		3.0	2.6	2.9			7.7	
Cirsium/Centaurea	2.3	3.4		1.6	2.6	5.0		2.6	2.9				
cf *Cynosurus* sp.	0.4	0.7			0.6			0.9					
Dactylis glomerata	0.4	0.7			0.6			0.9					
Deschampsia caespitosa	1.1	2.1			1.9			2.6					
Dianthus cf *armeria*	0.4	0.7			0.6			0.9					
Festuca rubra/ovina	0.4	0.7			0.6			0.9					
Festuca/Lolium	1.1	2.1			1.3	2.5		2.6					
Holcus lanatus	0.8	1.4			1.3			1.8					
Leontodon autumnalis	0.8	0.7		1.6	1.3			0.9	1.0				
Leontodon sp.	0.4	0.7			0.6			0.9					
Leucanthemum vulgare	4.2	4.1		7.8	4.5	5.0	3.0	4.4	5.8				
Lolium perenne	0.4	0.7			0.6			0.9					
Nardus stricta	0.4	0.7			0.6			0.9					
Plantago lanceolata	1.9	2.8		1.6	2.6	2.5		2.6	1.9				
Plantago media	2.3	3.4		1.6	3.9			4.4	1.0				

Table 3b Ubiquity of waterlogged plant species (suite)

		Spatial			Chronology			Context					
	Total	CIVIL EAST	TEMPLE COMPLEX	SURROUNDINGS	1st C AD	2nd C AD	Roman - not specified	Pit	Layer	Ditch	Posthole	Basin	Pot content
N of structures	63	27	12	24	35	10	18	25	31	2	3	1	1
N of samples	261	145	52	64	155	40	66	114	103	27	3	13	1
WATERLOGGED													
Poa pratensis	0.8	1.4			1.3			1.8					
Poa pratensis Type	0.4	0.7				2.5		0.9					
Poa pratensis/trivialis	0.4	0.7			0.6				1.0				
Potentilla erecta	0.8	1.4			1.3			1.8					
Prunella vulgaris	21.5	22.1	7.7	31.3	24.5	12.5	19.7	21.9	25.2	7.4		23.1	
Ranunculus acris	5.4	6.9	1.9	4.7	5.2	10.0	3.0	7.0	4.9			7.7	
Rhinanthus sp.	4.6	5.5		6.3	5.2	2.5	4.5	6.1	3.9			7.7	
Rumex acetosa - perianth	0.4	0.7			0.6			0.9					
Rumex acetosella	0.4	0.7			0.6			0.9					
Scabiosa sp.	0.8			3.1	0.6		1.5		1.0			7.7	
Silene vulgaris	1.1	2.1			0.6	5.0		2.6					
Taraxacum officinale	2.7	3.4		3.1	1.9	5.0	3.0	3.5	1.9			7.7	
Trifolium pratense	1.5	2.8			1.9	2.5		3.5					
Trifolium sp. - chalice	9.2	12.4		9.4	10.3	7.5	7.6	10.5	11.7				
Open swards													
Acinos arvensis	0.8	1.4			0.6	2.5		0.9	1.0				
Ajuga genevensis	1.5	2.1		1.6	2.6			0.9	2.9				
Artemisia campestris	0.4	0.7				2.5		0.9					
Centaurea scabiosa	0.4	0.7			0.6			0.9					
Dianthus sp.	0.4	0.7			0.6			0.9					
Euphorbia cf *seguieriana*	1.9	3.4			3.2				4.9				
Euphrasia/Odontites	0.8	1.4			1.3			0.9	1.0				
Gentiana cruciata	0.4	0.7			0.6			0.9					
Medicago lupulina	3.8	4.1	1.9	4.7	5.2		3.0	4.4	4.9				
Medicago minima - pod	6.9	11.0		3.1	10.3	2.5	1.5	9.6	5.8			7.7	
Odontites sp.	0.4	0.7			0.6			0.9					
cf *Petrorhagia prolifera*	0.4			1.6			1.5		1.0				
Prunella grandiflora	0.4	0.7			0.6			0.9					
Scabiosa columbaria	0.8	0.7	1.9		0.6	2.5		0.9	1.0				
Stachys recta	0.4	0.7			0.6				1.0				
Teucrium botrys	0.4	0.7			0.6				1.0				
Teucrium cf *chamaedrys*	1.1			4.7			4.5	0.9	1.9				
Teucrium montanum	0.8	1.4				5.0		1.8					
Trifolium cf *campestre* - chalice	0.4	0.7			0.6			0.9					
Aquatic plants													
Ceratophyllum cf *submersum*	3.1			12.5			12.1	0.9				53.8	
Lemna sp.	1.5	2.1		1.6	1.9		1.5	0.9	1.9			7.7	
Polygonum cf *amphibium*	0.4	0.7			0.6				1.0				
Potamogeton sp.	7.7	2.1	17.3	12.5	3.2	2.5	21.2	0.9	7.8	22.2		38.5	
Sparganium sp.	11.1	1.4	26.9	20.3	3.9	2.5	33.3	1.8	7.8	33.3		76.9	
Zannichellia palustris	0.8			3.1	0.6		1.5		1.9				
Reed fields													
Alisma plantago-aquatica	10.3	8.3		23.4	9.0	2.5	18.2	7.0	9.7			69.2	
Carex sp.	71.3	71.7	65.4	75.0	76.1	67.5	62.1	71.1	75.7	55.6	66.7	76.9	
Cicuta virosa	0.4			1.6			1.5					7.7	
Eleocharis palustris	33.7	37.9	26.9	29.7	42.6	30.0	15.2	36.8	40.8	11.1			100
Galium cf *palustre*	1.1	2.1			1.3	2.5		2.6					
Galium palustre	0.4	0.7			0.6				1.0				
Glyceria sp.	3.4	0.7		12.5	1.3		10.6	0.9	3.9			30.8	
Hippuris vulgaris	1.1	2.1			1.9				2.9				
Iris cf pseudacorus	0.4		1.9		0.6					3.7			
Juncus sp.	4.6	7.6		1.6	6.5	5.0		8.8	1.9				
Lycopus europaeus	9.2	4.1	5.8	23.4	6.5	2.5	19.7	4.4	9.7	7.4		53.8	
Mentha arvensis/aquatica	5.7	7.6		6.3	7.1	7.5	1.5	8.8	3.9			7.7	
Nasturtium officinale	8.0	2.8		26.6	3.2	2.5	22.7	4.4	3.9			92.3	
Oenanthe fistulosa	14.2	15.2	13.5	12.5	17.4	12.5	7.6	13.2	13.6	18.5		23.1	
Poa palustris	0.4	0.7			0.6			0.9					
Rorippa amphibia	0.4	0.7			0.6				1.0				
Rumex cf *aquaticus/hydrolapatum*	0.4	0.7			0.6				1.0				
Salix sp. - veg. part	1.1	2.1			1.9			2.6					
Schoenoplectus lacustris	0.4		1.9				1.5			3.7			
Schoenoplectus sp.	15.7	9.0	28.8	20.3	9.0	10.0	34.8	7.0	12.6	51.9		46.2	
Riverbank plants (pioneer)													
Alnus glutinosa - veg. part	0.4	0.7			0.6				1.0				
Alnus sp. - veg. Part	0.8	1.4			1.3			0.9	1.0				
Bidens tripartita	1.9		1.9	6.3	1.3		4.5		2.9			15.4	
Cyperus flavescens	0.4	0.7			0.6			0.9					
Cyperus fuscus	2.7	3.4		3.1	3.2	5.0		3.5	2.9				
Cyperus sp	0.4			1.6	0.6				1.0				
Myosoton aquaticum	2.3	3.4		1.6	2.6	2.5	1.5	4.4	1.0				
Polygonum hydropiper	14.6	14.5	15.4	14.1	18.1	5.0	12.1	5.3	22.3	18.5		30.8	
Polygonum hydropiper/mite	19.5	16.6	17.3	28.1	15.5	12.5	33.3	7.0	28.2	22.2		61.5	
Polygonum lapathifolium	10.0	15.9	1.9	3.1	12.3	12.5	3.0	14.9	7.8	3.7			
Polygonum minus	4.2	4.8		6.3	4.5	2.5	4.5	1.8	7.8			7.7	
Polygonum mite/minus	1.1	1.4	1.9		1.3		1.5		1.9	3.7			
Ranunculus flammula	0.4	0.7			0.6			0.9					

Table 3b Ubiquity of waterlogged plant species (suite)

	Total	Spatial			Chronology			Context					
		CIVIL EAST	TEMPLE COMPLEX	SURROUNDINGS	1st C AD	2nd C AD	Roman - not specified	Pit	Layer	Ditch	Posthole	Basin	Pot content
N of structures	63	27	12	24	35	10	18	25	31	2	3	1	1
N of samples	261	145	52	64	155	40	66	114	103	27	3	13	1
WATERLOGGED													
Ranunculus sardous	3.8	4.8	1.9	3.1	4.5	5.0	1.5	3.5	5.8				
Ranunculus sceleratus	10.3	3.4	9.6	26.6	5.2	7.5	24.2	3.5	9.7	14.8		69.2	
Teucrium cf *scordium*	1.1	2.1			1.9				2.9				
Wet meadows													
cf *Euphorbia palustris*	0.8	1.4			1.3			0.9	1.0				
Filipendula ulmaria	1.1	2.1			1.3	2.5		1.8	1.0				
Linum catharticum	1.9	2.8		1.6	2.6	2.5		2.6	1.9				
Lychnis flos-cuculi	4.6	3.4	1.9	9.4	5.2		6.1	3.5	6.8	3.7			
Scirpus sylvaticus	0.8	1.4			1.3			1.8					
Stachys officinalis	0.4	0.7			0.6			0.9					
Forests, forest edges and clearings, hedges													
Abies alba - needle	4.6	4.1	3.8	6.3	5.8	2.5	3.0	3.5	5.8	7.4			
Acer sp. - veg. part	0.4			1.6			1.5	0.9					
Arctium cf *nemorosum*	0.4			1.6			1.5		1.0				
Betula pendula - veg. part	0.4			1.6			1.5		1.0				
Cornus sanguinea	1.1	1.4		1.6	1.3		1.5	1.8	1.0				
Crataegus sp.	1.9	1.4		4.7	1.3		4.5	0.9	3.9				
Humulus lupulus	1.9		5.8	3.1	1.9		3.0	0.9	1.0	11.1			
Quercus sp. - veg. part	3.1	1.4		9.4	3.9		3.0	1.8	5.8				
Rosa sp.	9.2	15.2	1.9	1.6	7.1	32.5		18.4	2.9				
Solanum cf *dulcamara*	3.1	3.4	3.8	1.6	3.9	2.5	1.5	1.8	4.9	3.7			
Stellaria cf *nemorum*	0.8	1.4			1.3			0.9	1.0				
Torilis cf *japonica*	0.4			1.6			1.5		1.0				
Valeriana cf *tripteris*	0.4	0.7			0.6			0.9					
Viburnum lantana	0.8	0.7		1.6	0.6		1.5	1.8					
Viburnum opulus	0.8	1.4			0.6		1.5	0.9	1.0				
Calamintha menthifolia	1.1	1.4	1.9		1.3		1.5	0.9	1.0	3.7			
Galium verum	0.4	0.7			0.6			0.9					
Hypericum perforatum	2.3	3.4		1.6	1.3	7.5	1.5	4.4	1.0				
Saponaria cf *ocymoides*	0.4	0.7			0.6			0.9					
Silene nutans	0.4	0.7			0.6			0.9					
Thalictrum minus	0.8	0.7		1.6	0.6		1.5		1.9				

Table 3b Ubiquity of charred plant species

		Spatial			Chronology			Context					
	Total	CIVIL EAST	TEMPLE COMPLEX	SURROUNDINGS	1st C AD	2nd C AD	Roman - not specified	Pit	Layer	Ditch	Posthole	Basin	Pot content
N of structures	87	27	36	24	38	27	22	26	39	5	13	1	3
N of samples	310	145	101	64	164	76	70	123	125	30	16	13	3
CHARRED													
CEREALS _ grain													
Avena sp.	3.2	4.1	1.0	4.7	5.5	1.3		4.9	3.2				
Hordeum vulgare	10.6	9.0	15.8	6.3	7.3	21.1	7.1	14.6	10.4	6.7			
Hordeum sp.	5.8	6.2	2.0	10.9	7.9	2.6	4.3	10.6	4.0				
Secale cereale	0.6		2.0			2.6		1.6					
Triticum aestivum	1.0	0.7		3.1	1.2		1.4	2.4					
Triticum aestivum/durum/turgidum	5.5	1.4	8.9	9.4	1.8	13.2	5.7	8.9	4.0			7.7	
Triticum dicoccon	0.6	0.7		1.6	1.2			0.8	0.8				
Triticum spelta	0.3			1.6			1.4		0.8				
Triticum sp.	6.5	4.1	6.9	10.9	5.5	9.2	5.7	8.1	8.0				
Cerealia no Paniceae	19.4	16.6	24.8	17.2	15.9	31.6	14.3	26.8	16.8	10.0	18.8		
Panicum miliaceum	6.1	4.1	6.9	9.4	5.5	10.5	2.9	8.1	7.2				
Setaria italica	2.6	2.1	3.0	3.1	2.4	5.3		3.3	3.2				
Panicum/Setaria	0.3	0.7				1.3		0.8					
CEREALS _ chaff													
Hordeum vulgare - rachis	1.6	2.1	1.0	1.6	1.8	1.3	1.4	1.6	2.4				
Hordeum sp. - rachis	1.6	1.4		4.7	2.4	1.3		3.3	0.8				
Secale cereale - rachis	0.3			1.6			1.4	0.8					
Triticum aestivum - rachis	0.3			1.6			1.4	0.8					
Triticum dicoccon - glume	5.2	11.0			5.5	7.9	1.4	11.4	1.6				
Triticum monococcum - glume	1.3	2.8			2.4			0.8	2.4				
Triticum spelta - glume	6.5	11.7		4.7	8.5	6.6	1.4	13.0	3.2				
Glume wheat	3.5	4.8		6.3	4.3	2.6	2.9	7.3	1.6				
NUTS													
Corylus avellana	8.7	4.1	20.8		6.1	19.7	2.9	6.5	11.2	3.3	25.0		
Juglans regia	2.9	1.4	6.9			10.5	1.4	3.3	4.0				
Pinus pinea	3.9		11.9		0.6	14.5		6.5	2.4				33.3
PULSES													
Lathyrus sp.	0.6		2.0			2.6			1.6				
Lens culinaris	3.9	3.4	5.9	1.6	1.8	10.5	1.4	6.5	3.2				
Pisum sativum	0.6	0.7	1.0		0.6	1.3		0.8	0.8				
Vicia faba	3.2	3.4	3.0	3.1	1.8	7.9	1.4	4.9	2.4	3.3			
Vicia/Lathyrus	0.3	0.7				1.3		0.8					
Fabaceae	6.1	0.7	14.9	4.7	3.0	15.8	2.9	4.9	8.0	3.3	12.5		
SPICES													
Apium graveolens	0.3			1.6	0.6				0.8				
Satureja hortensis	0.3			1.6			1.4		0.8				
VEGETABLES AND SALADS													
Allium sativum	0.3		1.0			1.3			0.8				
cf Allium sativum	0.3		1.0			1.3		0.8					
Atriplex sp.	0.3		1.0				1.4		0.8				
Brassica sp.	1.0			4.7	1.2		1.4		2.4				
FRUITS													
Ficus carica - fruitflesh	3.9		11.9			15.8		6.5	3.2				
Phoenix dactylifera	2.3		6.9			9.2		4.9	0.8				
Prunus domestica/insititia	0.3			1.6	0.6				0.8				
Prunus persica	0.3		1.0			1.3			0.8				
Sambucus nigra/racemosa	4.8		14.9			19.7		0.8	11.2				
Vitis vinifera	2.6	0.7	6.9		1.2	7.9		3.3	2.4	3.3			
WEEDS OF WINTER CEREALS													
Galium aparine	3.9	2.1	2.0	10.9	4.9	1.3	4.3	4.9	4.0	3.3			
Veronica hederifolia	1.6		5.0			6.6		1.6	2.4				
Order Secalietalia, Caucalion alliance_weeds of calcareous soils													
Avena fatua	0.3	0.7			0.6				0.8				
Caucalis platycarpos	0.3			1.6	0.6				0.8				
Galium spurium	1.0	2.1			1.2	1.3		1.6	0.8				
Galium cf spurium	1.0		3.0			3.9			2.4				
Glaucium corniculatum	0.3			1.6	0.6				0.8				
Myagrum perfoliatum	0.6		1.0	1.6	0.6	1.3			1.6				
Vicia cf *angustifolia*	0.3	0.7			0.6				0.8				
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS													
Chenopodium album	0.6		2.0			2.6			0.8		6.3		
Chenopodium polyspermum	0.3	0.7				1.3		0.8					
Galeospis ladanum/segetum	0.3			1.6	0.6				0.8				
cf *Solanum nigrum*	0.3			1.6	0.6				0.8				
Thlaspi arvense	0.3	0.7			0.6				0.8				
PERENNIAL RUDERALS													
Cruciata laevipes	0.3		1.0			1.3			0.8				
Rumex obtusifolius	6.5	3.4	9.9	7.8	4.3	11.8	5.7	6.5	8.8	3.3			
Silene alba	0.3		1.0			1.3			0.8				
MEADOWS AND PASTURES													
Centaurea sp.	0.3	0.7			0.6				0.8				
Festuca/Lolium	0.6	1.4			0.6	1.3		1.6					
Galium boreale	0.3		1.0			1.3			0.8				

Table 3b Ubiquity of charred plant remains (suite)

	Total	Spatial: CIVIL EAST	TEMPLE COMPLEX	SURROUNDINGS	Chronology: 1st C AD	2nd C AD	Roman - not specified	Context: Pit	Layer	Ditch	Posthole	Basin	Pot content
N of structures	87	27	36	24	38	27	22	26	39	5	13	1	3
N of samples	310	145	101	64	164	76	70	123	125	30	16	13	3
CHARRED													
Plantago lanceolata	0.3	0.7				1.3		0.8					
Plantago media	0.3		1.0				1.4			3.3			
Trifolium sp.	0.3	0.7					1.4	0.8					
Aquatic plants													
Sparganium sp.	1.0		3.0			3.9		0.8	1.6				
Reed fields													
cf *Alisma plantago-aquatica*	0.3	0.7				1.3		0.8					
Carex sp. tricarpellate	0.6	0.7		1.6	0.6	1.3		1.6					
Galium cf *palustre*	0.3	0.7			0.6				0.8				
Riverbank plants (pioneer)													
Teucrium scordium	0.3	0.7			0.6				0.8				
Forests, forest edges and clearings, hedges													
Abies alba - needle	0.3	0.7					1.4	0.8					
Galium verum	0.3	0.7				1.3		0.8					
cf *Humulus lupulus*	0.3			1.6	0.6				0.8				

Table 3b Ubiquity of mineralised plant species

	Total	Spatial: CIVIL EAST	TEMPLE COMPLEX	SURROUNDINGS	Chronology: 1st C AD	2nd C AD	Roman - not specified	Context: Pit	Layer	Ditch	Posthole	Basin	Pot content
N of structures	87	27	36	24	38	27	22	26	39	5	13	1	3
N of samples	310	145	101	64	164	76	70	123	125	30	16	13	3
MINERALISED													
CEREALS _ grain													
Avena sp.	0.3	0.7				1.3		0.8					
cf *Avena*	0.6			3.1			2.9		1.6				
Hordeum vulgare	1.3	2.8			0.6	3.9		3.3					
Triticum spelta	0.3	0.7				1.3		0.8					
Triticum sp.	0.6	1.4				2.6		1.6					
Panicum miliaceum	10.3	20.7		3.1	9.8	18.4	2.9	24.4	1.6				
Setaria italica	1.0	2.1				3.9		2.4					
Panicum/Setaria	1.0	2.1			0.6	2.6		2.4					
Cerealia ohne Hirsen	3.2	6.9			3.0	6.6		7.3	0.8				
CEREALS _ chaff													
Hordeum vulgare - rachis	0.3	0.7			0.6			0.8					
Triticum spelta - spikelet fork	0.3	0.7			0.6			0.8					
Cerealia - ear	0.3	0.7				1.3		0.8					
Cerealia - glume	0.6	1.4				2.6		1.6					
Panicum miliaceum - glume	0.3	0.7				1.3		0.8					
Setaria italica - glume	0.3	0.7				1.3		0.8					
Panicum/Setaria - glume	0.3	0.7				1.3		0.8					
PULSES													
Lens culinaris	8.4	15.9		4.7	4.9	19.7	4.3	18.7	2.4				
Pisum sativum	0.3	0.7			0.6			0.8					
Vicia faba	5.8	10.3		4.7	2.4	14.5	4.3	12.2	2.4				
Fabaceae - fruitflesh	2.6	5.5			1.2	7.9		6.5					
Fabaceae	0.3	0.7			0.6			0.8					
FRUITS													
Cucumis melo	0.6	1.4				2.6		1.6					
Cucumis melo/sativa	4.8	9.0		3.1	1.2	14.5	2.9	10.6	1.6				
Ficus carica	7.1	12.4		6.3	7.9	6.6	5.7	14.6	3.2				
Fragaria vesca	1.0	2.1			1.2	1.3		2.4					
Malus sylvestris/domestica	3.2	6.9			3.7	5.3		8.1					
Pyrus sp.	0.3	0.7			0.6			0.8					
Malus/Pyrus	7.7	15.2		3.1	7.3	13.2	2.9	17.9	1.6				
Morus sp.	0.6	1.4				2.6		1.6					
Physalis alkekengi	0.6	1.4			0.6	1.3		1.6					
Prunus sp. - fragment	0.6	0.7		1.6	0.6		1.4	0.8	0.8				
Rubus caesius	1.0	2.1			0.6	2.6		2.4					
Rubus sp. - inner	0.3	0.7			0.6			0.8					
Sambucus nigra/racemosa	1.0	2.1			1.2	1.3		2.4					
Vitis vinifera	13.2	26.9		3.1	12.8	23.7	2.9	31.7	1.6				

Table 3b Ubiquity of mineralised plant remains (suite)

	Total	Spatial			Chronology			Context					
	Total	CIVIL EAST	TEMPLE COMPLEX	SURROUNDINGS	1st C AD	2nd C AD	Roman - not specified	Pit	Layer	Ditch	Posthole	Basin	Pot content
N of structures	87	27	36	24	38	27	22	26	39	5	13	1	3
N of samples	310	145	101	64	164	76	70	123	125	30	16	13	3
MINERALISED													
SPICES													
Anethum graveolens	4.5	8.3		3.1	2.4	10.5	2.9	9.8	1.6				
Apium graveolens	3.5	7.6			3.7	6.6		8.9					
Carum carvi	0.6	1.4				2.6		1.6					
Coriandrum sativum	3.2	6.9			1.8	9.2		8.1					
Foeniculum vulgare	0.6	1.4				2.6		1.6					
Nigella cf *sativa*	0.6	1.4				2.6		1.6					
VEGETABLES AND SALADS													
Atriplex sp.	0.3	0.7				1.3		0.8					
Beta vulgaris	1.0	2.1			1.2	1.3		2.4					
Brassica sp.	0.3	0.7				1.3		0.8					
Daucus carota	1.6	3.4			1.8	2.6		4.1					
Lagenaria siceraria	1.3	2.8				5.3		3.3					
OIL AND FIBRE PLANTS													
Linum usitatissimum	1.6	3.4				6.6		4.1					
Papaver somniferum	1.3	2.8			1.2	2.6		3.3					
WEEDS OF WINTER CEREALS													
Agrostemma githago	2.3	4.8			1.2	6.6		5.7					
Buglossoides arvensis	0.3	0.7			0.6			0.8					
Fallopia convolvulus	0.3	0.7				1.3		0.8					
Galium aparine	2.6	5.5			2.4	5.3		6.5					
cf *Veronica hederifolia*	0.3	0.7				1.3		0.8					
Order Aperetalia_weeds of rather acidic/neutral soils													
Camelina sativa	1.3	2.8			1.2	2.6		3.3					
Order Secalietalia, Caucalion alliance_weeds of calcareous soils													
Caucalis platycarpos	1.0	2.1			1.8			2.4					
Galium spurium	0.3	0.7			0.6			0.8					
Vaccaria pyramidata	0.3	0.7				1.3		0.8					
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS													
Galeopsis cf *speciosa*	0.3	0.7				1.3		0.8					
Polygonum lapathifolium/persicaria	0.3	0.7				1.3		0.8					
Solanum nigrum	1.6	3.4				6.6		4.1					
Sonchus oleraceus	0.3	0.7				1.3		0.8					
Stellaria media	0.3	0.7			0.6			0.8					
Thlaspi arvense	0.6	1.4			1.2			1.6					
PERENNIAL RUDERALS													
Arctium sp.	0.3	0.7			0.6			0.8					
Convolvulus arvensis	0.3	0.7				1.3		0.8					
Hyoscyamus niger	0.6	1.4			1.2			1.6					
Lapsana communis	0.3	0.7			0.6			0.8					
MEADOWS AND PASTURES													
Centaurea sp.	0.3	0.7			0.6			0.8					
Rhinanthus sp.	0.3	0.7				1.3		0.8					
Scabiosa sp.	0.6	1.4			1.2			1.6					
Reed fields													
Carex sp.	0.3	0.7			0.6			0.8					
Galium palustre	0.3	0.7				1.3		0.8					
Forests, forest edges and clearings, hedges													
Rosa sp.	1.0	2.1			1.2	1.3		2.4					
cf *Seseli libanotis*	0.3	0.7				1.3		0.8					

1st Cent. AD. Rye (*Secale cereale*) constitutes a very small part of the cereal remains. It is mainly found as waterlogged chaff fragments (in 1.5 % of the samples) in the organic layers bordering the palaeochannels in the area surrounding the temple complex. In the temple complex, waterlogged remains and few charred grains of rye are recorded (in 0.3 % of the samples). Naked wheat (*Triticum aestivum/durum/turgidum*) is mainly found as charred grains (in 5.5 % of the samples). Single finds of charred and waterlogged rachis however are recovered too (possibly hexaploid type). Naked wheats are most common in pits and in the 2nd Cent. AD. The majority of grains are recovered from the structures associated with offering practices in the temple complex.

On the whole, cereal remains are very common in Roman Oedenburg. They were found in all areas of excavation and mainly recovered from pits and layers. The most frequently found cereals are broomcorn millet, spelt, emmer and barley. The minor or major importance of individual cereal species on archaeological sites is hard to determine as different issues affect their representation: type of context, no storage facilities are found in the excavated areas; type of deposit, by-products from crop processing and other waste material; and conditions of preservation. All cereal taxa are attested in the 1st and 2nd Cent. AD. No clear chronological differences in the dispersal of the cereal species could be discerned. However, the spatial distribution of cereal taxa across the site is diverse. We remark that einkorn and emmer are not present in the Surroundings of the temple complex and the temple complex respectively, rye on the other hand was not found in the area Civil East.

Lentil (*Lens culinaris*), common pea (*Pisum sativum*), broad bean (*Vicia Faba*) and sweet pea (*Lathyrus* sp.) represent the pulses (**tab. 3a, 3b** and **3c; fig. 7.4**). Pulses are primarily recovered as mineralised seeds/fruits (in 9 % of the samples), in addition smaller amounts of charred (in 11.3 % of the samples) and waterlogged remains (in 5 % of the samples) are found. Pulses are mainly found in the area Civil East (waterlogged and mineralised) and the Temple complex (charred). The majority is recovered from pits, only few originate from layers. Lentil and broad bean are most recurrent, common pea is much less frequent. Lentil, broad bean and common pea were found in both the 1st and 2nd Cent. AD structures. Sweet pea is rare and recovered from a single structure in the temple complex dated to the 2nd Cent. AD (BK 04-05-50). Pulses are an important part of the Roman diet because of their high protein content. In contrast to many of the archaeological plant remains, pulses are better preserved when charring and/or mineralisation is attested. This applies also for Roman Oedenburg where pulses are generally underrepresented.

Walnut (*Juglans regia*), hazelnut (*Corylus avellana*) and stone pine nut (*Pinus pinea*) represent the nuts (**tab. 3a, 3b**). All three were recovered charred (in 11.6 % of the samples) and waterlogged (in 49 % of the samples) (**fig. 7.4**). Hazelnut shells are most frequently found, waterlogged they occur in 43.3 % of the samples, charred in 8.7 % of the samples. They are recovered from all areas of excavation. Their distribution across the samples is homogenous, which means that they occur in the same percentages of samples from the 1st and 2nd Cent. AD, in all types of structures and in all areas of excavations. Hazelnut is a wild plant which grows as a shrub in forests and along forest edges, its nuts are gathered for consumption.

Remains of walnut are slightly less frequent than hazelnut, waterlogged in 21.1 % of the samples, charred in 2.9 % of the samples. Walnut shells are recorded in all areas of excavation and are clearly more frequent in the 2nd Cent. AD (waterlogged in 47.5 % of the samples, charred in 10.5 % of the samples). Except for postholes they are recorded in all types of contexts.

The third nut species, stone pine nut, is very rare among the botanical findings. One single waterlogged nut is found. It represents the only find of stone pine outside the temple complex. Within the temple complex,

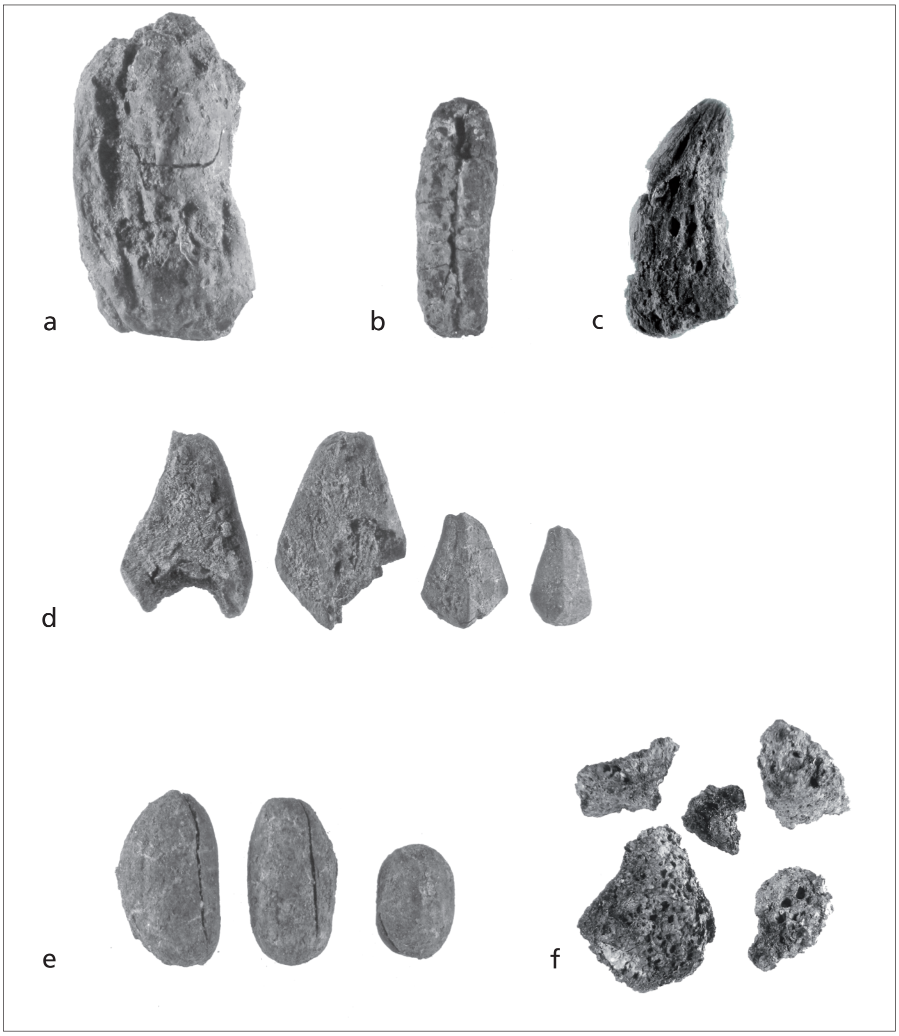

Fig. 7.6 a & b. *Phoenix dactylifera* (fruit and stone); c. *Allium sativum* (clove); d & e. *Pinus pinea* (scales and nuts); f. *Ficus carica (*fragments of fruitflesh). Scale 5 mm.
Photograph made by G. Haldimann, © IPNA Basel University.

charred remains of stone pine have been recorded in larger quantities (in 3.8 % of the samples)[48]. Nut fragments, scales and a cone fragment of stone pine are among the findings in two structures related to sacred practices (BK 04-05-50 and BK 05-05-160/219) (**fig. 7.6**). Stone pine remains undoubtedly represent imported goods as climatic conditions impede their growth north of the Alps. Although stone pine nuts are mentioned in many recipes by *Apicius*[49], they do represent rare imports[50]. Roman findings of stone pine north of the Alps are almost always in sacrificial contexts (in temples or in incineration graves) (see below). Spices are represented by 12 different species (**tab. 3a, 3b** and **3c**). Nine spices could be identified with certainty, three species are plausible identifications. Seeds and fruits of spices are mainly recovered as

[48] P. Vandorpe / S. Jacomet in press (footnote 19).
[49] J. André 1998 (footnote 44), 72f.
[50] C. Bakels / S. Jacomet, Access to luxury foods in Central Europe during the Roman period: the archaeobotanical evidence. In: M. van der Veen (ed.) Luxury foods. World Arch. 34/3, 2003, 542-557.

waterlogged items (in 43.7 % of the samples), charred and mineralised seeds are not so common (in 0.6 % and 7.7 % of the samples respectively) (fig. 7.4). The majority of findings derive from pit contexts.

Coriander (*Coriandrum sativum*), celery (*Apium graveolens*) and dill (*Anethum graveolens*) are the most regularly found (waterlogged in respectively 33.7, 26.8 and 18 % of the samples) and most abundantly present spices. Dill and coriander are found in waterlogged and mineralised condition, celery is additionally found as charred seeds. Summer savory (*Satureja hortensis*) and fennel (*Foeniculum vulgare*) are less common. However, summer savory is present in 9.2 % of the samples as waterlogged seeds, in 0.3 % as charred seeds. Fennel seeds are found in 2.3 % of the samples as waterlogged remains, mineralised in less than 1 % of the samples. The remaining spices are present in less than 1 % of the studied samples. They are often represented by a single find and are recovered from pit contexts solely. Caraway (*Carum carvi*) is recorded as mineralised (in 0.6 % of the samples) and waterlogged seeds (in 0.8 % of the samples). It is found both in the 1st and 2nd Cent. AD. Oregano *(Origanum vulgare)* is recorded as waterlogged seeds (in 0.8 % of the samples) and equally present in the 1st Cent. AD and 2nd Cent. AD. For parsley (cf. *Petroselinum crispum*), aniseed[51] (*Pimpinella anisum*) and common rue (cf. *Ruta graveolens*), one waterlogged seed each is identified. These findings originate from two pits in the area Civil East and date to the 1st Cent. AD. Parsley, aniseed[52] and common rue were introduced by the Romans. All of them are rarely found in the archaeological record north of the Alps. Although, they were very common spices in ancient Rome.

Pepper (*Piper nigrum*) is recorded in two pits in the area Civil East. One is dated to the 1st Cent. AD (BK 01-04-24), the other to the 2nd Cent. AD (BK 02-04-15). It both involves single findings of waterlogged peppercorns. Pepper represents a luxury good and is imported from India. Archaeological findings of pepper north of the Alps are rare[53].

Black cumin (*Nigella* cf. *sativa*) is found in a pit-structure (BK 01-04-38) dated to the 2nd Cent. AD in the area Civil East. It involves two mineralised seeds (fig. 7.7). Black cumin is used as a condiment; it is also known as a healing herb in southern Europe and the Near East[54]. Besides, it is native in the Mediterranean and represents an imported food plant.

Spices are an important component of the Roman diet. Historical sources very often refer to the lavish use of spices in Roman cooking[55]. The majority of the spices are introduced into this region with the start of the Roman period and are probably cultivated locally towards the end of the 1st Cent. AD. The spatial distribution of spices across the civil settlement is remarkable. Almost all spices are recovered from the area Civil East. In the Surroundings of the temple complex and in the Temple complex itself five respectively two spices are found. It is likely that the representation of spices is related to the type of context from which they were recovered.

Vegetables and salads are represented by at least ten species (tab. 3a, 3b and 3c). They include amaranth (*Amaranthus* sp.), orache (*Atriplex* sp.), beet (*Beta vulgaris*), cabbage (*Brassica* cf. *oleracea*, *Brassica rapa/nigra*, *Brassica* sp.), cabbage/mustard (*Brassica/Sinapis*), carrot (*Daucus carota*), bottle gourd (*Lagenaria*

[51] The findings of aniseed have been discussed in a previous publication, see P. Vandorpe / S. Jacomet 2005 in Reddé et al. (footnote 39), 255f.

[52] A recent publication mentions the findings of pollen of aniseed in a well in Waldgirmes (G). They represent the only other find of aniseed north of the Alps, see A. Stobbe, Ein römischer Brunnen im freien Germanien. Archäologie in Deutschland 2, 2009, 28-29.

[53] For more details about the pepper find see P. Vandorpe / S Jacomet 2005 in Reddé et al. Oedenburg (footnote 39), 255f. – S. Jacomet / C. Brombacher 2009 (footnote 6), 27-106.

[54] A. Heiss / K. Oeggl, The oldest evidence of Nigella damascena L. (Ranunculaceae) and its possible introduction to central Europe. Veg. Hist. Arch. 14, 2005, 562-570.

[55] J. André 1998 (footnote 44), 279f.

Fig. 7.7 a. *Cucumis melo*; b. *Cucumis sativus*; c. *Morus nigra*; d. *Olea europaea*; e. *Ficus carica*; f. *Vitis vinifera*; g. *Lagenaria siceraria*; i. *Nigella* cf. *sativa*; j. *Beta vulgaris*; k. *Carthamus tinctorius*. Scale 2 mm. Photograph made by G. Haldimann, © IPNA Basel University.

siceraria), parsnip (*Pastinaca sativa*), little hogweed (*Portulaca oleracea*) and garlic (*Allium sativum*)[56]. Usually finds of vegetables and salads succeed relatively rare in archaeological deposits while they are harvested before the seeds mature. The leaves or roots which are consumed do not succeed. However, vegetables comprise a large part of the economic plant remains in Roman Oedenburg. They are mainly found as waterlogged seeds (in 51 % of the samples), mineralised and charred seeds represent only rare findings (**fig. 7.4**).

Amaranth is the most common leaf vegetable. It is present in 36.8 % of the samples. It is found in all areas of excavation; it is slightly more common in the 2nd Cent. AD and above all recovered from pits.

Other widespread leaf vegetables include orache (in 11.1 % of the samples), little hogweed (in 5.4 % of the samples) and cabbage (in more than 10 % of the samples). Cabbage/mustard seeds are present in less than 1 % of the samples and recorded in two pits, dated to the 1st Cent. AD and 2nd Cent. AD.

Besides leaf vegetables, three root vegetables are represented. They include carrot, beet and parsnip. Most numerous are the findings of carrot. It occurs in 16.5 % of the samples and is more common in the 1st C AD, it was found in different types of contexts and in all parts of the settlement. Findings of beet fruits and occasionally seeds are equally frequent (**fig. 7.7**). They appear in 9.6 % of the samples. They are more common in the 1st Cent. AD and are recovered from pits as well as layers. A third root vegetable is parsnip. Parsnip represents a very rare find. It is recorded in a 1st Cent. AD layer (BK 02-04-55) in the area Civil East. Another rare find includes two charred cloves of garlic (**fig. 7.6**). They originate from a layer in the temple complex dated to the 2nd Cent. AD. Garlic, in general, is hardly ever found on archaeological sites due to its potential to be preserved[57]. It is only preserved as a charred clove.

Finally, waterlogged seeds, two stalks, parts of the fruit wall and mineralised seeds of bottle gourd are recovered. Seeds of bottle gourd are recovered from 9.6 % of the samples, they are more common in the 2nd Cent. AD and found in pits as well as layers (**fig. 7.7**). Remarkable are the findings of parts of the stalk and the apical half of a bottle gourd in two different structures[58]. Bottle gourd is rarely found on archaeological sites due to its potential to be preserved. In contrast to garlic, it is found in waterlogged conditions only.

The vegetables and salads are generally well represented throughout the whole site. However larger quantities were found in the area Civil East and in the Surroundings of the Temple complex.

The largest group of cultural plants are undoubtfully the fruits. 20 species have been identified of which 19 are waterlogged, 11 are charred and 6 are mineralised (**tab. 3a, 3b** and **3c**). The majority are recovered as waterlogged remains (in 78.2 % of the samples), mineralised (in 18.7 % of the samples) and charred (in 5.4 % of the samples) remains are less frequent (**fig. 7.4**). Fruits are mainly recorded in pits, however they do occur in all other types of contexts. The most regularly found fruits are (in order of abundance): fig (*Ficus carica*) (**fig. 7.6**), elderberry (*Sambucus nigra/racemosa*), grapevine (*Vitis vinifera*) (**fig. 7.7**), apple/pear (*Malus/Pyrus*), winter cherry (*Physalis alkekengi*), cherry (*Prunus avium/cerasus*), dewberry (*Rubus caesius*), blackthorn (*Prunus spinosa*) and peach (*Prunus persica*). Rarely found species (present in less than 10 % of the samples) include date (*Phoenix dactylifera*) (**fig. 7.6**), mulberry (*Morus nigra*) (**fig. 7.7**), olive (*Olea*

[56] Amaranth, orache, cabbage/mustard, carrot, parsnip and little hogweed are also known as wild plants or weeds. As they are known in the Roman cuisine and they were found in contexts dominated by food plants, we classified them within this group.

[57] S. Jacomet / C. Brombacher 2009 (footnote 6), 27-106.

[58] P. Vandorpe / S. Jacomet 2005 in Reddé et al. Oedenburg (footnote 39), 254f.

europaea) (**fig. 7.7**), melon (*Cucumis melo*) (**fig. 7.7**), cucumber (*Cucumis sativus*) (**fig. 7.7**) and plums (*Prunus domestica/insititia*).

The fruit species can be divided into three subgroups, namely 1) indigenous fruits gathered in their natural habitat, 2) imported fruits and 3) fruits introduced by the Romans and grown locally. It is often difficult to determine to which of the subgroups (2) or (3) fruits belong. It is clear that many fruits were introduced into the area by the Romans, it is not clear however if local cultivation was practiced and when this first began. From traditional archaeobotanical analyses only, it is hardly possible to establish whether fruits originate from local cultivation or represent imported goods (see below).

The gathered fruits include woodland strawberry (*Fragaria vesca*), winter cherry, blackthorn, dewberry, blackberry (*Rubus fruticosus*), red raspberry (*Rubus idaeus*) and elderberry. From the gathered fruits, winter cherry is not so common. It is not always seen as a food plant, in Roman Oedenburg however it was found as mineralised seeds in latrine deposits, which is an indication for its consumption. The fruits introduced by the Romans and possibly cultivated locally include fig, melon, cucumber, peach, cherry, plum, black mulberry, apple/pear and grape. Fruits that were definitively imported while can not grow in the area because of climatic reasons comprise date and olive.

All fruits except date are found both in the 1st and the 2nd Cent. AD. Date, a fruit often associated with sacred practices, was exclusively found in charred state in the temple area in two structures dated to the 2nd Cent. AD. Most fruit species are found throughout the three areas of the civil settlement, with the temple complex yielding the lowest variety and numbers of fruit remains.

Oil, fibre and dye plants are not abundant in Roman Biesheim and when found then only in small numbers (**tab. 3a, 3b** and **3c; fig. 7.4**). Hemp (*Cannabis sativa*), flax (*Linum usitatissimum*) and poppy (*Papaver somniferum*) are plausible oil and fibre plants[59] [60]. They are mainly recovered as waterlogged seeds, only few mineralised remains are recorded.

Hemp seeds are most common and present in 7.3 % of the samples, of which 8.4 % is dated to the 1st C AD and 10 % in the 2nd Cent. AD. They are more common in layers than in pits. Hemp is evenly distributed over the different excavation areas.

Flax seeds are not common (waterlogged in 1.9 % of the samples, mineralised in 1.6 % of the samples), they are more frequent in the 2nd Cent. AD and originate from pits only in the area Civil East.

Poppy is again more common, it occurs in 5 % of the samples as a waterlogged seed, in 1.3 % of the samples as a mineralised seed. It has been noted in pits in the area Civil East only and is more frequent in the 2nd Cent. AD. Because only small quantities of poppy were recovered, it is very likely that it had not been cultivated for its oil extraction but had rather been used as a spice or for medicinal purposes[61].

Findings of dye plants are rare in Roman Oedenburg. Two possible dye plants are identified, it concerns dyers woad (cf. *Isatis tinctoria*) and safflower (*Carthamus tinctorius*). Of dyers woad, a single waterlogged seed is recorded. Its identification is uncertain. It was found in a pit (BK 01-04-24) in the area Civil East and dating to the 1st Cent. AD. Dyers woad is known as a source of blue dye. The blue pigment is extracted from its leaves. Dyers woad is a plant favouring nutrient rich, alkaline soils. It is very common in dry warm areas like the Upper Rhine region, along roads but also in dry calcareous grassland. As several plant species

59 It is likely that gold of pleasure (Camelina sativa) also belongs to the oil and fibre plants, however only small amounts were recovered.

60 Note that the plants mentioned here could also have been used for other purposes than to extract oil or fibres.

61 J. André 1998 (footnote 44), 162f.

favouring dry calcareous grassland are found within this pit, it is more likely to assume that it reached the settlement as part of the grassland vegetation. Therefore we think its presence in Roman Oedenburg is not connected to dyeing practices[62].

In contrast to the single seed of dyers woad, seeds of safflower (*Carthamus tinctorius*) are found in large quantities in a single structure (**fig. 7.7**). They originate from one layer (BK 03-09-74) in the Surroundings of the Temple complex. It is dated to the 1st Cent. AD. All safflower seeds are waterlogged and very well preserved; the majority of the seeds are found complete with just a small hole on the side (**fig. 7.7**). Oberdorfer[63] mentions the cultivation of safflower for oil extraction or for birdseeds in the lowlands of the river Rhine. It is also known as a source of red and yellow dyes which can be extracted from its flowers. Findings of safflower seeds are exceptional and very rare in the archaeobotanical record (see below).

Arable and ruderal weed flora

By far the largest group of wild plants are the weeds of cultivated fields. They include 75 taxa. These arable weeds reached the civil settlement most likely as part of the harvested crops. Within the arable weed flora we can, on an actualistic basis, distinguish between weeds of winter cereals and weeds of summer crops. We have classified the annual ruderal vegetation with the weeds of summer crops, as their natural habitats are overlapping and thus difficult to keep apart. In addition we discuss the perennial ruderal vegetation.

Weeds of winter cereals (Secalietea)

The weeds of winter cereals or Secalietea are represented by 40 different plant species (**tab. 3a, 3b** and **7.3c**), of which 38 taxa were preserved through waterlogging, eight through charring and nine through mineralisation. Considering the variety of plant taxa, the weeds of winter cereals represent one of the largest groups of plant taxa recovered. In addition they constitute a large part of the plant assemblage. Waterlogged remains of weeds of winter cereals are found in 78.2 % of the samples, charred in 8.1 % of the samples, mineralised in 6.5 % of the samples (**fig. 7.5**).

The most commonly found weeds of winter cereal are muskweed (*Myagrum perfoliatum*) (**fig. 7.8**) and corn cockle (*Agrostemma githago*) (**fig. 7.8**). They are both present in more than 40 % of the samples. Other species present in more then 10 % of the samples include black-bindweed (*Fallopia convolvulus*), annual hedge nettle (*Stachys annua*), carrot bur parsley (*Caucalis platycarpos*), cleavers (*Galium aparine*), corn chamomile (*Anthemis arvensis*), yellow bugle (*Ajuga chamaepitys*) and narrow fruit corn salad (*Valerianella dentata*). The remaining species are found in less than 8 % of the samples.

Within the Secalietea, species belonging to two sub-groups are well represented. They consist of the Order Secalietalia Alliance Caucalion and the Order Aperetalia.

Of special interest are the 19 weeds belonging to the order of the Secalietalia, the Alliance Caucalion. They are found very frequently in the studied samples (waterlogged in 68.2 % of the samples, charred in 3.5 % of the samples, mineralised in 1.6 % of the samples). The commonest of these taxa in Roman Oedenburg are

[62] For more information on dyers woad see V. Zech-Matterne / L. Leconte, New archaeobotanical finds of Isatis tinctoria L. (woad) from Iron Age Gaul and a discussion of the importance of woad in ancient time. Veg. Hist. Arch., 2009, published online.

[63] E. Oberdorfer 1994 (footnote 42), 1050f.

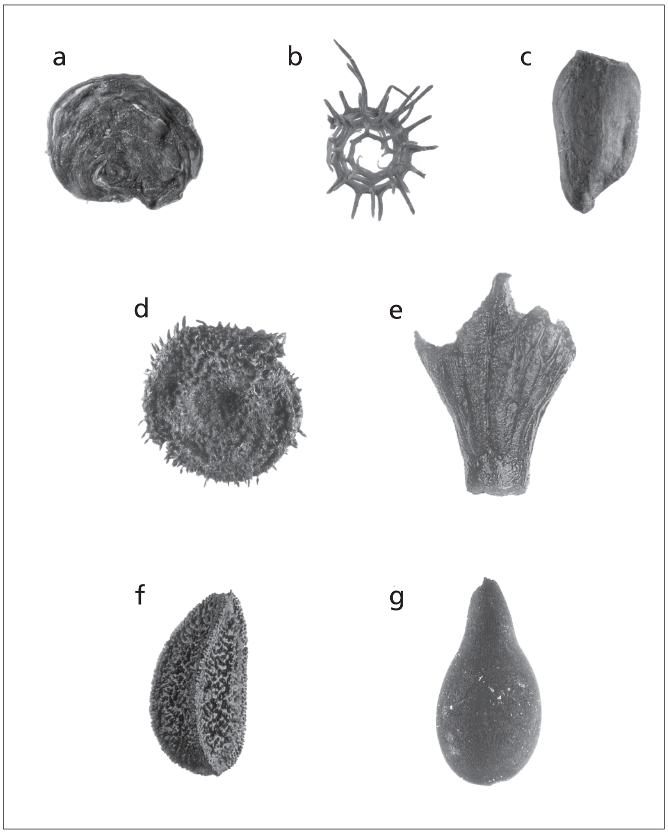

Fig. 7.8 a. *Medicago lupulina*; b. *Medicago minima*; c. *Centaurea cyanus*; d. *Agrostemma githago*; e. *Myagrum perfoliatum*; f. *Nigella arvensis*; g. *Thymelaea passerina*. Scale 1 mm. Photograph made by G. Haldimann, © IPNA Basel University.

(in order of abundance): muskweed (*Myagrum perfoliatum*), annual hedge nettle (*Stachys annua*), carrot bur parsley (*Caucalis platycarpos*), yellow bugle (*Ajuga chamaepitys*), white lace flower (*Orlaya grandiflora*), narrowfruit cornsalad (*Valerianella dentata*), false cleavers (*Galium spurium*) and corn buttercup (*Ranunculus arvensis*). Less common are cow soapwort (*Vaccaria hispanica*) and red horned poppy (*Glaucium corniculatum*). And rare are findings of devil-in-a-bush (*Nigella arvensis*) (fig. 7.8), spurge flax (*Thymelaea passerina*) (fig. 7.8), field hedge parsley (*Torilis arvensis*), shepherd's needle (*Scandix pecten-veneris*), thorow-wax (*Bupleurum rotundifolium*), dwarf spurge (*Euphorbia exigua*), a possible forking catchfly (*Silene* cf. *dichotoma*), wild oat (*Avena fatua*) and a possible garden vetch (*Vicia* cf. *angustifolia*). All of these are native in the Mediterranean area (except for forking catchfly (*Silene dichotoma*) which is native in Eastern Europe). The phytosociological group of the Caucalion alliance is characterised by thermophilic plant species growing on calcareous soils. Most of these plant species flower relatively early, as a result they are very prominent in winter cereals. Today the large majority of these plant species are rarely found. Nonetheless they were growing in the near vicinity of the settlement before the beginning of the industrial maize agriculture.

The remaining 20 weeds of winter cereals represent different habitats and are generally more common in Roman plant assemblages. The majority grows on sandy loam soils. Corn cockle (*Agrostemma githago*) is by far the best represented. It is a plant favouring nutrient rich soils, along with garden cornflower (*Centaurea cyanus*) (fig. 7.8), parsley piert (*Aphanes arvensis*) and cleavers (*Galium aparine*). The latter is likewise an indicator for nitrogen. The second most frequently found taxon is black-bindweed (*Fallopia convolvulus*). It is one of the most commonly found species within cereal fields and is characteristic of more acidic soils. Other cereal weeds, characteristic of slightly acidic to highly acidic soils, include respectively corn gromwell (*Buglossoides arvensis*), corn chamomile (*Anthemis arvensis*) and wild radish (*Raphanus raphanistrum*). Broad-fruited cornsalad (*Valerianella rimosa*), lamb's lettuce (*Valerianella locusta*) and common catchfly (*Silene gallica*) are weeds favouring dry and open areas. Lastly for this group, we identified weeds preferring to grow on soils free of lime such as blindeye (*Papaver dubium*), prickly poppy (*Papaver argemone*) and johnny jump up (*Viola tricolor*). Within these 20 weed species, eight can be classified to the order of the Aperetalia. They represent weeds of rather acidic-neutral soils or lime-deficient soils.

Weeds of winter cereals are present in the three studied areas of excavation. The majority are found in the area Civil East and the Surroundings of the temple complex. They are more common in pits and layers. Their distribution is similar in the 1st and 2nd Cent. AD.

Weeds of summer crops and annual ruderals

The weeds of summer crops and annual ruderals comprise 35 taxa (35 waterlogged, 6 mineralised and 4 charred), of which four identifications are only tentative (**tab. 3a, 3b** and **3c**). Quantitatively they represent a large part of the plant remains. Waterlogged remains are found in 84.7 % of the samples, charred in 1.6 % of the samples, mineralised in 3.2 % of the samples (**fig. 7.5**).
Annual ruderals are classified together with the weeds of summer crops as their habitats are related. Many of the weeds classified in this category are today found between cultivated plants as leaf vegetables and summer cereals. However they also occur on waste and disturbed land, along roadsides and riverbanks. It is also plausible that many of these plant taxa have grown in the near vicinity of the structures in which they were found.
Almost all weeds of summer crops and annual ruderals found in the civil settlement of Oedenburg favour nutrient-rich sandy and loamy soils. Several plant taxa preferring soils rich in nitrogen were recovered; they represent the most frequently found plant taxa within this group. They comprise (in order of abundance) fat-hen (*Chenopodium album*), maple-leaved goosefoot (*Chenopodium hybridum*), common chickweed (*Stellaria media*), field pennycress (*Thlaspi arvense*) and black nightshade (*Solanum nigrum*). In addition plant taxa with a preference for calcareous soils were found, these include thyme-leaved sandwort (*Arenaria serpyllifolia*), broad-leaved spurge (*Euphorbia platyphyllos*), blue pimpernel (*Anagallis arvensis/foemina*) and fool's parsley (*Aethusa cynapium*). Several plants growing in dry respectively humid environments were found; vervain (*Verbena officinalis*) and high mallow (*Malva sylvestris*) favour dry land; sun spurge (*Euphorbia helioscopia*), common fumitory (*Fumaria officinalis*) and rough cocklebur (*Xanthium strumarium*) favour humid soils. Weeds of summer crops were found in all three excavated areas. However, the majority comes from the area Civil East and the Surroundings of the temple complex.

Perennial ruderal vegetation

Plants representing the perennial ruderal vegetation consisted of 33 different species of which three are tentative identifications (**tab. 3a, 3b** and **3c**). All 33 species were found as waterlogged seeds or fruits, three as charred and four as mineralised seed/fruit. Waterlogged remains are found in 82.8 % of the samples, charred in 6.8 % of the samples, mineralised in 1.6 % of the samples (**fig. 7.5**). They originate from all types of contexts. Except for a few species, the perennial ruderals represent only a small part of the plant remains. Their natural habitat includes wasteland, disturbed grounds, alongside roads etc. Nevertheless some of the perennial ruderals can equally be found as part of cultivated fields and/or garden cultivation. The majority of plant species classified under ruderal vegetation are likely to have grown in the immediate surroundings of the structures/layers in which they were found.
As for the weeds of summer crops and the annual ruderals, general habitat characteristics of the perennial ruderal vegetation are: nutrient rich soils (indicators for nutrients are round-leaved dock (*Rumex obtusifolius*) and curled dock (*Rumex crispus*)), mainly growing on sand and loam (e.g. knotweed (*Polygonum aviculare*)), some growing on clayey soils (e.g. creeping buttercup (*Ranunculus repens*)). Plants recovered favouring humid environments are swallow wort (*Chelidonium majus*) and silverweed (*Potentilla anserina*).

A small group of perennial ruderals typical for dry environments comprise henbane (*Hyoscyamus niger*), scotch thistle (*Onopordum acanthium*), skeletonweed (*Chondrilla juncea*), wild lettuce (*Lactuca serriola*), soapwort (*Saponaria officinalis*) and a possible white horehound (*Marrubium vulgare*). The latter three represent single items. Today, these plant species can still be found in the surroundings of the site.
Perennial ruderals were found throughout the three excavated areas of the civil settlement, however the largest variety originates from the area Civil East.

Grassland vegetation

The grassland vegetation recorded in the civil settlement includes 51 plant species (50 waterlogged, 3 mineralised and 6 charred) of which 4 doubtful identifications (**tab. 3a, 3b** and **3c**). Even though the number of plant taxa is high, this group of plants only represents a very small part of the plant assemblage. Of more than half of the plant taxa, only a single item was found. Waterlogged remains of grassland plant taxa are found in 41 % of the samples, charred in 2.3 % of the samples, mineralised in 1 % of the samples (**fig. 7.5**).
Within the grassland vegetation, we can distinguish between plant species growing in cultivated meadows and pastures (24 plant taxa) (Molinia-Arrhenatheretea class) and others growing on open swards (19 plant taxa)(Festuco-Brometea class).
Cultivated meadows and pastures are characterised by nutrientrich soils with a high nitrogen content and good irrigation. Self-heal (*Prunella vulgaris*) is the most frequently found species (in 21.5 % of the samples) followed by knapweed (*Centaurea* sp.), common bugle (*Ajuga reptans*), meadow buttercup (*Ranunculis acris*) and oxeye daisy (*Leucanthemum vulgare*).
Open swards are characterised by soils poor in nutrients. In the plant assemblage we have evidence for poor calcareous swards and open swards of sandy and rocky ground. From the latter only five plant species are found representing mainly single items. The vegetation of calcareous grassland is slightly better represented. The most frequently found species are yellow trefoil (*Medicago lupulina*) (**fig. 7.8**) and bur medick (*Medicago minima*) (**fig. 7.8**). In the Upper Rhine region, natural drainage conditions, as sandy soils with a lower substrate of gravel, supply very dry soil conditions throughout the year[64]. The latter enables the sub Mediterranean grassland vegetation as found in Roman Oedenburg.
Most of the grassland plant species are sporadically found in all types of contexts, particularly in the area Civil East. The majority of grassland species in samples include few remains. It is likely that they reached the settlement adhering to human clothing and/or animal fur (e.g. the pod remains of yellow trefoil). However, samples from one 1st Cent. AD pit (BK 99-04-01, and to a lesser extent in pit BK 01-04-24 and layer BK 02-04-55) in the area Civil East, have produced a large amount and variety of plant taxa growing in meadows, pastures and swards. These plant assemblages are exceptional in their composition in comparison to the other studied samples. It is likely that the deposits in Pit BK 99-04-01 derive from animal dung and/or fodder (see below).

64 M. Moor, Einführung in die Vegetationskunde der Umgebung Basels in 30 Exkursionen. Lehrmittelverlag des Kantons Basel-Stadt (Basel 1962) 464.

Forest, forest edges and clearings

The vegetation of forests, forest edges, forest clearings and hedges is represented by 23 plant species[65] (21 waterlogged, 3 charred, 2 mineralised) (**tab. 3a, 3b** and **3c**). Waterlogged remains are found in 26.4 % of the samples, charred in 1 % of the samples, mineralised in 1.3 % of the samples (**fig. 7.5**). Most findings are dated to the 1st Cent. AD, only few species are recorded in the 2nd Cent. AD. On the whole they are present in small amounts, commonest are wild rose (*Rosa* sp.) and fir needles (*Abies alba*). The majority of the woodland species indicate the presence of floodplain forest such as common hops (*Humulus lupulus*) and guelder rose (*Viburnum opulus*) among others. The remaining woodland plants indicate the presence of dryer woodland with species as woodland calamint (*Calamintha menthifolia*) and common St. Johnswort (*Hypericum perforatum*). Some of the species grow near the excavated areas, others like fir (*Abies alba*) were most probably introduced from further distances like the Vosges mountains (about 40 km away).
In Roman Oedenburg, a whole range of plants growing in forests and forest edges are gathered for consumption. They have been mentioned above with the nuts and fruits (see above). They constitute the largest amount of woodland vegetation.

Aquatic, reeds and riverbank vegetation

Plants favouring wet environments are very frequent in Roman Oedenburg. A large part of the civil settlement was located in lower marshland. Consequently these plant taxa are most likely representing the local vegetation. 42 different plant species are found (42 waterlogged, 5 charred and 2 mineralised) (**tab. 3a, 3b** and **3c**). We distinguished between four habitats: plants growing in water, in reeds, on riverbanks and on wet meadows. However, these habitats can not be separated very strictly from one another, single species can easily grow in several of these four habitats.
Six aquatic plants are recorded. Waterlogged they are present in 16.9 % of the samples, charred in 1 % of the samples (**fig. 7.5**). They indicate rooted water plant communities with stagnant and/or slowly flowing water and are characteristic of nutrient rich and alkaline soils. Tropical hornwort (*Ceratophyllum* cf. *submersum*) and horned pondweed (*Zannichellia palustris*), both plants are today rarely found, point to the presence of muddy water. Many aquatics recovered originate from 1st Cent. AD layers in the area Civil East. As discussed above, this area of the civil settlement was largely affected by flooding of the Rhine in the 1st Cent. AD. Nonetheless, aquatic plants were also abundant in the ditches of the temple complex, particularly pondweed (*Potamogeton* sp.) and bur-reed (*Sparganium* sp.).
A second well represented wet environment is reed fields. Eighteen plant species are recorded. They represent a large part of the plant assemblage and are found throughout the whole civil settlement in all types of contexts. They are recorded in 80.5 % of the samples as waterlogged remains, 1.3 % as charred remains and 0.6 % as mineralised remains (**fig. 7.5**). As for the aquatic plants, the reed fields are characterized by nutrient rich and alkaline soils. We note the presence of tubular water-dropwort (*Oenanthe fistulosa*), a very rare plant today. It is present in 14.2 % of the studied samples, in all types of contexts except for postholes. It is a pioneering plant, thermophilic and grows in areas with changing water conditions. Findings of other currently rare plants include cowbane (*Cicuta virosa*) and great yellow cress (*Rorippa amphibia*). The majority

[65] These 23 plant taxa do not include the gathered food plants.

of the reed field taxa originate from the area Civil East and the Surroundings of the temple complex which is to be expected as these areas are prone to flooding of the Rhine.

A third group comprises the riverbank vegetation. Twelve plant species were recovered, some of which are very common, others rare. They are recorded in 42.1 % of the samples as waterlogged remains and in 0.3 % as charred remains (**fig. 7.5**). They are generally more abundant in layers, ditches than in pits. The riverbanks are characterised by nutrient rich and alkaline soils, rich in humus. Several plants are a sign for the presence of floodplains (e.g. water chickweed (*Myosoton aquaticum*) and common alder (*Alnus glutinosa*)). Among the rare plant species are threelobe beggarticks (*Bidens tripartita*) and water germander (*Teucrium scordium*). Threelobe beggarticks favours riverside environments but can also be found within the arable weed flora indicating wet patches within the fields. Water germander, today rarely found, is another plant species favouring very wet and flooded areas. The majority of the riverbank taxa are found in the area Civil East and the surroundings of the temple complex.

A last group in this category, are those plants growing in wet meadows. They include six plant species. They are recorded in 7.3 % of the samples as waterlogged remains (**fig. 7.5**). Apart from ragged robin (*Lychnis flos-cuculi*) (present in 4.2 % of the samples), they are not very common and present in less than 2 % of the samples. In addition, ragged robin also occurs in improved grassland. Therefore it is very plausible that the plant species found comprise isolated plants and do not indicate the presence of a wet meadow in the near vicinity.

RESULTS 2: CHARACTERISTICS OF PLANT ASSEMBLAGES WITHIN AREAS AND STRUCTURES

In the following chapter, we will discuss the contexts in which plant remains are found. As the three areas of excavation are very different in character, we decided to discuss the types of contexts for each area separately. Within each area, contexts are grouped according to type, preservation and plant assemblage. The following observations are based on the semi-quantitative dataset of plant macro remains[66].

Civil East

The area Civil East is characterised by its location adjacent to the military camp and its position under the current water level (**fig. 7.1; 7.9**). Hence, all studied samples originate from waterlogged sediments. Two time horizons have been defined within this area. They coincide with the 1st (Horizon 1) and 2nd Cent. AD (Horizon 2). Samples are taken in pits and layers solely. In total, 145 samples from 27 structures are studied (**tab. 1a**). Samples which did not yield a significant assemblage of plant macro remains are not or only shortly mentioned in the text.

Layers in waterlogged sediments

Organic layers are dug in eight different locations of the excavated area. In total, 35 samples are recovered. They comprise of mainly waterlogged plant material, charred and mineralised remains are only rarely found.

[66] Tables comprising the semi-quantitative recording are included in the appendix. In this table each sample is listed separately.

Fig. 7.9 Map of the area Civil East indicating those studied structures rich in plant macro remains.

They all date to the 1st Cent. AD. Based on their composition of plant macro remains, we distinguish two types of layers.

– A first type consists of layers poor in plant macro remains (BK 01-04-50, BK 01-04-71 and BK 01-04-72) (**fig. 7.9**)[67]. Only few remains of cultivated plants are found. Cereal chaff fragments of mainly glume wheat, some spices (coriander and celery), some fig seeds and a single peach stone are recovered. Wild plant taxa include arable weeds and ruderal weeds as well as those growing on riverbanks and in reed fields. Only few charred and no mineralised remains are found. Characteristic for these layers is their neatly positioned grid of interlacing twigs. These twigs are mainly from willow (*Salix* sp.), poplar (*Populus* sp.) and alder (*Alnus* sp.), all of which are typical for floodplain forests and grow in the near vicinity of the river Rhine. Alder is also known for its qualities as a construction wood in wet environments[68]. Most of the recorded plant macro remains derive from natural deposits. They are indicators of the local environment. This would have been a moist area with soils rich in nitrogen, and open water nearby.

– A second type consists of layers rich in plant macro remains (BK 02-04-55, BK 02-04-64, BK 02-04-78) (**fig. 7.9**). The assemblage of waterlogged seeds and fruits is much more diverse and plentiful. The major difference to the first type of layers lies in the representation of cultivated and gathered plants. Large amounts of cereal chaff fragments (of spelt, emmer, einkorn and broomcorn millet) and small-seeded food plants are registered. They include spices, fruits and vegetables. In particular, remains of coriander, celery, amaranth, apple/pear, fig and grapevine are abundant. Large fruit stones are only rarely registered. The assemblage of wild plant taxa is in comparison to the first type of layers also more plentiful and diverse. It comprises primarily ruderal plants and weeds of winter cereal; especially weeds of the Caucalion alliance are recorded in large quantities. In addition plants growing on riverbanks and in reed fields are abundant. Charred plant remains, in particular charred chaff fragments, are found. No mineralised plant macro remains are registered.
In BK 02-04-55 we recorded cereal testa fragments and single findings of olive, bottle gourd and mulberry. In the bottom layers of BK 02-04-55 we recorded remains of grassland vegetation. The latter are very scarcely found in Roman Oedenburg, and almost exclusively found within one pit (BK 99-04-01; see below).
Characteristic for these layers (except BK 02-04-78) are, besides the waterlogged twigs and branches, the many fragments of wood debris. These fragments of wood debris often represent unfinished artefacts, waste of construction material and partially burnt fragments. The wood species are much more varied and other than the species mentioned above. Remains of silver fir (*Abies alba*), Norway spruce (*Picea abies*), maple (*Acer* sp.), hazelnut (*Corylus avellana*), oak (*Quercus* sp.), birch (*Betula* sp.) and common beech (*Fagus sylvatica*) are found[69]. In addition, ceramics, bone fragments and remains of metal working (e.g. slag) are found in this area.
In contrast to the first type of layers, the deposits in layers BK 02-04-55 and BK 02-04-64 represent a mixture of human and natural deposits. Both of these layers include a variety of waste products.

67 Two other layers are recorded as poor in plant macro remains (BK 02-04-65 and BK 02-04-67). Their sample composition is different. They do not contain twigs and branches; BK 02-04-65 yielded hardly any plant macro remains; in BK 02-04-67 the majority consists of charred cereal grains and chaff. Both of their plant assemblage are not very significant and most likely represent settlement noise.

68 See chapter 8.

69 See chapter 8.

Pits in waterlogged sediments

Hundred and six samples from nineteen pits are studied. Most pits are multiply sampled. Of these pits, twelve are dated to the 1st Cent. AD, five to the 2nd Cent. AD, one is not more precisely dated than »Roman period«. On the whole, the amount of macro plant remains recovered from these eighteen pits is very variable. In the following we distinguish five types of pits based on their content of plant macro remains.

– A first type of pits includes those with a poor representation of plant macro remains (BK 01-04-08, BK 01-04-14, BK 01-04-15, BK 01-04-02, BK 01-04-33, BK 02-04-18, BK 02-04-40, BK 02-04-42). They consist of waterlogged remains mainly, in addition some charred cereal grain and very few or no mineralised remains are recorded. The waterlogged remains comprise small numbers of wild plant taxa. They represent ruderal vegetation and reed fields. Remains of edible plants are rare; they include hazelnut shell, glumes of millet and elderberries. Two of these pits showed a somewhat more diverse plant spectrum. It consists of pit BK 02-04-42 which has yielded seeds of fig and grapevine; and BK 01-04-02 which yielded more edible plants in the bottom layers of the pit (US 07).
All of these pits are described by the archaeologists as refuse pits. It is very likely that the plant remains recovered from these pits do not originate from the primary fill of the pit, but rather from a secondary deposit of waste material. As indicators for human deposits are slight, we consider them as settlement noise (see below). Furthermore, remains of the local vegetation which was moist and nutrient rich, are found.

– A second type of pits comprises only one pit (BK 99-04-01) (**fig. 7.9**). It is characterised by a rich assemblage of plant macro remains of mainly wild weeds. All studied samples originate from the lowest layer of this pit and yielded very compact waterlogged organic material in which many culms were found. Charred and mineralised plant material is nearly absent. Waterlogged seeds and fruits on the contrary are abundant. The large majority of the seeds and fruits represent wild weeds; edible plants form only a minor part. The latter comprise above all cereal chaff remains (barley, spelt and broomcorn millet), vegetables (carrot, cabbage and bottle gourd) and spices (coriander, celery and summer savory). No fruits are recorded. The spectrum of wild weeds is very diverse. Cereal weeds, ruderal plants and weeds of reed fields and riverbanks are recorded. However, in comparison to all plant assemblages recovered in Roman Oedenburg its richness in plant species growing in meadows, pastures and open swards is unique. Therefore, the plant assemblage of this pit is of much interest. First of all, almost exclusively wild weeds are recovered; and second the sample composition before sieving was very characteristic and exclusive in Oedenburg. The samples were very compacted, composed of organic material only, homogenous in their composition and lots of large vegetative remains as stems were visible. These different features suggest that we are dealing here with the remains of stable manure and/or litter (see below). Similar deposits were identified in two wells in the Roman castle of Welzheim (G)[70].

– A third type of pits is characterised by a rich and diverse assemblage of plant macro remains of mainly edible plant species. It involves five pits dated to the 1st Cent. AD (BK 01-04-86, BK 01-04-24, BK 01-04-27, BK 01-04-73, BK 02-04-140) and two dated to the 2nd Cent. AD (BK 01-04-38, BK 01-04-53) (**fig. 7.9**).

70 U. Körber-Grohne / U. Piening, Die Pflanzenreste aus dem Ostkastell von Welzheim mit besonderer Berücksichtigung der Graslandpflanzen. In: U. Körber-Grohne / M. Kokabi / U. Piening / D. Plank (eds.) Flora und Fauna im Ostkastell von Welzheim. Konrad Theiss Verlag (Stuttgart 1983) 17-88.

These pits yielded a large quantity of organic vegetative material composed of mainly waterlogged remains. Mineralised remains are present. Charred remains were rather scarce and contain almost exclusively cereal grains and chaff. For all pits, remains of economic plants constitute a large part of the plant assemblage. Characteristic of all these plant assemblages is the abundance of small-seeded food plants (both waterlogged and mineralised). They include cereals (millet), spices (coriander, celery), vegetables (amaranth and beet), and many fruits (figs, wild strawberry, apple/pear, cape gooseberry, grapevine). Large fruit stones of mainly cherry and plum are attested too. Cereal chaff is recovered from all pits, cereal testae are recovered from four of the pits. Pulses are not common among the findings. Findings of wild weeds include species of the arable weed flora and the ruderal vegetation. In particular findings of corn cockle are abundant. Other wild plants indicating the local wet environment are scarce.
Within this group two pits need further consideration while they were extremely rich in plant macro remains. The first pit (BK 01-04-24) is large and quadrangular in shape and dated to the 1st Cent. AD. The studied samples originate from each layer from top to bottom. Single findings of aniseed and pepper are registered. Many food plants are recorded. Towards the bottom layers more cereal chaff and weeds of winter cereal are recorded; grassland species (which is rather unusual) and more wetland species are registered. In these bottom layers we discern similarities with the plant assemblage of the fill of pit BK 99-04-01, belonging to our »type two« pit. The second pit (BK 01-04-38) is quadrangular and of a very regular shape (3.5 m x 2.8 m). Wooden planks constructed on wooden posts were found at the bottom of this pit. It has been interpreted as a possible cellar and is dated to the 2nd Cent. AD. The fill of this pit is extremely rich in plant macro remains. In comparison to other pits, many »exotic« plant species are found. These »exotics« include olive, melon/cucumber, bottle gourd and mulberry. Besides, a variety and abundance of mineralised remains were recorded. These are above all edible plants, including large amounts of pulses (mainly broad bean and other unidentified Fabaceae) and very rare plant taxa as e.g. the spice black cumin.
We conclude that the plant assemblage recovered from the third type of pits is dominated by the presence of human waste material. It is clear that the fills of these pits represent waste material of many different origins. Clear indicators for the presence of faecal remains are found, too (see below). Whether these deposits represent primary or secondary deposits is hard to identify. Nonetheless, it is clear that waste materials other than faecal material are also discarded in the pits.

– A fourth type is characterised by a rich assemblage of plant macro remains of cultivated and wild plants. It includes one pit (BK 02-04-15) which dates to the 2nd Cent. AD (**fig. 7.9**). Contrary to the third type of pits, no evidence of faecal remains is found and many indicators of the local wet environment are found. The plant assemblage of this pit is composed of waterlogged remains only. Cereal chaff of mainly glume wheat is abundant as are nuts (walnut), grapevine and vegetables. In addition there are findings of olive stones and a single peppercorn. Wild weeds include weeds of winter cereal, summer crops and ruderal vegetation. From the archaeobotanical analysis we conclude that most of the plant remains made their way into this deposit as refuse material. It is unlikely that any latrine deposits were dumped. This structure should be interpreted as a refuse pit, where waste of cultural activity was deposited (cooking, crop processing among others). The local environment was wet and eutrophic. Many of the recorded food products were imported from the Mediterranean region.

– A fifth type includes one pit (BK 01-04-25) (**fig. 7.9**). It is characterised by a plant assemblage of mainly cereal remains and wild weeds. Contrary to the third and fourth type of pits, hardly any remains of fruits are discovered. Other edible plants are equally scarce. The majority of plant macro remains consists of waterlogged seeds and fruits of ruderal plants and plants of the arable weed flora. No clear indications to the nature of the deposit are discernable. This pit is likely to be used as a refuse pit for crop processing debris.

Conclusion

Based on the plant macro remains, we conclude that the area Civil East is one of intense human activity. From the archaeological evidence it is hard to distinguish whether the plant assemblages derive from primary or secondary deposited material. Nonetheless it is clear that a wide range of waste products from cultural activity are dumped at some point in the pits and layers in this area. On the one hand the local population needed to get rid of their rubbish, on the other hand they possibly tried to stabilize and manage the marshland by throwing waste in the course of the palaeochannels (layers). The latter is also suggested by the many twigs and branches recovered from these layers.
The plant spectrum recovered in the area Civil East ascertains that the local population had access to a very wide range of food plants. Comparing the semi-quantitative data of plant macro remains from 1st Cent. AD structures with those from the 2nd Cent. AD structures, we can observe changes towards the 2nd Cent. AD. Imported food plants as e.g. melon, cucumber, olive and mulberry represent rare findings in the 1st Cent. AD; in the 2nd Cent. AD they are much more numerous (see below). Thus after the abandonment of the military camp around 70 AD; the influence of Roman culture is still perceptible. Or is it a consequence of the beginnings of local cultivation of certain food plants (see below) ?

Temple complex

In the temple complex, a hundred and one samples from 30 structures are studied (**tab. 1b; fig. 7.1; 7.7**). The studied samples originate from dry as well as waterlogged sediments. Chronologically they can be attributed to five different phases. In this overview we have only included those contexts which have yielded plant macro remains.

Contexts in waterlogged sediments

Within the waterlogged sediments, two ditches and several layers have been sampled. The ditches form an important part of the temple complex. One represents the enclosing ditch of the temple area (BK 04-05-49), the other presumably functioned as a drainage channel (BK 03-05-16). Layers and the contents of ditches are discussed together as similarities between deposits are observed.
The majority of contexts belongs to Phase 1 (3/4 to 75/80 AD) (layers BK 03-05-53, BK 03-05-56 and BK 04-05-32; ditch BK 04-05-49), two layers to Phase 2 (75/80 AD to 120 AD) (BK 03-05-75, BK 04-05-02), and a ditch to Phases 3 to 5 (from 120 AD onwards) (BK 03-05-16) (see chapter 2). Based on the composition and abundance of plant macro remains, we discern different deposits.

– A first group of contexts is characterised by a low density but large variety of plant macro remains including cultivated plants. Such a botanical sample composition can be observed in layers BK 03-05-53, BK 04-05-32,

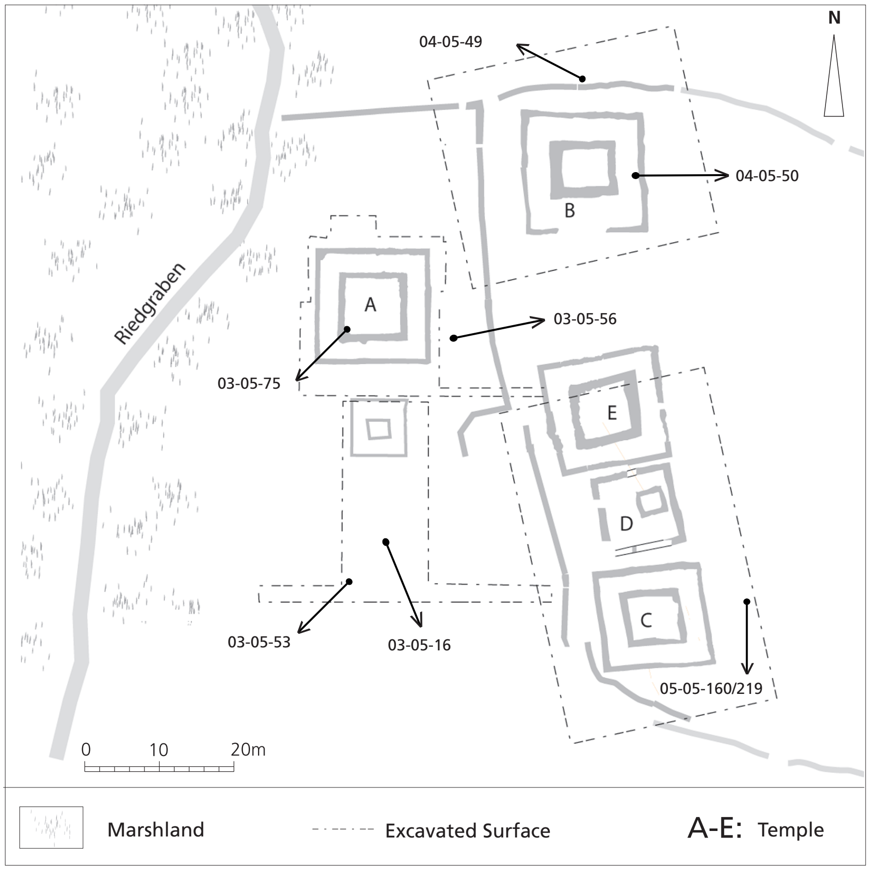

Fig. 7.10 Map of the Temple complex indicating those studied structures rich in plant macro remains (after C. Schucany and PAS Schwarz Fig 2.1 in chapter 2).

BK 03-05-75, BK 04-05-02 and the ditch BK 04-05-49 (**fig. 7.10**). The majority of plant remains is preserved through waterlogging, in addition few charred remains are recorded. The plant assemblage is composed of small numbers of wild weeds and economic plants. The greater part of the useful and/or edible plants are fruits (fig, pear, peach, elderberry and grapevine) and hazelnut. The wild weeds include cereal weeds and plants representing ruderal vegetation and reed fields. In BK 03-05-53 and BK 03-05-75 one seed of a bottle gourd was found respectively; in BK 04-05-49 few remains of walnut and cereal (chaff fragments of millet and glume wheat) were recorded[71]. In BK 03-05-75 less fruits were recorded.

We conclude that a wide range of well-preserved plants were found in these deposits, originating from human activity and the local vegetation. In comparison to waterlogged deposits in the other areas of excavation, only small numbers of plant macro remains are recorded; especially food plants are scarce. This could indicate that this area of the settlement was only frequented for special occasions and not for disposal of debris.

[71] Towards the bottom of the ditch more waterlogged organic material is preserved, resulting in a more diverse spectrum of plants in the lowest layers, e.g. cereal remains and cultural plants originate from the lower levels only. The difference between the upper and the lower part of the fill of the ditch has to be interpreted as a consequence of conditions of preservation, a tendency which is also observed in the pollen spectrum of the ditch (L.Wick pers. Comm.).

– A second group of deposits is characterised by a low density of plant macro remains including gathered plants and wild weeds. These deposits are observed in the filling of the drainage ditch (BK 03-05-16) (**fig. 7.10**; **2.68**). The fill of the ditch is characterised by its dark colour and high organic content. Both the upper and lower layer has been intensively sampled. The plant remains represent what was growing in and around the ditch. A wide range of aquatic and riverbank plants gives away the marshy nature of the area. It is very likely that the ditch was filled with water most of the time. The small numbers of above all gathered edible plants (hazelnut, elderberry, winter-cherry) and cereal weeds could indicate that some human waste material ended up in the ditch. It represents most likely secondary deposits. According to the small number of waste material, the ditch must have been kept fairly clean.

– A third group of deposits includes those very poor in plant macro remains. They include the layer BK 03-05-56 (**fig. 7.10**) and postholes BK 04-05-138 and BK 04-05-139 belonging to Phase 1, posthole BK 03-05-65 dated to Phase 2 and the layers BK 03-05-38 and BK 03-05-39 belonging to Phase 3. All studied samples have yielded very few plant macro remains originating from natural deposits of the local vegetation.

Contexts in dry sediments

In the dry sediments there is a clear distinction between those contexts rich and those poor in plant macro remains[72].

– Contexts poor in plant macro remains include two layers (BK 04-05-17, BK 04-05-19) and ten postholes (BK 04-05-63, BK 04-05-80, BK 04-05-83, BK 04-05-84, BK 04-05-86, BK 04-05-88, BK 04-05-106, BK 04-05-123, BK 04-05-135, BK 05-05-174) both belonging to Phases 1 and 2 (1st and 2nd Cent. AD). All of these contexts are located on a gravel terrace. The composition of the samples is very similar. Only few charred plant macro remains have been recovered. They include primarily cereal grains, hazelnut shell and a few wild weeds. The plant assemblage is too small to make any inferences; they most likely represent settlement noise, no area of particular use could be defined.
Three other deposits were also poor in plant macro remains. All of these were related to sacrificial practices and include a deposit of arms (BK 05-05-211) and the contents of two ceramic vessels (BK 05-05-180 US35 and 48). The few charred plant remains represent secondary deposits and are not connected to offering. In BK 05-05-180 US 35 one fragment of stone pine nut, fruit flesh of fig and some fragments of unidentified fruit flesh were found. Although the remainder are typical for vegetable offerings in Roman times, no traces of fire are observed within this area. It is likely that they derive from surrounding structures.

– Contexts rich in plant macro remains include one layer (BK 04-05-50) belonging to Phase 3 (120 AD to 130/140 AD) and one pit (BK 05-05-160/219) belonging to Phase 4 (130/140 AD to 160/170 AD) (**fig. 7.10**; **fig. 2.95 to 2.109**). Both contexts are characterised by their dark ashy nature. Charcoal, charred fruit flesh and/or charred processed food are predominant in the samples. In addition charred seeds and fruits of

72 Five contexts are not considered as they yielded hardly any plant macro remains. These are BK 04-05-137, BK 04-05-92, BK 04-05-12, BK 04-05-66, BK 04-05-70.

mainly cultivated plants are recovered. They comprise cereal grains (naked wheat and barley), pulses (lentil, pea and broad bean), nuts (stone pine nut, walnut and hazelnut), fruits (fig, date, peach and grape) and a clove of garlic (**fig. 7.6**). Hardly any wild plants are found. The plant assemblages recovered from these two contexts are unique in Roman Oedenburg. They represent primary deposits. From the plant macro remains, it is clear that both represent the remains of vegetable offerings (see below).

Conclusion

In comparison to the other areas of excavation, most of the samples from the temple complex are poor in plant macro remains both in waterlogged and dry sediments. It is likely that they derive from settlement noise and do not represent intentional human deposition. As plant remains are scarce, inferences about chronological changes within the temple complex are not possible.
The only exceptions to these conclusions are the two contexts rich in charred plant macro remains. It is clear that these contexts are both related to sacrificial practices. Their plant assemblages are the result of intentional fire. The sacrificial nature of the pit (BK 05-05-160/219) was visible from the start due to the abundance of small ceramic vessels (89 were recovered), the large chunks of charcoal and the large fragments of charred processed food within its deposits. It is confirmed that the remains in the pit evolve from a single event. The nature of the layer (BK 04-05-50) is only discovered after archaeobotanical analysis of its content. The plant macro remains in this layer have possibly accumulated over time[73]. From our analysis, it becomes clear that some food plants were exclusively used for sacrificial practices. Findings of date, garlic and stone pine[74] are restricted to the temple complex.

Surroundings of the temple complex

The area »Surroundings of the temple complex« is defined as the area immediately to the North of the temple complex (**fig. 7.1; 7.8**). Here, sixty two samples from 23 structures were studied (**tab. 7.1c**). They include pits, layers in and around palaeochannels, as well as a large quadrangular basin. All are located in waterlogged deposits. Few structures are dated to the 1st Cent. AD, the majority no more detailed than »Roman period - not specified«.

Waterlogged layers

Based on the composition of plant remains, we differentiate between three types of layers.
– A first type of layers is characterised by a rich assemblage of plant macro remains of mainly cereal chaff and wild weeds. Three layers located in the western part of the excavated area have yielded such an assemblage. They include a floor level (BK 03-09-166), a wattle structure (BK 03-09-163) and a trial trench through a palaeochannel (BK 03-09-Son26) (**fig. 7.11**). The first two are dated in the 1st Cent. AD, the latter

[73] See chapter 2.

[74] A single stone pine nut was found in the area Surrouding the temple complex.

is not precisely dated. Their plant assemblages are dominated by waterlogged plant macro remains, charred and mineralised remains are absent. Cereal remains and wild weeds stand out in the samples.
In layers BK 03-09-166 and BK 03-09-163 glumed grains of broomcorn millet, followed by rachis fragments of barley and other unidentified cereals are predominant. Other seeds and fruits are scarce. They include cereal weeds, ruderal plants, riverbank plants and meadow plants.
In layer BK 03-09-Son26 rachis fragments of barley and rye followed by glumed grains of millet are recorded. Few fragments of glume wheat chaff are found. Weeds of winter cereals are abundant, with an extremely high number of corn cockle (*Agrostemma githago*), carrot bur parsley (*Caucalis platycarpos*) and corn chamomile seeds (*Anthemis arvensis*).
It is clear that the layers in and around the palaeochannels are used to dispose of waste material as has been observed in the area Civil East. Particularly the disposal of cereal waste products is observed in these layers. In comparison to the area Civil East where glume wheat is abundant, we remark here the presence of other cereal species (rye, barley and millet). Also significant is the abundance of very well preserved millet grains. In such large amounts millet grains were only registered in a 2nd Cent. AD pit in the area Civil East. In the present floor layer, it is likely that we are dealing with some kind of storage facilities. However, no other indications are found for this hypothesis.

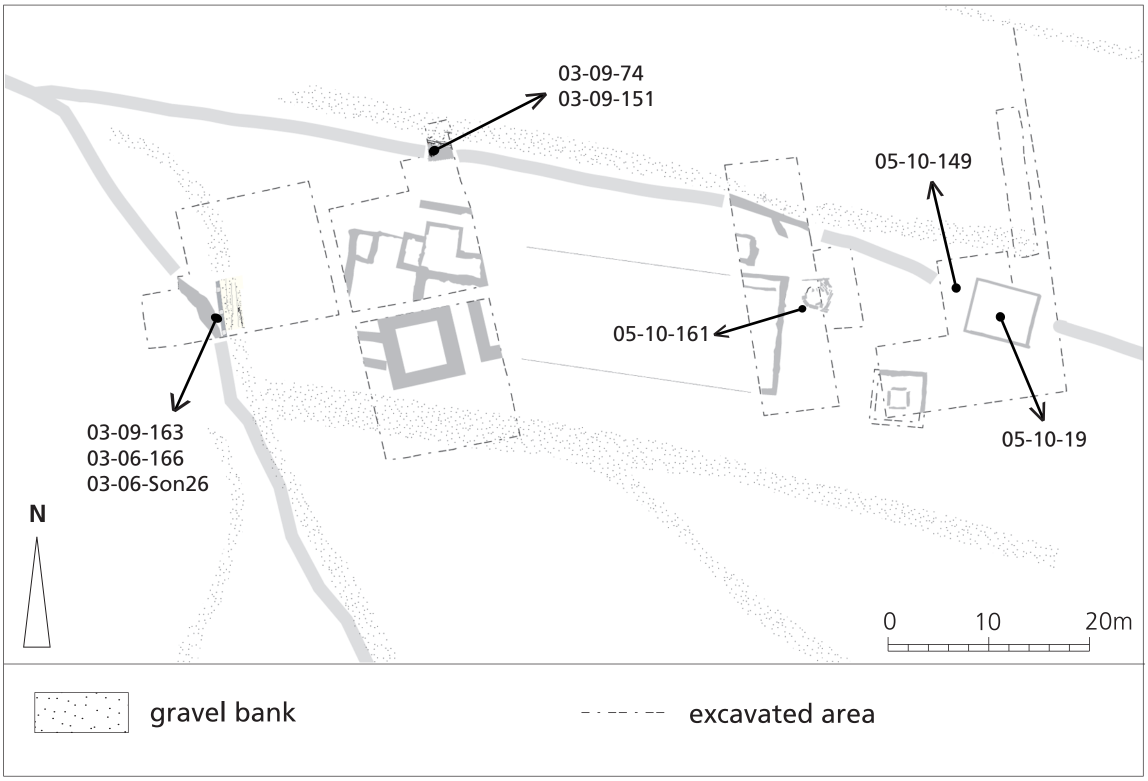

Fig. 7.11 Map of the Surroundings of the temple complex indicating those studied structures rich in plant macro remains.

– A second type of layers is characterised by a rich assemblage of above all cultivated plants. Three layers are dated to the 1st Cent. AD (BK 03-09-74, BK 03-09-212, BK 05-10-310), the remaining could not be dated precisely (BK 03-09-151, BK 10-05-149) (**fig. 7.11**). The waterlogged plant macro remains, mainly seeds, are plentiful and very diverse in these layers. They compile an extensive list of species of which the economic plants form the largest share. The edible and/or useful plants include nuts, vegetables, spices and fruits, especially small-seeded food plants are present. Waterlogged cereals are not so common, only few chaff fragments of millet and spelt are documented. Then again cereal weeds are very numerous. By far the most frequent are the weeds of winter cereals from the Caucalion alliance. Other wild weeds include ruderal plants and less abundant are plants preferring riverbank and reed field environments, forests or meadows.
In BK 03-09-74, we note the presence of many »exotic« plants remains (olive, melon/cucumber and seeds and the nearly complete fruit of a bottle gourd). Remarkably is also the finding of safflower seeds (*Carthamus tinctorius*). Charred plant macro remains are plentiful. The plant assemblage in this layer is comparable to the extremely rich plant assemblages recovered from pits in the area Civil East.
In BK 03-09-151plant macro remains represent almost exclusively edible plants. We note the abundance of waterlogged cereal bran fragments as well as mineralised remains of millet, lentil, broad bean and grape. Except for some ruderals and plants favouring humid environments, wild weeds are scarce.
In BK 05-10-149 we remark the presence of a single waterlogged stone pine nut. It represents the only waterlogged find of stone pine in Roman Oedenburg.
Edible and/or useful plants made up for the majority of the seeds and fruits in this type of layers. It is clear that a mixture of waste products is discarded of in this area.

– A last group of layers is poor in the representation of plant macro remains. They are layers BK 05-10-308, BK 03-09-67 and BK 05-10-168. It is thought that most of the plant remains derive from natural deposits of its immediate surroundings.

Pits in waterlogged sediments

Eight samples from seven pits are analysed. They include three pits dated to the 1st Cent. AD (BK 03-09-29, BK 03-09-193, BK 03-09-194) and four which are not more precisely dated than Roman period (BK 03-09-89, BK 03-09-90, BK 03-09-129, BK 05-10-161). On the whole, the studied samples from these pits do not yield a significant plant assemblage. They are very poor in plant remains, the latter included waterlogged as well as charred remains. These charred remains are mainly single findings of cereal chaff and grains.
In pit BK 03-09-194 a slightly more diverse spectrum was recorded, with some spices and cereal weeds. The plant assemblage recovered from pit BK 03-09-129 is also more abundant and diverse. It includes few waterlogged cereal chaff remains, some fruits (fig, grapevine and mulberry) and some ruderal plants.
One pit represents a monumental stone well (BK 05-10-161). Due to safety hazards the well could not be excavated entirely. It is thought to be related to sacrificial practices. Its plant assemblage is dominated by waterlogged remains of above all aquatic and ruderal plants. Economic plants are rather scarce, only waterlogged hazelnut shell and charred cereal grain are recorded. It is clear that the studied plant spectrum does not indicate any sacrificial practices but derives from the immediate surroundings of the well and secondary deposits of waste.

Basin

Several samples taken in a trial trench (BK 05-10-Son19) within a large quadrangular basin were studied (**fig. 7.11**). The basin itself is constructed in the 1st Cent. AD. The side walls consist of very large wooden planks of oak. The samples taken in the fill of the basin are mainly of very dark organic material (like peat). Lots of very thin vegetative material is recovered. Plant macro remains are not abundant and include mainly aquatic plants and plants favouring wet environments. The aquatic plants indicate the presence of standing or slowly flowing water. As aquatic plants are found throughout the whole trial trench, it is thought that the basin was always more or less filled with water. In addition to the aquatic plants, ruderal plants are found and some economic plants especially towards the bottom of the basin. The majority of plant remains represent the vegetation within and in the near vicinity of the basin. Indication to the function of this basin could not be detected through the study of its plant macro remains.

Trench 08

Two samples taken in Roman layers in Trench 08 were studied (**fig. 7.1**). The plant assemblage recovered from these deposits is similar to those found in pits and cultural layers in the area Civil East. They are mainly composed of waterlogged plant macro remains; no mineralised or charred remains were recovered. The presence of grapevine and peach confirms its date in the Roman period.

Conclusion

The area »Surroundings of the temple complex« includes a large variety of contexts of which the coherence and chronology is not entirely clear. As in the area Civil East, we observe the practice of waste disposal within palaeochannels. The samples from pits are rather poor in plant macro remains. The plant spectrum is varied, although different to the other areas of excavation (see below). The plant assemblages of some contexts are very rich. In this area of excavation, no evidence of sacrificial practices is found through the study of plant macro remains.

DISCUSSION

Interpretation of archaeobotanical assemblages

Deposition of plant remains within archaeological structures is of two natures. It can be thanatocoenoses that is it is formed in the course of its deposition and consists of plants of different origins. Or else it can be palaeo-biocoenoses, where plant species grow together at the place of deposition or they are collectively brought to their place of deposition (e.g. cultivated plants and weeds)[75]. In Roman Oedenburg the majority

[75] U. Willerding 1991 (footnote 35), 25-51.

of plant assemblages are thanatocoenoses. They represent a mixture of different deposits. These include human as well as natural origins.
In the following we aim to define the origin of the plant remains within the archaeological deposits.

Waste disposal

The majority of plant macro remains recovered in the Roman-period structures is part of waste products from human activity. These waste products range from kitchen refuse to crop processing debris to faecal material. As discussed above, it is clear that pits and palaeochannels are used to dispose of waste. Based on the occurrence of plant taxa/parts, preservation and abundance of seeds/fruits, we distinguish different types of deposits. Our observations are based on the groups made by Hellwig[76] for the interpretation of archaeological plant assemblages.

– A first type of deposit is faecal remains. Within these deposits, we find mainly those parts of plants that are used for consumption and consequently survive the digestion process. The latter has a strong influence on the representation of plant taxa. Due to the digestion process a whole range of food plants is not or scarcely attested in faecal deposits. They include those plants of which only the leaves and roots are consumed (e.g. salads and vegetables).
In Roman Oedenburg we define faecal material by the presence of a large abundance of cereal bran fragments, stone cells of pear, pericarp of apple/pear, small-seeded food plants and compacted organic concretions. The plant macro remains within these faecal deposits are waterlogged as well as mineralised. Cereal bran fragments are the remains of cereal grains which have passed through the intestinal tract. The small-seeded food plants include mainly fruits (e.g. fig, wild strawberry), spices (e.g. celery, coriander) and millet grains. The compacted organic concretions are often mineralised. In its texture small seeds of edible plants and cereal bran fragments can be observed. They possibly represent parts of human coprolites[77]. In addition to plant macro remains, faecal deposits often yield large amounts of fly pupae and other small zoological remains (see chapter 9).
Samples including latrine deposits are mainly identified in pits in the area Civil East (1st Cent. AD (BK 01-04-86, BK 01-04-24, BK 01-04-27, BK 01-04-73, BK 02-04-140); 2nd Cent. AD (BK 01-04-38, BK 01-04-53)) and in two layers in the Surroundings of the temple complex (BK 03-09-74 and BK 03-09-151). Whether these present primary or secondary deposits is hard to tell from the plant macro remains. It is clear however that those contexts containing latrine waste are used for other kinds of waste disposal, too. The plant assemblage of such contexts including latrine deposits, have yielded the richest and most diverse spectrum of edible plants.

– A second type of deposit indicates the presence of kitchen refuse. This group is characterised by the presence of charcoal, charred cereal grains and charred wild weeds, additionally larger fruit stones (e.g. peach, plum etc.) and nutshells are usually found[78]. Besides kitchen refuse, we classify these plant remains

[76] M. Hellwig, Botanischer Beitrag zur Funktionsanalyse an mittelalterlichen Feuchtsedimenten aus Braunschweig. Nachr. Niedersachs. Urgesch. 58, 1989, 267-271.

[77] Such concretions were also frequently attested in a latrine deposit in Eschenz; see F. Feigenwinter 1997 (footnote 2), 21-28.

[78] M. Hellwig 1989 (footnote 76), 267-271.

in Roman Oedenburg under »settlement noise«, indicating the vicinity of living quarters and thus cultural activity. These deposits include only small quantities of plant macro remains. This type of deposit is identified in the majority of structures in the three areas of excavation.

– A third type of deposit is characterised by the presence of many arable weeds and cereal chaff. Hellwig[79] questions their origin as remains of crop processing and suggests that these could have originated from faecal remains especially due to presence of the larger arable weeds as corn cockle and cornflower. In Oedenburg however it is clear that the assemblages of cereal chaff and arable weeds represent part of crop processing activities as hardly any other indicators for faecal material are found within these assemblages. In addition arable weeds are often introduced to settlement areas with the harvest[80]. These types of deposits are predominantly recovered from organic layers in and at the edges of palaeochannels (e.g. BK 02-04-55, BK 02-04-78, BK 03-09-163, BK 03-09-166, BK 03-09-Son26). In the area Civil East, the cereals include mainly glume wheat. In the Surroundings of the temple complex, rachis fragments of barley and glumes of broomcorn millet dominate in the samples. From the contextual evidence it is not clear whether or not these cereal remains represent local crop processing activity or are deposited for other reasons (wetland management - see below).

– A fourth type of deposit includes above all ruderal plants or wild plants growing in gardens[81]. In Oedenburg, we add plants favouring wet environments as riverbanks and reeds to this deposit. This fourth group of plants are not of any use but mainly represent the local environment. Within the waterlogged layers in the area Civil East and the Surroundings of the temple complex, a large part of the plant assemblage derives from the local vegetation. This environment was largely influenced by human occupation (the ruderal vegetation is well-represented) and the presence of water.

– A fifth type of plant assemblage in Roman Oedenburg is composed of almost exclusively wild plant taxa. One pit structure (BK 99-04-01) in the area Civil East is composed almost uniformly of such deposits. Its content is characterised by very compacted organic material including a lot of straw-like plant material. It is thought that they derive from cereals; however, the identification of the stems was not taken any further yet, therefore they may also originate from wild grasses. The seeds and fruits in the deposit include mainly plants growing in cultivated meadow and pasture communities, in addition to many other wild plant taxa. In particular reed fields (e.g. sedges) are well-represented. Of the plant taxa, not only seeds and/or fruits were found but also other vegetative parts as chalices, pods and perianths etc. Their preservation was outstanding. Usually remains of the grassland vegetation reach settlement areas as part of hay or dung. One possible interpretation for this fifth type of deposits is that it originates from animal dung. However, a close inspection of the unsieved material does not confirm this[82]. In addition no mineralised plant remains are recorded. Another hypothesis could be that they derive from hay or bedding from stables – maybe mixed with dung – which is more plausible[83]. Archaeobotanical examination of two well deposits in the Roman East castle of Welzheim provided a similar plant assemblage where grassland taxa dominate the

79 M. Hellwig 1989 (footnote 76), 267-271.
80 S. Jacomet / A. Kreuz 1999 (footnote 7), 76ff.
81 M. Hellwig 1989 (footnote 76), 267-271.
82 M. Kühn pers. comm.
83 Future detailed inspection (e.g. a thin section) of these sediments could possibly add to the understanding of this deposit.

assemblage. In addition, this deposit fits well in the indicator group[84] defined by Kenward and Hall[85] for the identification of stable manure in archaeological deposits. According to them, stable manure is characterised by a high organic content, straw-like plant material, characteristic decomposer insects, hay-meadow plants and insects, cereal remains, twigs and leaves among others. Considering these indicators and the results of the Welzheim deposit, we suggest we are dealing with stable manure which contained a mix of bedding and hay. It could have originated from horse stables which must have existed with the presence of the military.

Wetland management

The Roman settlement of Oedenburg was installed at the beginning of the 1st Cent. AD in the alluvial plains of the river Rhine. At that time, the landscape was composed of many palaeochannels crossing the settlement area, small islands and river terraces[86]. Large parts of the civil settlement are thus located in marshland where water was a constant threat. In the plant spectrum, this is particularly discernible in the area Civil East. It is thought that in this area of excavation, brushwood matting was deposited in order to drain this marshland area [87]. Periods of heavy rainfall during the excavation seasons have shown that these brushwood matting are very effective to walk on and to keep ones feet dry. Evidence of brushwood matting was found in the organic layers. As discussed, two types of organic layers are excavated (see above). The first type is characterised by the presence of many twigs and branches, few other plant macro remains; the second type is characterised by the presence of twigs, branches, debris of woodworking and many other plant macro remains. They include large amounts of cereal chaff and cereal weeds among other plant macro remains. Cereal weeds are normally introduced to the settlement as part of the harvest. On the one hand it is plausible that activity related to cereal processing has taken place in this area; it is also possible that remains of crop processing activity are brought to this area to serve for drainage purposes[88]. On the other hand the cereal chaff fragments and arable weeds could also be part of an accumulation of general waste disposal. The dumping of waste material in rivers or watercourses is known from the Roman *vicus* in Solothurn Vigier[89] and the Roman town in Xanten[90]. Besides drainage purposes, the deposition of waste material could have served to level the underground for the installation of a new floor. During the excavation season of 2009 in the vicus of Eschenz/Tasgetium (CH), such foundations filled with waste and cereal by-products were found[91].

[84] H. K. Kenward / A. R. Hall 1997 (footnote 20), 665f : »An indicator group is thus a colleczion of recordable data of any kind which when occurring together, can be accepted as evidence of some past state or activity«.

[85] H. K. Kenward / A. R. Hall 1997 (footnote 20), 663ff.

[86] See M. Reddé 2007. Oedenburg I (footnote 11).

[87] see chapter 5.

[88] In this context, the presence of cereal rachis fragments and arable weeds in the palaeochannels in the area to the East of Altkirch (see 7.3.5.3.1) can be explained as drainage material.

[89] S. Jacomet / C. Wagner / K. Wacker Feigenwinter / N. Felice / H. Albrecht, Samen und Früchte aus vorrömischen, römerzeitlichen und mittelalterlichen Ablagerungen in der Altstadt von Solothurn (Schweiz), Areale Vigier und Klosterplatz. Unpublished manuscript, 1993.

[90] K.-H. Knörzer 1981 (footnote 22), 176.

[91] S. Jacomet, pers. comm., results of the archaeobiological field course 2009 organised by the IPNA (University of Basel).

The temple complex and its vicinities

In the temple complex, the majority of samples have yielded few plant macro remains. We have interpreted these remains as part of the local vegetation and as indicators of adjoining living quarters. We did not record the intentional deposition of large amounts of waste material as observed in other parts of the civil settlement. We did however record intentional deposition of plant remains as part of sacrificial practices.

Based on contextual evidence (location within temple complex) and plant assemblage, we identified the remains of vegetable offerings in a hearth and a pit[92]. Vegetable offerings are characterised through plants that are not usually in contact with fire for their consumption. In addition stone pine, date, fig, cereal and pulses among others are very frequently found as part of Roman vegetable offerings in sacred areas such as temples [93] and graves[94]. The plant assemblage from the offering pit and hearth in Oedenburg is characterised by large fragments of charred fruit flesh and/or charred processed food. The charred processed food probably derives from bread and/or pastry. Parts of the charred fruit flesh could be identified as date and fig. The remaining vegetable remains include seeds and fruits of cultivated plants which are typical for Roman offerings. An evaluation of fourteen archaeobotanical studies undertaken in sacrificial contexts in the Roman Empire has shown that the list of offering plants in Oedenburg is extensive in comparison to the majority of sites[95]. This is mainly due to the recovering techniques used at the temple sites[96]. From this evaluation we infer that stone pine, date and fig are most frequently found as part of vegetable offerings. Nuts other than stone pine, cereals and pulses are recovered when soil samples are processed. It is therefore thought that they represent an equally important part of the offerings and that the predominance of stone pine, date and fig at most of the other sites can be explained by a bias created through the method of collection of plant macro remains. In general, we conclude that the vegetable offerings recovered in Oedenburg are similar to the findings in other sacrificial sites in the Roman Empire. Furthermore, we note that plants used for offering are similar or even identical throughout the Roman Empire regardless of the location of the site[97].

In Roman Oedenburg, we note the absence of date and almost absence of stone pine outside the temple complex. Only one single waterlogged nut of stone pine is found within the extensively studied and well preserved archaeological layers of the civil settlement. Date and stone pine represent imported food plants as climatic conditions prohibit their growth north of the Alps. Other imported food plants from

[92] These findings have been the subject of two previous publications; P. Vandorpe / S. Jacomet in press (footnote 19). – F. Ginella / H. Hüster Plogmann / P. Vandorpe, »… und sie huldigten den Göttern«. Reste von Tieren und Pflanzen aus dem gallo-römischen Tempelbezirk Oedenburg/Biesheim-Kunheim (Haut-Rhin, F). In: D. Castella, M.-F. Meylan Krause (eds.) Topographie sacrée et rituels, Le cas d'Aventicum, capitale des Helvètes, Actes du colloque international d'Avenches, 2-4 novembre 2006. Antiqua 43, 2008, 304-308.

[93] D. E. Robinson, Domestic burnt offerings and sacrifices at Roman and pre-Roman Pompeii, Italy. Veg. Hist. Arch. 11, 2002, 93-99. – B. Zach, Vegetable offerings on the Roman sacrificial site in Mainz, Germany - short report on the first results. Veg. Hist. and Arch. 11, 2002, 101-106. – J.-C. Béal, Le sanctuaire des basaltes à Alba-La-Romaine (Ardeche) et ses offrandes. In: C. Goudineau / I. Fauduet / G. Coulon (eds.) Les sanctuaires de tradition indigène en Gaule Romaine. Editions Errance – Musée d'Argentomagus (Paris 1994) 161-168.

[94] L. Bouby / P. Marinval, Fruits and seeds from Roman cremations in Limagne (Massif Central) and the spatial variability of plant offerings in France. Journal Arch. Scien. 31, 2004, 77-86. – M. Petrucci-Bavaud / S. Jacomet, Zur Interpretation von Nahrungsbeigaben in römerzeitlichen Brandgräbern. Ethn.-Arch. Zeitschr. 38, 1997, 567-593. – M. Petrucci-Bavaud / A. Schlumbaum / S. Jacomet, Samen, Früchte und Fertigprodukte. In: D. Hintermann (ed.) Der Südfriedhof von Vindonissa. Archäologische und naturwissenschaftliche Untersuchungen im römerzeitlichen Gräberfeld Windisch-Dägerli. Aargauische Kantonsarchäologie (Brugg 2000) 151-159.

[95] P. Vandorpe / S. Jacomet in press (footnote 19).

[96] The majority of the other findings are hand collected and have thus yielded less remains.

[97] D. E. Robinson 2002 (footnote 93), 93-99.

the Mediterranean and further afield have been identified and recorded throughout all areas of the civil settlement. As a result of these findings, we assume that date and stone pine are in Oedenburg exclusively used for sacrificial purposes and not for daily consumption.
In the surroundings of the temple complex, no indications of sacrificial acts could be identified through study of the plant remains. The single nut of stone pine was found within a drainage channel (BK 05-10-149) filled with human waste material. Stone pine nuts and scales are often found as part of Roman sacred contexts on archaeological sites north of the Alps[98]. And although they were an important component of Roman cooking, findings of stone pine in other types of contexts are rare,. One exception to this are the findings of stone pine nuts in the kitchen of the Roman villa in Worb (CH)[99].

Summary

The majority of plant assemblages recovered in the civil settlement derives from a mixture of deposits. The inhabitants disposed of their waste materials in both watercourses and pits. There is no clear pattern recorded. In the majority of pit structures, we are dealing with secondary deposits. Waste material in the watercourses is twofold; some palaeochannels are used to discard debris, others are filled with cleaning by-products and/or rubbish to serve as isolation material or drainage purposes. It is likely that we only have primary fills in two contexts in the temple complex. They are a clear sign of sacrifical events.

Local cultivation and/or import of food plants

Before the arrival of the Romans, the diet of the local population in the Upper Rhine region is rather monotonous. It is mainly based on vegetable food with cereals and pulses composing the main part of the diet[100]. Furthermore wild fruits, hazelnuts and spices are gathered[101]. With the arrival of the Romans, many new products are introduced and imported, this results in a richer and much more diverse diet[102]. In addition, the cultivation of fruit trees, the gardening of vegetables and spices and the development of wine growing is initiated[103]. The change in nutritional pattern in comparison to the Late Iron Age is very

98 For an overview of the findings of stone pine see in the first place M. E. Kislev, Pinus pinea in agriculture, culture and cult. In: H. Küster (ed.) Der prähistorische Mensch und seine Umwelt. Festschr. für Udelgard Körber-Grohne. Konrad Theiss Verlag (Stuttgart 1988) 73-79. – and furthermore : G. Willcox, Exotic plants from Roman waterlogged sites in London. Journal Arch. Scien. 4, 1977, 269-282. – C. Bakels / S. Jacomet 2003 (footnote 50), 542-557. – L. Bouby / P. Marinval 2004 (footnote 94), 77-86.

99 C. Brombacher, Archäobotanische Untersuchungen. In: M. Ramstein (ed.) Worb-Sunnhalde; Ein römischer Gutshof im 3. Jahrhundert. Berner Lehrmittel- und Medienverlag (Bern 1998) 105-108.

100 S. Jacomet / C. Jaquat / M. Winter / L. Wick, Umwelt, Ackerbau und Sammelwirtschaft. In: F. Müller, G. Kaenel, G. Lüscher (eds.) Eisenzeit. Verlag Schweiz. Ges. für Ur- und Frühgeschichte (Basel 1999) 98-115. – K.-H. Knörzer / R. Gerlach, Geschichte der Nahrungs- und Nutzpflanzen im Rheinland. In: K.-H. Knörzer / R. Gerlach / J. Meurers-Balke / A. J. Kalis / U. Tegtmeier / W. D. Becker / A. Jürgens (eds.) PflanzenSpuren. Archäobotanik im Rheinland: Agrarlandschaft und Nutzpflanzen im Wandel der Zeiten. Materialien zur Bodendenkmalpflege im Rheinland 10, 1999, 67-127

101 There are hints in the archaeobotanical record that local cultivation of »exotic« food plants initiated in the Iron Age; see comments in S. Jacomet / C. Brombacher 2009 (footnote 6), 27-106

102 S. Jacomet / J. Schibler / C. Maise / L. Wick / S. Deschler-Erb 2002 (footnote 43), 21-40 - C. Bakels / S. Jacomet 2003 (footnote 50), 542-557

103 J. Wiethold, How to trace the »Romanisation« of central Gaule by archaeobotanical analysis? - Some considerations on new archaeobotanical results from France Centre-Est. In: Actualité de la Recherche en Histoire et Archéologie agraire (ed.) Actes du colloque international AGER V, septembre 2000. Presses Universitaires Franc-Comptoises (Besançon 2003) 269-282.

apparent in Roman Oedenburg. The newly introduced food plants include nuts, spices, fruits, vegetables etc. Some are introduced and subsequently cultivated locally, others are imported. It remains vague when local cultivation of newly introduced food plants first started and if they ever were cultivated locally. It is clear that, at least during the military occupation of the site, a large supply of vegetable foods was needed to feed the inhabitants. Even after the abandonment of the military camp in the 1st Cent. AD, Roman Oedenburg remained an important centre as proven by its large surface and its many public buildings.

To prove local cultivation of food plants based on archaeobotanical macro remain data only is hardly feasible. Hints can be provided by the study of off-site pollen cores. However, there are many methodological problems. The issue of identifying a »Consumer or Producer site« has been food for discussion among many authors[104]. Several explanatory models were developed in order to interpret archaeological plant assemblages. M. Jones[105] developed a model to understand the patterning in charred seed assemblages in order to define whether the recovered seed assemblage represents a producer or a consumer site. Producer sites being defined through grain-rich assemblages, consumer sites through weed- and chaff-rich assemblages. This model has been questioned ever since it appeared. A recent re-analysis of the issue by van der Veen and G. Jones[106] has demonstrated that a distinction between these two types of settlements can not be made purely on the basis of the content of charred seed assemblages. It rather represents an indicator of the scale of production and consumption. In addition, it was stressed that species composition, taphonomic issues and context in which the assemblage was found should have been considered in the model. We touch upon this issue to state that opinions differ when interpreting archaeobotanical data in order to find out about local production.

Besides the archaeobotanical record, Jacomet[107] compiled information about contextual evidence which is indicative of local cultivation, to interpret the plant assemblage of a Roman villa in Biberist (CH). Yet, none of the archaeological markers apply for Roman Oedenburg; there is no evidence of tools used for cultivation; neither dry kilns nor storage facilities were found. Only the archaeobotanical indicators are relevant, namely: 1) the presence of different stages of cereal processing; 2) the presence of imported food plants, they point to trading which implies a surplus production; 3) the predominance of a plant (pointing to specialisation); and 4) findings of non-consumable parts of food plants such as straw[108].

Based on the above-mentioned archaeobotanical indicators, we infer that cereals were cultivated locally in Roman Oedenburg[109]. Findings of cereal remains are common in Roman Oedenburg. Of the nine different cereal taxa recorded in Oedenburg, four are very common, in particular their chaff remains. They include spelt, emmer, barley and broomcorn millet. Waterlogged chaff remains – accompanied by a variety of arable weeds- constitute the main bulk of the cereal remains. As for the chaff remains, those of free-threshing wheat are very rarely found within settlement areas[110], also in Oedenburg. Chaff remains of hulled cereals

[104] For an overview see M. van der Veen / G. E. M. Jones, A re-analysis of agricultural production and consumption: implications for understanding the British Iron Age. Veg. Hist. Arch. 15, 2006, 217-228.

[105] M. K. Jones, Archaeobotany beyond Subsistence Reconstruction. In: G. Barker / C. Gamble (eds.) Beyond domestication in prehistoric Europe. Academic Press Inc. (London 1985) 107-128.

[106] M. van der Veen / G. E. M. Jones 2006 (footnote 104), 217-228.

[107] S. Jacomet / M. Petrucci-Bavaud / M. Kühn 2006 (footnote 5), 579-624 / 877-916 (Tables)

[108] The latter was identified in pit BK 99-04-01 in the area Civil East.

[109] While very few Roman sites have been archaeobotanically analysed in the direct surroundings of Oedenburg, we can obviously not exclude that the provisions of the civil and military settlement were supplied by other rural sites instead of cultivated by the inhabitants of Oedenburg.

[110] Upon threshing grains of naked wheats are released. Threshing of cereals is mainly undertaken outside the settlement areas.

are more regularly found within settlements[111]. Charred cereal grains are rare. Waterlogged cereal testae are numerous among the findings.
An additional strong hint on local cereal cultivation gives the the analysis of two pollen profiles (one originating from the Temple complex, the other from a nearby palaeochannel »Riedgraben«). These indicate an open landscape with arboreal pollen not exceeding 20 to 30 % from the beginning of the Roman period onwards; the development of the herbaceous vegetation is at the expense of the woodland[112] and an increasing abundance of cereal pollen (over 5 %) and grassland pollen is recorded. The pollen data visibly expose the anthropogenic influence on the landscape at the beginning of the Roman period.

Agricultural practices

In the following we try to shed a light on local agricultural practices based on the arable weed flora and the grassland vegetation. We discuss these in function of the location and/or soil types used for cultivation. We classified the arable weeds into weeds growing within the winter cereals and weeds growing within summer crops. A strict border between both does not exist[113]. In addition, it is not possible to differentiate between the weeds growing within summer cereals and those growing within garden cultivation plots[114]. From our data, it is apparent that mixtures of ecological types were exploited; they are a good reflection of the immediate surroundings of the settlement.

Summer crops / gardens

The weeds of summer crops (or crops requiring hoeing) recorded in the archaeological layers reflect the exploitation of several soil types for growing the crops (see above; **tab. 3a, 3b** and **3c**). The presence of nutrient-rich sandy and loamy soils is attested by findings of e.g. sun spurge (*Euphorbia helioscopia*) and field pennycress (*Thlaspi arvense*); the presence of calcareous soils by thyme-leaved sandwort (*Arenaria serpyllifolia*) and blue pimpernel (*Anagallis arvensis/foemina*). Findings of e.g. fat hen (*Chenopodium album*) and black nightshade (*Solanum nigrum*) indicate a high nitrogen content of the soil which could be an indication of manuring. Findings of humid sun spurge (*Euphorbia helioscopia*) and common fumitory (*Fumaria officinalis*) possibly indicate that even relatively moist environments were cultivated.
The garden plots in which a mixture of pulses, vegetables and spices were grown, must have been located in the settlement area. In our samples, remains of pulses are not common; vegetables and spices on the contrary are abundant. Pulses certainly played a major role in the diet. Their under-representation is likely to be caused by issues of preservation[115]. Among the vegetables and spices we count above all amaranth,

[111] Glume wheats are often transported and stored in the spikelets to prevent infestation of the grains. Dehusking of the grains belongs to the daily activities.

[112] C. Petit / O. Girardclos / V. Ollive / M. Reddé, Milieux humides et aménagements anthropiques dans la plaine du Rhin : Le site romain d'Oedenburg (Haut-Rhin). In VII^{e} Colloque AGER, Silva et Saltus en Gaule romaine. Dynamique et gestion des forêts et des zones rurales marginales, in press.

[113] S. Jacomet / C. Wagner / N. Felice / B. Füzesi / H. Albrecht, Verkohlte pflanzliche Makroreste aus Grabungen in Augst und Kaiseraugst. Kultur- und Wildpflanzenfunde als Informationsquellen über die Römerzeit. Jahresber. Augst u. Kaiseraugst 9, 1988, 271-310.

[114] E. Oberdorfer 1994 (footnote 42), 1050.

[115] Preservation of pulses in waterlogged sediments is rare. This has been observed by several authors, e.g. S. Jacomet / C. Brombacher / M. Dick, Archäobotanik am Zürichsee. Ackerbau, Sammelwirtschaft und Umwelt von neolithischen und bronzezeitlichen Seeufersiedlungen im Raum Zürich. Ergebnisse von Untersuchungen pflanzlicher Makroreste der Jahre 1979-1988. Orell Füssli Verlag (Zürich 1989) 124f.

cabbages, carrot, dill, coriander and celery. For most vegetables and salads (e.g. amaranth) it is the leaves or roots which are meant for consumption. Plants are only then allowed to flower to recover their seeds. Consequently, one could interpret the occurrence of seeds as an indication of cultivation. This is in contrast to many of the spices where the seeds possess the aromatic flavour and are used for consumption and are thus very regular findings in archaeobotanical assemblages.

In Oedenburg there is evidence for both summer and winter cereals. Spelt is a winter cereal; broomcorn millet is a summer cereal. Barley and emmer can be cultivated as summer or winter cereal. From the cereal remains and arable weeds, there is no clear indication whether winter cereals were more important than summer cereals. In addition, samples containing e.g. winter cereals usually contained a mix of arable weeds, likewise for the summer cereals. On top, the weeds of summer crops are often found in plant assemblages rich in vegetables and salads, which demonstrate that they may originate from garden cultivation as well as cereal fields.

Winter cereals

The weeds of winter cereals recorded in the archaeological layers belong to several ecological types (see above; tab. 3a, 3b and 3c). They reflect the use of a variety of soils for cereal cultivation. Like the summer crops, nutrient-rich soils of sand and loam (proven through the recovery of corn cockle (*Agrostemma githago*) and garden cornflower (*Centaurea cyanus*) among others), soils high in nitrogen (e.g. cleavers (*Galium aparine*)) but also the more acidic soils poor in nutrients (indicated by the weeds belonging to the Order of the Aperetalia) were used for crop cultivation.

Of special interest are the weeds of winter cereals belonging to the Order of the Secalietalia, Caucalion alliance. The majority of these weeds, favouring a dry warm climate and calcareous soils, are native in the Mediterranean. Up till now it is unclear how they diffused north of the Alps, some say they were introduced with the arrival of the Romans[116]. However recent findings have demonstrated that part of these Caucalion taxa was already present north of the Alps before the arrival of the Romans[117]. This issue is particularly important when considering the origin of the cereals. It is known that during the Roman period cereals were traded over long distances[118]. Thus, it is plausible that arable weeds were introduced into the area as part of cereal import from the Mediterranean area. There are only few Caucalion weeds found in Oedenburg that did not occur before the Roman period. They comprise muskweed (*Myagrum perfoliatum*), corn buttercup (*Ranunculus arvensis*), thorow-wax (*Bupleurum rotundifolium*) and devil-in-a-bush (*Nigella arvensis*). In order to find an answer to the question of cereal import, we verified the context and sample composition in which these four plant taxa were found.

Thorow-wax represents a single find in the 1st Cent. AD structure BK 99-04-01 in the area Civil East. It is part of a plant assemblage dominated by wild weeds originating from meadows and pastures and from cultivated fields. Chaff remains of millet and glume wheat represent the most important cultivated plants.

116 J. Wiethold, Archäobotanische Aspekte der Romanisierung in Südwestdeutschland. Bemerkungen zur Unkrautflora römerzeitlicher Dinkeläcker. In: A. Müller-Karpe / H. Brandt / H. Jöns / D. Krausse / A. Wigg (eds.) Studien zur Archäologie der Kelten, Römer und Germanen in Mittel- und Westeuropa. Marie Leidorf GmbH (Rahden 1998) 531-551.

117 S. Jacomet / C. Brombacher 2009 (footnote 6), 27-106. – T. Märkle, Macroremains from a late Iron age well in Schaeffersheim. In: J. Wiethold (ed.) Travaux d'Archéobotanique (à la mémoire de Karen Lundstrom-Baudais). Bibracte, Glux-en-Glenne, in press.

118 A. Kreuz, Landwirtschaft im Umbruch? Archäobotanische Untersuchungen zu den Jahrhunderten um Christi Geburt in Hessen und Mainfranken. Ber. RGK 85, 2004, 97-292, 9 Tafeln.

Single findings of devil-in-a-bush are found in two 1st Cent. AD layers in the Surroundings of the temple area (BK 09-03-74 and BK 10-05-310). They both represent layers of waste material where cereals are not dominating the samples, other economic plants are plentiful. We remark that one of these layers (BK 09-03-74) includes a very exotic plant spectrum with many imported food plants (see above). In addition, there are indications that this layer contains an imported seed transport (see below).
Corn buttercup is slightly more frequent in the samples (in 13 samples or 5 %) although in small amounts. It is found in one sample from the 1st Cent. AD layer BK 09-03-74 in the Surroundings of the temple area. In the temple area it is found in a 1st Cent. AD ditch (BK 03-05-49). In the area Civil East, it is found in two 1st Cent. AD pits (BK 99-04-01 and BK 01-04-24) and two 2nd Cent. AD pits (BK 01-04-38 and BK 02-04-15). In all (except for BK 99-04-01) many imported food plants are found, in addition few of these samples include large amount of millet and spelt wheat chaff.
Muskweed is by far the most frequent taxon of the Caucalion alliance in our samples. Muskweed is mainly known as a weed of winter cereal but can also occur as a ruderal plant[119]. Siliques of muskweed are robust and slightly lignified, which facilitates their preservation in waterlogged contexts. The apical parts of the silique of muskweed were found in more than 40 % of the samples as a waterlogged remain, in 0.6 % as a charred remain. It is found in all types of contexts and in all areas of excavation. There is no clear pattern in its distribution in the samples. It occurs in very rich plant assemblages dominated by cultivated food plants as well as in very poor plant assemblages where hardly any economic plants are attested. Its presence is remarkably higher in the 1st Cent. AD (52.9 % of the samples) than in the 2nd Cent. AD (25 % of the samples)[120]. In addition the 2nd Cent. AD findings often represent a single item. The earliest findings of muskweed in Roman Oedenburg originate from a layer in the temple complex which is dated 3/4 AD (BK 03-05-53) based on dendrochronology. Within this layer we also have evidence for bottle gourd. Unfortunately, in the other areas of excavation, no structures could be dated this early.
As established, muskweed is very frequent in Roman Oedenburg but hardly ever found on other Roman sites North of the Alps. One possible reason for its absence on Roman archaeological sites could be due to its difficulty of identification. Only four other Roman findings of muskweed are known to us. They represent more recent findings. Kreuz[121] mentions the find of a single waterlogged silique of muskweed in Gross-Gerau (G). Matterne[122] reports the finding of muskweed in cereal grain stocks at the site »Larry« in Liéhon, Moselle (F). Wiethold[123] found muskweed in a well dated around 200 AD in Kaiserslautern-Otterbach (G). Finally, muskweed was identified in a layer of destruction in the excavation Insula 27 in Augst[124]. Today muskweed is rarely found and its repartition is restricted to the South of Europe.
To state that muskweed arrived in Alsace as part of cereal grain transport from the Mediterranean area – based on our findings alone – is however doubtful. First of all, siliques of muskweed are not easily recognised. For the un-trained eye they pose a problem of identification. Secondly, the archaeobotanical dataset of the pre-Roman times in Alsace is scarce. In general while very few archaeobotanical studies have taken place so far. Thirdly, long-distance relations with the Mediterranean area were established long before the Roman occupation north of the Alps. These contacts are mainly confirmed through findings of imported artefacts

119 E. Oberdorfer 1994 (footnote 42), 1050.
120 See also S. Jacomet / C. Brombacher 2009 (footnote 6), 27-106.
121 A. Kreuz 2004 (footnote 1183), 97-292.
122 V. Matterne, Étude carpologique d'un stock de grains gallo-romain découvert sur le site de Liéhon »Larry« (Moselle). Unpublished manuscript, 2005, 3.
123 J. Wiethold pers. comm.
124 Own research
125 See A. Livarda / M. Van der Veen, Social access and dispersal of condiments in North-West Europe from the Roman to the medieval period. Veg. Hist. Arch. 17, 2008, 201-209. – and the annotations in S. Jacomet / C. Brombacher 2009 (footnote 6), 27-106.

on Iron Age sites. About import of plants in the Iron Age there exists very few information[125]. One example is the Iron Age salt mining site of Bad Nauheim (G), where plant species thought to be introduced by the Romans were recorded. These plants (e.g. coriander) were found together with other imported handicraft products. Accordingly, it is suggested that plants native in the Mediterranean could already have been introduced during the Iron Age[126]. It is however clear that an increase comes with the Roman expansion[127]. In the case of muskweed: we can not prove nor exclude the hypothesis that muskweed first reached the site as part of imported cereal stocks from the Mediterranean area. Its ubiquity is very high in Roman Oedenburg. It may well have diffused into the area with the sowing of the imported cereal grains. As a consequence, the large majority of the muskweed siliques found in Oedenburg derive from locally grown plants after a primary introduction into the area. The presence of the calcareous gravel terraces in the near vicinity of the site yields a good substitute to its natural habitat in Southern Europe. To conclude, a clear answer to this question is impossible without the ideal context, that is preferably a sunken ship wreck packed with cereal stocks as was found in the Netherlands[128].

Grassland management

Macro plant remains representing grassland vegetation are rare in Oedenburg. They represent single findings in most of the samples. Yet in the area Civil East, one pit context (BK 99-04-01) yielded more than average. Samples from this pit are dominated by wild plant taxa and in particular the grassland vegetation. Table 4 summarises the recorded grassland species in this pit. The origin of these deposits is difficult to detect. As stated above we assume we have the remains of stable manure or bedding which implies these deposit can contain straw and/or hay. We have at least 24 plant taxa growing in cultivated meadows and pastures. The most commonly found ones are self-heal (*Prunella vulgaris*), clover (*Trifolium* sp.) and rattle (*Rhinanthus* sp.). We have also evidence of six species favouring poor calcareous swards. Although, they are much less frequent in the samples. In addition, pollen analysis confirms that the landscape was already open at the beginning of the Roman period. Not only is there an increase in cereal pollen, the percentage of grassland pollen is equally high.

Assuming that we are dealing with deposits of hay or what is left of it, we explored the flowering times of the different grassland taxa in order to find out about the time of cutting of the meadows for hay. In Table 4 the blooming time of each taxon is indicated. This shows that flowering of the taxa takes place between May and September/October. This suggests that the meadows were cut in late summer as seed-ripening of the majority of these taxa was then possibly fullfilled. The hay was then used as fodder or as bedding in stables[129]. Mowing of the meadows is a known practice in Roman times. It has been established in several Roman settlements[130]. It is thought the fields were grazed and manured until early summer. After that they were kept free of animals to preserve the meadow until mowing times.

[126] A. Kreuz, Unerwartete Pflanzenfunde aus der keltischen Saline in Bad Nauheim. Hessen Arch. 2002, 2003, 66-68. – S. Jacomet / C. Brombacher 2009 (footnote 6), 27-106.

[127] A. Livarda / M. Van der Veen 2008 (footnote 125), 201-209. – S. Jacomet / C. Brombacher 2009 (footnote 6), 27-106.

[128] J. P. Pals / T. Hakbijl, Weed and insect infestation of a grain cargo in a ship at the Roman fort of Laurium in Woerden (Province of Zuid-Holland). Review of Palaeobotany and Palynology 73, 1992, 287-300. – J. K. Haalebos, Ein römisches Getreideschiff in Woerden (NL). Jahrb. RGZM 43, 1996, 475+487.

[129] Findings of straw have not been registered.

[130] See U. Körber-Grohne / U. Piening 1983 (footnote 70), 17-88. – M. Klee, Ackerbau und Grünlandwirtschaft: Ergebnisse der archäobotanischen Untersuchungen. In: J. Rychener (ed.) Der römische Gutshof in Neftenbach. Druck Kommunikation Verlag (Zürich 1999) 464-472.

Molinio-Arrhenatheretea	*Achillea millefolium*	6.-9	*Nardus stricta**	5.-7
cultivated meadows and pastures	*Agrostis* sp.	6.-8	*Plantago lanceolata*	4.-9
	Bromus cf. *commutatus*	5.-6	*Plantago media*	5.-7
	Bromus hordeaceus	5.-6	*Poa pratensis*	5.-6
	Centaurea sp.	6.-9	*Potentilla erecta*	6.-9
	Dactylis glomerata	5.-6	*Prunella vulgaris*	6.-9
	Deschampsia caespitosa	6.-8	*Ranunculus acris*	4.-9
	Festuca rubra/ovina	5.-9	*Rhinanthus* sp.	5.-8
	Holcus lanatus	5.-8	*Rumex acetosa*	5.-8
	Leontodon autumnalis	7.-9	*Silene vulgaris*	6.-9
	Leucanthemum vulgare	5.-10	*Taraxacum officinale*	4.-10
	Lolium perenne	6.-9	*Trifolium pratense*	**5.-10**

Festuco-Brometea	*Dianthus* sp.	5.-10
moor or less arid poor calcareous swards	*Medicago lupulina*	5.-9
	Medicago minima	5.-6
	Odontites sp.	6.-10
	Prunella grandiflora	6.-10
	Scabiosa columbaria	6.-9
	Trifolium cf. *campestre*	5.-8

Table 4 Grassland taxa recorded in Pit BK 99-04-01 indicating blooming times of each taxon (indicated by month 1 to 12).

Summary

Indications for agricultural practices in and around Roman Oedenburg are numerous (**tab. 4**). Cereal cultivation played an important role in the local agricultural system. Study of the arable weeds suggests that cereal fields were located on the calcareous gravel terraces along the Rhine as well as on the nutrient-rich loamy and sandy soils in the near vicinity of the settlement. Although local cultivation of cereals is evident, import of cereals can not be excluded. Whether this was a single event at the beginning of the Roman occupation in Oedenburg or a continuous event throughout its occupation is hard to verify. In and around the settlement small garden plots were operated for the cultivation of mainly vegetables, spices and possibly fruit trees. Besides cereal fields and gardens, it is thought that meadows and pastures were located in the near vicinity of the settlement, the plant remains indicate their management.

Roman introductions and imports

At the beginning of the Roman period many new food plants are introduced north of the Alps, many of which are also found in Roman Oedenburg[131]. In **Table 5** the newly introduced and imported food plants found in the studied samples are summarised. In this table we differentiate in the first place between those

[131] These food plants have been the subject of a previous publication, therefore we only briefly touch upon this issue; see P. Vandorpe / S. Jacomet 2005 in M. Reddé et al. Oedenburg (footnote 39), 252-257.

Imports		
Nigella sativa	black cumin	*spice*
Olea europaea	olive	*fruit*
Phoenix dactylifera	date	*fruit*
Pinus pinea	stone pine	*nut*
Piper nigrum	black pepper	*spice*
Imported, local cultivation is questioned		
Carthamus tinctorius	saflor	*oil, dye and fibre plant*
Cucumis melo	melon	*fruit*
Cucumis sativus	cucumber	*fruit*
Ficus carica	fig	*fruit*
Lagenaria siceraria	bottle gourd	*vegetable*
Prunus persica	peach	*fruit*
Vitis vinifera	grapevine	*fruit*
Introduced and local cultivation plausible		
Allium sativum	garlic	*vegetable*
Anethum graveolens	dill	*spice*
Apium graveolens	celery	*spice*
Beta vulgaris	beet	*vegetable*
Carum carvi	caraway	*spice*
Coriandrum sativum	coriander	*spice*
Foeniculum vulgare	fennel	*spice*
Juglans regia	walnut	*nut*
Malus domestica	apple	*fruit*
Morus nigra	black mulberry	*fruit*
Pastinaca sativa	parsnip	*vegetable*
cf. *Petroselinum crispum*	parsley	*spice*
Pimpinella anisum	aniseed	*spice*
Prunus avium/cerasus	cherry	*fruit*
Prunus domestica	plum	*fruit*
Prunus insititia	plum	*fruit*
Pyrus communis/pyraster	pear	*fruit*
cf. *Ruta graveolens*	common rue	*spice*
Satureja hortensis	summer savory	*spice*

Table 5 Overview of the newly introduced and imported food plants recorded in Roman Oedenburg.

plants which can and those which can not grow north of the Alps. Species belonging to the last group require different climatic conditions and were thus certainly imported. Species belonging to the first group could grow in Alsace meaning the climatic conditions do not prohibit their growth (they may however be damaged by cold winters or late frosts).

As stated above, macro plant remains combined with data from off-site pollen cores can suggest local production. In the studied area, there exist only very few analyses of off-site pollen profiles[132]. Study of off-site pollen profiles are only then of use to determine local cultivation when the pollen can be determined to species level. This is for many of the listed plants difficult. In addition, many of the newly introduced food plants are insect-pollinated species. This means their pollen is hardly ever found in off-site pollen cores. The ideal context to recover pollen of these food plants would be a compost heap or garden structures.
Besides the study of off-site pollen profiles, analyses of ancient DNA[133] enables the exploration of local cultivation. Studies of ancient DNA have the potential to add to the identification of a taxon (e.g. wild versus domesticated), in addition the origin of plant taxa and the kinship between certain plant taxa can be explored. The results obtained from aDNA studies always need to be seen relative to other archaeological evidence to give a reliable result.
In general, local cultivation of newly introduced food plants is thought to have started towards the 2nd half of the 1st Cent. AD[134]. This theory is mainly supported through the more frequent findings of these food plants from that time onwards. We think this theory could apply for Roman Oedenburg, too.
In the following we discuss the origin of the imported food plants and the plausibility of local cultivation of certain plants.

Origin of the imported food plants

The majority of the new food plants, introductions as well as imports, originate from the Mediterranean region. Findings of olive, date and stone pine nuts in the 1st and 2nd Cent. AD layers, all of which can not grow in Alsace, confirm the steady trade contacts with the South[135]. They represent uncommon findings in Oedenburg and are regarded as »luxury« food (or at least as »food« for very special purposes like rituals) in all areas north of the Alps[136].
Another imported plant represents black cumin (*Nigella* cf. *sativa*). Black cumin is native in the Mediterranean area too and does not grow north of the Alps. It is used as a condiment and a medicinal plant in southern Europe and the Near East[137]. Archaeological findings of black cumin are very rare north of the Alps, hitherto no other recordings of this spice are known for the Roman period[138]. The mineralised seeds found in Roman Oedenburg are therefore important findings.
Within the Oedenburg plant assemblage, there are only few plant taxa which are evidence of long-distance trade relations. They include black pepper (*Piper nigrum*) and bottle gourd (*Lagenaria siceraria*). Black pepper is imported from India[139]. Bottle gourd is thought to be imported from subtropical Africa. Recent DNA

[132] Pollen profile in Mengen (G) published in L. Wick / A. Schlumbaum 2009 (footnote 11), 37-43 - pollen profile Riedgraben see chapter 1 of this volume
[133] e.g. B. Pollmann / S. Jacomet / A. Schlumbaum, Morphological and genetic studies of waterlogged Prunus species from the Roman vicus Tasgetium (Eschenz, Switzerland). Journal Arch. Scien. 32, 2005, 1471-1480. – A. Schlumbaum / M. Tensen / V. Jaenicke-Després, Ancient plant DNA in Archaeobotany. Veg. Hist. Arch. 17, 2008, 233-234.
[134] C. Bakels / S. Jacomet 2003 (footnote 50), 542-557.
[135] Transport of e.g. vegetable foods, ceramics etc. is very fragile, therefore it is likely that they were stored in boxes which were lined with vegetative material (e.g. straw) to secure their transport. This could have been another way of introducing plants from the Mediterranean region into Alsace.
[136] C. Bakels / S. Jacomet 2003 (footnote 50), 542-557 – P. Vandorpe / S. Jacomet 2005 in M. Reddé et al. (footnote 39), 252-257 and cited literature – P. Vandorpe / S. Jacomet in press (footnote 19) and cited literature.
[137] A. Heiss / K. Oeggl 2005 (footnote 54), 562-570.
[138] A. Heiss pers. comm.
[139] S. Jacomet / J. Schibler, Les contributions de l'archéobotanique et de l'archéozoologie à la connaissance de l'agriculture et de l'alimentation du site de Biesheim-Kunheim. In: S. Plouin / Reddé M. / Boutanin C. (eds.) La frontière romaine sur le Rhin supérieur. À propos des fouilles récentes de Biesheim-Kunheim, 60-69.

studies however have proven that bottle gourds are independently domesticated in Asia, long before its domestication took place in Africa[140]. The morphology of the bottle gourd seeds shows that the ones found in Roman Oedenburg are of the Asian type[141]. It is therefore likely that bottle gourd arrived in Oedenburg via the same routes as e.g. black pepper. On-going research into ancient DNA of the Roman bottle gourd seeds along with morphological study of the seeds found in Oedenburg confirms this theory[142].

Assumptions about local growing and import?

As stated above, gardening of vegetables and spices and growing of fruit trees including walnut and chestnut develop during the Roman period[143]. It is believed that the majority of newly introduced spices and vegetables were cultivated locally in the garden plots in and around the settlement[144]. The beginning of local cultivation of fruit trees is difficult to prove / evidence. Jacomet[145] provides a good overview of the cultivated plants introduced north of the Alps during the Roman period. In this publication the issue of local cultivation versus import is discussed. It is thought that many of the fruits were dried prior to transport for reasons of preservation. Figs e.g. can grow north of the Alps but the fruits hardly ever ripen. The findings of fig on Roman archaeological sites north of the Alps are therefore mainly interpreted as imports of dried fig fruits[146]. Accordingly, we think many of the grape pips reached the settlement as dried raisins.
In the following we consider local cultivation of selected food plants based on findings in Oedenburg. To confirm the growing of fruit trees, evidence of off-site pollen profiles or wood/trunks is required. For most fruit and/or nut trees, these are not available. However, pollen of walnut was identified in a ditch in the temple area[147]. These deposits are dated to the 2nd and 3rd Cent. AD. In addition, charred wood was identified in the offering pit (see chapter 8). Based on these findings, we assume walnut trees were planted within the temple complex. It is likely that they were restricted to the sacred area as no other pollen evidence for walnut was found in Oedenburg. Archaeological findings of walnut are, in the early Roman period, rather scarce north of the Alps[148]. At that time walnuts were not part of the basic diet but represented delicacies[149]. It is only towards the end of the 1st Cent. AD that archaeological findings of walnut become more abundant which can possibly be linked to the beginning of the local cultivation of this tree[150]. Consequently the earliest macro remains of walnut we find, in all probability represent imported goods[151]. As with walnut, it is plausible that the growing of other fruit trees (e.g. peach) initiated also towards the end of the 1st Cent. AD.

Exposition présentée au Musée gallo-romain de Biesheim, 31 août au 20 octobre 2001. Musée Gallo-Romain de Biesheim (Biesheim 2001) 60-69. – see P. Vandorpe / S. Jacomet 2005 in M. Reddé et al. (footnote 39), 252-257 and cited literature; S. Jacomet / C. Brombacher 2009 (footnote 6), 27-106 and cited literature.

140 D. L. Erickson / B. D. Smith / A. C. Clarke / D. H. Sandweiss / N. Tuross, An Asian origin for a 10000-year-old domesticated plant in the Americas. Proc. Nat. Acad. Scien. United States of America (PNAS) 102, 2005, 18315-18320.

141 J. A. Kobyakova, The bottle gourd. Bull. Applied Botany, Genetics and Plant Breeding 23, 1930, 475-520.

142 P. Vandorpe / A. Schlumbaum, Genetische und morphologische Untersuchungen am römischen Flaschenkürbissen aus der Nordwestschweiz, in prep.

143 e.g. J. Wiethold 2003 (footnote 103), 269-282.

144 Based on the regular findings of certain condiments A. Livarda / M. Van der Veen 2008 (footnote 125), 201-209. suggest local cultivation of these species

145 S. Jacomet 2003 (footnote 3), 173-229.

146 C. Bakels / S. Jacomet 2003 (footnote 50), 542-557. – S. Jacomet / C. Brombacher 2009 (footnote 6), 27-106. – A. Kreuz 2004 (footnote 118), 97-292.

147 See chapter 8.

148 S. Jacomet 2003 (footnote 3), 173-229.

149 J. André 1998 (footnote 44), 161ff.

150 C. Bakels / S. Jacomet 2003 (footnote 50), 542-557.

151 P. Vandorpe / S. Jacomet 2005 in M. Reddé et al. Oedenburg (footnote 39), 252-257.

As for the beginnings of wine growing in the southern Upper Rhine region, the information is vague. It is clear that the climatic conditions needed for wine growing are available; today the Alsace is a well-known wine growing area. However to determine when local cultivation first started[152], there is a lack of evidence. So far no archaeological wood could be identified, in addition pollen from wild and cultivated grape can not be differentiated.

Bottle gourd (*Lagenaria siceraria*) represents another doubtful case of local cultivation. It is not native in the Upper Rhine region. However, experiments in the Botanical Garden in Basel in the summer of 2000 have demonstrated that bottle gourd can grow in the climatic conditions of the Upper Rhine region[153]. So far no pollen data is available to support this theory. Seeds of bottle gourd at the Roman site »Le Bois Harlé« (Oise, France), were recovered from a well located within a large ditched enclosure divided into small plots[154]. This complex was interpreted as small garden plots used for horticultural purposes. In »Le Bois Harlé«, it is assumed that the combination of bottle gourd seeds and garden plots could be the indication for its local cultivation[155]. Local cultivation is also believable in Oedenburg. The findings of a nearly whole fruit, stalks etc. point in this direction. In addition, the climate in the southern Upper Rhine area is a lot milder than in Northern France.

The findings of safflower seeds (*Carthamus tinctorius*) represent another important finding. First of all, findings of safflower are very rare North of the Alps, if not absent in Roman times. Kroll[156] identified safflower in Feudvar, a Bronze Age settlement in Serbia. Other archaeological findings of safflower are recorded in the Near East and Egypt[157]. The safflower seeds in Oedenburg are most probably not the remains of oil extraction. Oil is much easier to transport as a finished product. Whether or not they are the remains of dyeing practices is difficult to tell while no flower fragments were recovered. A hypothesis could be that the safflower seeds are part of a seed transport for the initiation of local cultivation. In Roman Oedenburg, they are found as part of waste material. The presence of small circular wholes within almost every seed is most likely the result of insects which could mean we are dealing with an infested seed transport.

Chronological and spatial tendencies across the civil settlement

Spatial variations across the site

In the Roman civil settlement, excavations were conducted in three distinct locations (fig. 7.1). These locations do not only represent a spatial difference but also implicate a different type of occupation. Hence

[152] In Wallis recent studies identified the beginning of wine growing in the Iron Age; see P. Curdy / O. Paccolat / L. Wick, Les premiers vignerons du Valais / Die ersten Weinbauern im Wallis. Arch. Schweiz 32, 2009, 2-19.

[153] S. Jacomet / J. Schibler 2001 (footnote 139), 60-69 - S. Jacomet / C. Brombacher 2009 (footnote 6), 27-106.

[154] A. E. de Hingh, Bottle gourd seeds at Gallo-Roman Le Bois Harlé (Oise, France). Analecta Praehistorica Leidensia 26, 1993, 93-97.

[155] A. E. de Hingh 1993 (footnote 154), 93-97.

[156] H. Kroll, Saflor von Feudvar, Vojvodina. Ein Fruchtfund von Carthamus tinctorius belegt diese Färbepflanze für die Bronzezeit Jugoslawiens. Arch. Korrbl. 20, 1990, 41-46.

[157] M. van der Veen, The botanical evidence. In: V. A. Maxfield / D. Peacock (eds.) Survey and excavation Mons Claudius 1987-1993. Excavations: Part I. Institut Francais d'archéologie orientale, Fouilles de l'IFAO 2, 2001, 175-246 - W. A. van Zeist / S. Bottema / M. van der Veen, Diet and vegetation at Ancient Carthage. The archaeobotanical evidence. Groningen Institute of Archaeology (Groningen 2001) 104. – W. A. van Zeist / W. Waterbolk-van Rooijen / R. M. Palfenier-Vegter / G. J. de Roller, Plant cultivation at Tell Hammam Et-Turkman. In: W. A. van Zeist (ed.) Reports on archaeobotanical studies in the Old World. (Groningen 2003) 61-114. – C. E. Vermeeren / R. T. J. Cappers, Ethnographic and archaeobotanical evidence of local cultivation of plants in Roman Berenike and Shenshef (Red Sea coast, Egypt). BIAXiaal 140, 2002, 1-12.

the spatial variation of plant macro remains across the civil settlement is likely to be more and/or primarily dependent on the character of the excavated structures and to a lesser extent on its immediate surroundings.
The area Civil East is an area of intense human activity along a navigable arm of the river Rhine. The plant assemblages recovered from this area represent mainly latrine and other cultural waste deposits. The majority of the archaeobotanically-analysed structures are contemporaneous with the 1st Cent. AD military camp; five structures are definitively in use after the abandonment of the camp. Therefore, an association between the 1st Cent. AD structures and the military occupation of the camp is plausible. It is suggested that waste products, such as latrine contents, produced in the camp were discarded in the area Civil East. According to the archaeologists, a wooden bridge existed across an active palaeochannel that connected the camp to this area of the settlement. In addition to waste disposal, it is thought that handicraft activities were carried out outside the camp (in the samples there is evidence for metal working). At least in the 1st Cent. AD, this area was under influence of the military presence.
The area Surroundings of the temple complex is in its Western part civilian in character (living quarters). The plant assemblages recovered from this area originate from waste deposition. In contrast to the area Civil East, latrine deposits are rare which impedes a direct comparison of e.g. eating habits. Waste products include mainly cereal processing debris. In its Eastern part this area is related to sacred practices (e.g. temples, the basin, the stone built well). Nevertheless no evidence of this sacred nature is found in the plant macro remains.
Finally, the temple complex has an obvious sacred nature. This is confirmed by findings of vegetable offerings. The remaining plant macro remains represent a mix of natural and human deposits. The latter are very poor and can be defined as settlement noise.

A difference in distribution of the cultural and gathered plants is apparent. In the area Civil East an abundance of food plants is recorded. In particular fruits and spices[158] are well represented, varied and unique. They include many locally grown plants as well as imported plants. Cereal remains are dominated by glume wheats and broomcorn millet. In the Surroundings of the temple complex, a less varied assemblage of edible plants is recorded (primarily considering the spices). Yet imported food plants are also found here (e.g. olive, bottle gourd). Considering cereal remains, we remark that findings of barley and rye are more frequent than glume wheat. Finally, we notice that the use of some plant species is restricted to sacred practices. Findings of date and stone pine are only recorded in the temple complex. It is thought that only those plants required for offering practices are deliberately brought to the temple complex. This assumption is based on the near absence of plant remains representing waste material within the studied structures.

Considering the wild plant taxa, there is hardly any spatial diversity across the site. Noteworthy is the presence of grassland taxa in the area Civil East. They originate of two pits (BK 99-04-01 and BK 01-04-24). As discussed it is likely that these deposits derive from stable manure and/or litter. They could be related to the presence/keeping of animals like horses for the military. The near absence of arable weeds in the temple complex can possibly be explained through the lack of cereal waste products in its samples.

[158] A. Livarda / M. Van der Veen 2008 (footnote 125) 201-209 claim a strong military association considering the dispersal of condiments in Northwest Europe during the Roman times.

To summarise, there are differences in plant distribution across the civil settlement. These can be clarified on the one hand by the different nature of the settlement (military versus civil versus sacred). On the other hand it is likely that differences in plant distribution are the result of different types of excavated contexts (latrine versus offering pit versus layers of crop processing debris). In all three areas of excavations, we examined very different types of structures and/or deposits. It is clear that a deposit of crop processing activity provides a completely different plant assemblage than a latrine or a deposit of vegetable offerings.

Chronological changes

Assumptions about chronological change are possible when a large dataset of well-dated structures is available. For Roman Oedenburg, we can only try to differentiate/compare 1st and 2nd Cent. AD deposits. This is however delicate as many samples could not be dated in much detail. In the Surroundings of the temple complex, the majority of structures could not be dated with certainty; none are attributed to the 2nd Cent. AD. In the temple complex, five chronological phases are determined. Nonetheless in this area the majority of plant assemblages are too poor to make any inferences about chronological changes. Only the area Civil East allows such a comparison.
In the area Civil East, structures could be dated to both the 1st (N=20) and 2nd Cent. AD (N=5). Based on ubiquity of plant species within the samples, no clear difference between the plant assemblages recovered from the 1st and 2nd Cent. AD is noticeable. However, the amount of »exotic« food plants is generally high in the 2nd Cent. AD pits. We infer that even after the abandonment of the military occupation in Oedenburg, the local population had access to the »exotic« and typically Roman food plants.
This could be due to several reasons. First of all, the large temple complex was in use until the 3rd Cent. AD and possibly represented a centre of pilgrimage. Vegetable offerings usually included exotic food plants, as shown by the findings of date and stone pine. Therefore, trade with the Mediterranean area was still active after the abandonment of the military camp. A second hypothesis could be the existence of a port in Roman Oedenburg. The settlement could have functioned as a centre of distribution of goods for settlements not located along the river Rhine (see also below). So far no archaeological evidence can support this hypothesis. Another hypothesis of the more frequent findings of exotic food plants (e.g. mulberry, walnut, etc…) could be the start of local cultivation of the introduced food plants and hence the more frequent findings.

Significance and/or standing of the site Oedenburg during the Roman period based on the archaeobotanical data

Based on the archaeological evidence, Oedenburg was an important settlement in the Roman period; it was continuously inhabited and well integrated in the Roman road network. It was situated on the road leading from *Augusta Raurica*/Augst or *Epomanduodurum*/Mandeure via *Cambete*/Kembs to *Argentorate*/ Strasbourg. It is possible that the archaeological site Oedenburg can be identified as Roman *Argentovaria*[159].

[159] It cannot be said with certainty as no inscriptions were yet recovered. See M. Reddé et al. 2005 Oedenburg (footnote 39), 215ff.

Argentovaria was mentioned by Ptolemaeus as the *polis* of the Rauraci and afterwards indicated in the *Itinerarium of Antoninus* and the *Tabula Peutingeriana*[160]. The Rauraci are the indigenous population occupying the southern Upper Rhine region and part of the Hochrhein area. Oedenburg was located in the northern part of their territory and represented an important settlement besides the colonial town of *Augusta Raurica* (Augst, CH).

Based on historical evidence[161], Oedenburg was located on the border (river Rhine) of the Roman Empire in the early Roman period. From 70 AD onward the Romans begin their conquest to the East of the river Rhine. Towards the end of the 3rd Cent. AD, the border of the Roman Empire is relocated and is again formed by the river Rhine. At that time, Alsace is once more prone to raids of the Germanic tribes and now belongs to the *Provincia Maxima sequanorum*.

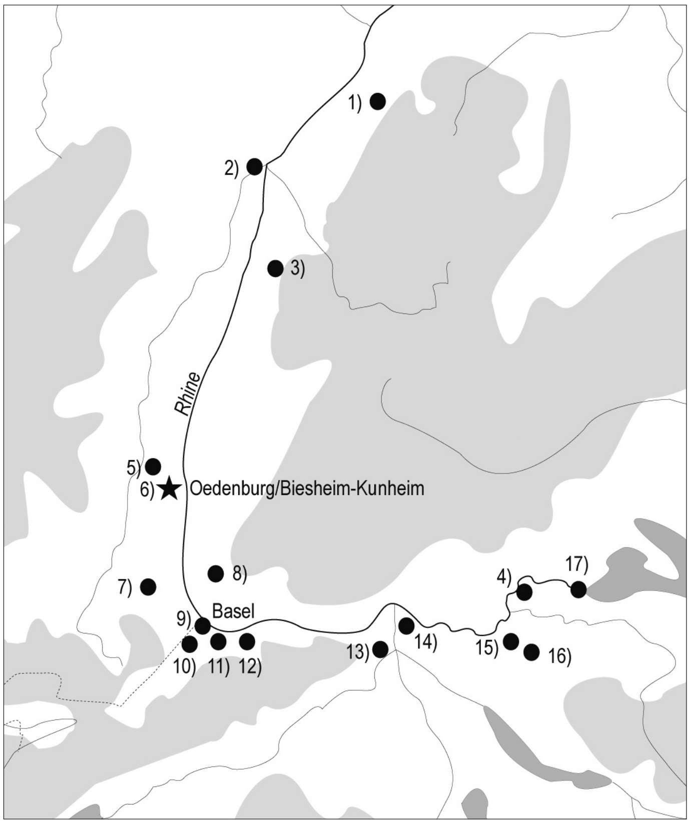

Fig. 7.12 Location of sites used in our regional comparison. 1) Baden-Baden (G), 2) Strasbourg (F), 3) Lahr-Dinglingen (G), 4) Schleitheim (CH), 5) Oedenburg (F), 6) Horbourg-Wihr (F), 7) Sierentz (F), 8) Badenweiler (G), 9. Basel (CH), 10) Allschwill (CH), 11) Reinach (CH), 12) Augst (CH), 13) Windisch (CH), 14) Zurzach (CH), 15) Neftenbach (CH), 16) Oberwinterthur (CH), 17) Eschenz (CH).

To understand the standing of the civil settlement in Oedenburg based on the archaeobotanical record, we collected archaeobotanical data of sites located in a selected region. **Figure 7.12** shows the geographical location of the settlements. For the purpose of this comparison, we have included those food plants which were imported and/or introduced with the beginning of the Roman period as listed in our table 7.4. **Table 7.6** lists the sites considered for regional comparison and summarises the data. The data is presented here as presence or absence of a given taxon. A site is defined as a well dated phase or defined type of settlement within an excavation, hence the plural occurrence of several places[162]. In total 38 sites were considered for regional comparison (Oedenburg excluded), they are located in 17 different places, in France (3), Germany

[160] See M. Reddé et al. 2005 Oedenburg (footnote 39), 215ff.

[161] After H. Bender / G. Pohl, Der Munsterberg in Breisach, Bd. 1. Römische Zeit und Frühmittelalter Karolingisch-vorstaufische Zeit. Verlag C.H. Beck (Munchen 2005).

[162] After C. Bakels / S. Jacomet 2003 (footnote 50), 542-557.

(3) and Switzerland (10). Sites were selected on the basis of their geographical location and on the basis of their chronology. The region of comparison represents partly the territory inhabited by the indigenous people the Rauraci.
The geographical area was defined as follows: all sites located in and close to the alluvial plains of the river Rhine, with Baden Baden (G) as northern limit, the Vosges mountains as Western limit, the Jura mountains as Southern limit and Eschenz/*Tasgetium* (CH) as eastern limit. In addition we included in our table all plus/minus well investigated and datable sites from the North of Switzerland like Oberwinterthur/*Vitudurum* or Windisch/*Vindonissa* (CH), the latter is situated on one of the Rhine's tributaries (the river Aare). Geographically, the core of the selected area of comparison can be defined as the southern Upper Rhine region and the »Hochrhein« region. The latter represents that part of the river Rhine coming out of Lake Constance near Eschenz/*Tasgetium* until Basel in Switzerland.
For the chronological framework we concentrated on 1st and 2nd Cent. AD findings while the majority of the archaeological layers in Oedenburg belong to this period. Within our selected area of research, we made three chronological groups, namely 1st Cent. AD (21 sites), 1st/2nd Cent. AD (7 sites) and 2nd Cent. AD (10 sites). These three groups correspond to the chronological framework we defined for our main analysis of the Oedenburg samples.
Within our selection of sites, there are different types of settlements. The majority is of a civilian nature, only three have an exclusively military character. They include the military camps of Vindonissa (Excavation Windisch-Breite HP 5-7, excavation Windisch-Dägerli/Südfriedhof and Schutthügel) and Strasbourg (Excavation Grenier d'abondance). Four sites have a clear civilian character but included a military occupation of the site[163]. They include Basel (Excavation Rittergasse), Vindonissa (Excavation Windisch-Breite HP 2-4) and Zurzach Tenedo in Switzerland and the site under study, Oedenburg. In addition two sites representing Roman *villae* are included, in particular Reinach (BL) (Excavation Mausackerweg) and Neftenbach (ZH), both in Switzerland.
The different types of settlements contained many different types of contexts. Plant assemblages have been recovered from pits, latrines, hearths, ovens, layers, wells, graveyards and cremation graves, drainage channels and cellars. As the type of context mainly determines the composition and richness of the plant assemblage – as clearly shown for Oedenburg (see above) – in a strict sense, comparison between different types of contexts should be avoided. Nevertheless, as the data available for our area of comparison is limited, we had to include all analysed contexts without differentiating between them in our table. For one site (Oberwinterthur, Excavation Gebhardtstrasse) the information to the type of context could not be obtained. Within the frame of future research the evaluation of the mentioned sites according to structures is planned.
In addition, we consider archaeological sites with different conditions of preservation. In 3.1 we discussed the influence of the conditions of preservation on the representation of plant remains on archaeological sites. It is clear that the plant assemblage of a site where waterlogging occurred, is often much more rich and diverse in comparison to sites located in dry deposits where plant remains can only survive as charred and/or mineralised remains. However there are exceptions when e.g. dealing with layers of destruction through fire. The plant spectrum recovered from such deposits (e.g. Vindonissa, Excavation Windisch-Breite) can be as rich as those from certain waterlogged deposits. In our area of comparison, 19 sites

[163] After S. Jacomet 2003 (footnote 3), 173-229.

included a mainly waterlogged plant assemblages, 16 sites had a predominant charred plant assemblage, 1 an exclusively mineralised plant assemblage (Zurzach[164]) and two a mainly mineralised plant assemblage (Augst, Excavation Tophaus[165] and the legionary camp phase of Vindonissa (HP 5-7), Excavation Windisch-Breite[166]). As the conditions of preservation of plant macro remains are influenced by so many different factors, we have not differentiated between types of preservation in our table.
A last issue which can influence the outcome of a regional comparison is the type and scale of analysis. It is clear that the volume of soil and number of samples studied in Oedenburg are of a much higher scale than the majority of sites in the area of comparison (2513.3 litres of soil for 310 samples).

To begin with, we evaluate the attested plant taxa. From **Table 6** we infer that imported food plants (of which nine species are identified) are uncommon in the area of comparison, both in the 1st and the 2nd Cent. AD (five sites). Besides Oedenburg, they are found in those settlements with an exceptional preservation of macro remains (the pre-military and legionary camp phases of Vindonissa, (Excavation Windisch-Breite)[167]; and a well in the *vicus* of Lahr-Dinglingen) and those linked to sacrificial practices (the graveyard belonging to the legionary camp of Vindonissa (Excavation Windisch Dägerli, Südfriedhof); the temple area in the *vicus* of Sierentz (Excavation Zac Hoell)). Considering the latter, date (*Phoenix dactylifera*) and stone pine (*Pinus pinea*) were registered in the fillings of an offering pit located within a temple area of the *vicus* of Sierentz (Excavation Zac Hoell). In the graveyard belonging to the legionary camp of Vindonissa (Excavation Windisch Dägerli, Südfriedhof[168]) olive and date were recorded. Other imports in the pre-military camp phases of Vindonissa include olive (*Olea europaea*), date, and possibly stone pine. In the 2nd Cent. AD well in the *vicus* of Lahr-Dinglingen[169] a peppercorn (*Piper nigrum*) was registered.
There are only few of the imported food plants which were present in our selected area but not recorded in Oedenburg. These include one pulse, one fruit and two nut species. Chickpea (*Cicer arietinum*) was possibly registered in the earliest phases of the legionary camp of Vindonissa (Excavation Windisch-Breite (HP5-7)[170]). The representation of pulses on archaeological sites is highly influenced by the conditions of preservation. In Oedenburg, we have only few findings of pulses as they do not preserve well in waterlogged environments (see above). In the early Roman period (pre-military camp phases) of Vindonissa (Excavation Windisch-Breite[171]) charred seeds and fruit flesh of pomegranate (*Punica granatum*) were found at the bottom of two barrels[172]. Findings of pomegranate are very rare also in the Mediterranean area[173]. Another unique import in the pre-military camp phases of Vindonissa includes pistachio (*Pistacia* sp.). The latter is a single find and dates between 10 BC and 15 AD[174]. Waterlogged almond (*Prunus dulcis*) was found in a 2nd Cent. AD well in the *vicus* of Lahr-Dinglingen[175]. Almond and pistachio are hardly ever recovered from

[164] S. Jacomet / C. Wagner, Mineralisierte Pflanzenreste aus einer römischen Latrine des Kastell-Vicus (Zurzach). In: R. Hänggi / C. Doswald / K. Roth-Rubi (eds.) Die frühen römischen Kastelle und der Kastell-Vicus von Tenedo-Zurzach. Aargauische Kantonsarchäologie (Brugg 1994) 321-343.
[165] H. Hüster Plogmann / S. Jacomet / M. Klee / U. Müller / V. Vogel Müller, Ein stilles Örtchen. Zur Latrinengrube in Feld 6, Grabung TOP-Haus AG, Kaiseraugst (2001.01). Jahresber. Augst u. Kaiseraugst 24, 2003, 159-191.
[166] S. Jacomet 2003 (footnote 3), 173-229.
[167] It concerns burnt destruction layers. In addition to conditions of preservation the presence of the military is likely to play an important role.
[168] M. Petrucci-Bavaud / A. Schlumbaum / S. Jacomet 2000 (footnote 94), 151-159.
[169] M. Roesch pers. comm.
[170] S. Jacomet 2003 (footnote 3), 173-229.
[171] S. Jacomet / D. Kucan / A. Ritter / G. Suter / A. Hagendorn, Punica granatum L. (Pomegranates) from early Roman contexts in Vindonissa (Switzerland). Veg. Hist. Arch. 11, 2002, 79-92. – S. Jacomet 2003 (footnote 3), 173-229.
[172] Recent excavations in the vicus of Eschenz/Tasgetium have yielded waterlogged pomegranate seeds too (S. Jacomet, pers. comm.). They date in the 1st Cent. AD.
[173] For an overview see S. Jacomet / D. Kucan / A. Ritter / G. Suter / A. Hagendorn 2002 (footnote 176), 79-92. – S. Jacomet 2003 (footnote 3), 173-229.
[174] S. Jacomet 2003 (footnote 3), 173-229.
[175] M. Roesch pers. comm.

								Group 1 : Imports									Group 2 : Imports and local cultivation questioned							
Location	Status	Preservation	N° of samples	Volume	Total group 1	Total group 2	Total group 3	*cf. Cicer arietinum*	*Nigella cf. sativa*	*Olea europaea*	*Phoenix dactylifera*	*Pinus pinea*	*Piper nigrum*	*Pistacia sp.*	*Prunus dulcis*	*Punica granatum*	*Carthamus tinctorius*	*Cucumis sativus*	*Cucumis melo*	*Cucumis melo/sativus*	*Ficus carica*	*Lagenaria siceraria*	*Prunus persica*	*Vitis vinifera*
1st Cent. AD																								
Total findings 1st Cent. AD except Oedenburg								1	0	1	2	1	0	1	0	1	0	0	0	0	10	0	3	9
Augst, Forum 1 and 2 (CH)	civil	ch	9	12l	0	0	0																	
Augst, Insula 23 (CH)	civil	ch	12	20.15l	0	0	0																	
Augst, Kastelen 1 (CH)	civil	ch	7	48l	0	0	0																	
Augst, Sägerei Ruder (CH)	civil	ch	23	229.4l	0	0	2																	
Basel, Rittergasse (CH)	civil with mil.occ.	ch	7	37.6l	0	0	0																	
Basel, Rittergasse (CH)	civil with mil.occ.	ch	11	57.1l	0	2	7														1			1
Oberwinterthur, Gebhardtstrasse (CH)	civil	ch	1	5l	0	0	1																	
Sierentz, Zac Hoell	civil	ch	1	280.4l	2	2	1				1	1									1			1
Windisch-Breite 1996-1998 (HP2-4) (CH)	civil and military	ch/min	55	547l	4	1	5			1	1	cf		1		1			cf				1	
Windisch-Breite 1996-1998 (HP5-7) (CH)	military	ch/min	3	39l	1	2	7	1												cf	1			1
Zurzach, Tenedo (CH)	civil with mil.occ.	min	4	4.1l	0	2	7														1			1
Eschenz, Areal Rebmann (CH)	civil	wl	1	1.62l	0	1	10														1			
Windisch, Schutthügel (CH)	military	wl	no	no	0	1	3																1	
Allschwil, Neuweilerstrasse (CH)	unclear	wl/ch	7	32.75l	0	2	10														1			1
Baden-Baden, Gernsbacher Strasse 30 (GE)	civil	wl/ch	14	2904g	0	1	4														1			
Badenweiler (GE)	civil	wl/ch	11	29.5l	0	1	6																	1
Eschenz, 1999.010 (CH)	civil	wl/ch	2	11.2l	0	2	2														1			1
Oberwinther, Römerstrasse and Unteres Bühl (CH)	civil	wl/ch	35	no	0	2	8														1		1	
Oberwinterthur, Kastellweg	civil	wl/min	2	34.8l	0	2	7														1			1
Strasbourg, Grenier d'abondance (F)	military	wl/ch	2	4l	0	0	2																	
Oberwinther, Gebhardtstrasse (CH)	civil	wl/ch/min	1	6l	0	1	1																	1
Oedenburg/Biesheim-Kunheim (F)	civil with mil.occ.	wl/ch/min	164	1127.5l	2	7	19			1			1				1		1	1	1	1	1	1
1st/2nd Cent. AD																								
Total findings 1st/2nd Cent. AD except Oedenburg								0	0	1	1	0	0	0	0	0	0	0	0	0	2	0	2	6
Augst, Rheinstrasse (CH)	civil	ch	31	no	0	2	2														1			1
Augst, Rundbau beim Osttor (CH)	civil	ch	4	65l	0	0	0																	
Reinach, Mausackerweg (CH)	civil (villa)	ch	5	no	0	1	1																	1
Windisch, Dägerli (CH)	military	ch	217	no	2	3	6			1	1										1		1	1
Neftenbach (CH)	civil (villa)	ch/min/metal	159	678l	0	1	6																	1
Baden-Baden, Gernsbacher Strasse 30 (GE)	civil	wl/ch	3	1297g	0	2	5																1	1
Eschenz, 1999.010 (CH)	civil	wl/ch	2	16.5l	0	1	1																	1
Oedenburg/Biesheim-Kunheim (F)	civil with mil.occ.	wl/ch/min	70	575.3l	0	5	13													1	1	1	1	1
2nd Cent. AD																								
Total findings 1st/2nd Cent. AD except Oedenburg								0	0	0	0	0	1	0	1	0	0	0	2	1	8	1	2	6
Augst, Kastelen 2 (CH)	civil	ch	4	13.8l	0	1	1														1			
Augst, Kastelen 2 (CH)	civil	ch	3	34l	0	1	1														1			
Augst, Tophaus (CH)	civil	ch/min	8	38l	0	3	6											cf	cf	1	1			1
Horbourg-Wihr, Nouvelle Mairie (F)	civil	wl	no	no	0	3	4												1				1	1
Baden-Baden, Gernsbacher Strasse 13 (GE)	civil	wl/ch	2	1432g	0	2	8														1			1
Eschenz, 1999.010 (CH)	civil	wl/ch	2	9.5l	0	1	3														1			
Oberwinther, Gebhardtstrasse (CH)	civil	wl/ch	4	44.25l	0	2	7														1			1
Schleitheim, Z'underst Wyler	civil	wl/ch	2	27.9l	0	1	8														1			
Baden-Baden, Gernsbacher Strasse 30 (GE)	civil	wl/ch/min	2	1177g	0	2	2												1					1
Lahr-Dinglingen (GE)	civil	wl/ch/min	59	no	2	4	17						1		1						1	1	1	1
Oedenburg/Biesheim-Kunheim (F)	civil	wl/ch/min	76	810.5l	4	7	16		1	1	1	1	cf					1	1	1	1	1	1	1
Total findings in the area of comparison except Oedenburg								1	0	2	3	1	1	1	1	1	0	0	2	1	20	1	7	21

Table 6 Presence-absence data of the newly-introduced and imported food plants on Roman sites in a selected area of comparison

(a : M. Dick 1989 (footnote 4), 347-350. - b : M. Dick 1989 (footnote 4), 347-350. - c : S. Jacomet / M. Petrucci-Bavaud 2004 (footnote 4), 241-299 - d : Ö. Akeret, Samen und Früchte. In: B. Pfäffli / H. Sütterlin / Ö. Akeret / S. Deschler-Erb / E. Langenegger / A. Schlumbaum, Die Gräber aus dem Areal der Sägerei Ruder - ein Ausschnitt aus dem Nordwestgräberfeld von Augusta Raurica. Jahresberichte aus Augst und Kaiseraugst 25, 2004, 111-178. - e : Petrucci-Bavaud pers.comm. - f : C. Brombacher, Archäobotanische Untersuchungen von Getreideproben aus dem römischen Vicus Basel-Rittergasse. In: G. Helmig / U. Schön (eds.) Neue Befunde zur antiken Zufahrtsstrasse auf den Basler Münsterhügel. Jahresbericht der Archäologischen Bodenforschung des Kantons Basel-Stadt, 1995, 55-56 and Brombacher pers.comm. - g : Kuhn pers.comm. - h : own research - i : S. Jacomet 2003 (footnote 3), 173-229. - j : S. Jacomet 2003 (footnote 3),173-229. - k : S. Jacomet / C. Wagner 1994 (footnote 169), 321-343 - l : F. Feigenwinter 1997 (footnote 2),21-28 – m : E. Neuweiler 1908 (footnote 191), 393-407. – n : Kuhn pers.comm. – o : H.-P. Stika 1996 (footnote 27) 207. – p : H.P. Stika, Botanische Grossreste aus Feuchtsedimenten vom Drainagekanal der römischen Heilthermen von Badenweiler, Kr. Breisgau-Hochschwarzwald. Fundberichte aus Baden-Württemberg 23, 1999, 119-126. and M. Rösch 1995 (footnote 189), 151-156. - q : B. Pollmann 2003 (footnote 2). – r : C. Jacquat 1986 (footnote 1), 241-264 - s : own research – t : Akeret pers.comm. – u : Kuhn pers.comm – v : Petrucci Bavaud 1997 (footnote 4), 253-259 – w

Group 3 : Introduced and local cultivation																								
Allium sativum	*Anethum graveolens*	*Apium graveolens*	*Beta vulgaris*	*Carum carvi*	*Castanea sativa*	*Coriandrum sativum*	*Foeniculum vulgare*	*Juglans regia*	*Malus sylvestris/domestica*	*Malus/Pyrus*	*Morus alba + nigra*	*cf. Origanum majorana*	*Origanum vulgare*	*Pastinaca sativa*	*cf. Petroselinum crispum*	*Pimpinella anisum*	*Portulaca oleracea*	*Prunus avium + cerasus*	*Prunus domestica + insititia*	*Pyrus communis/pyraster*	*Ruta graveolens*	*Satureja hortensis*	*Thymus cf. vulgaris*	
0	6	10	2	3	0	9	0	12	5	10	1	0	2	0	0	0	2	6	6	4	0	5	0	
																								a
																								b
																								c
								1		1														d
																								e
		1		1		1		1	1	1	cf							cf				1		f
								1																g
								1																h
								1	1	1								1	1					i
	1	1		1		1		1		1								cf	cf			1	cf	j
	1	1		1		1			1	1								cf		1				k
	1	1	1			1			1	1								1	1	1		1		l
					sp			1										1	1					m
	1	1				1		1		1	1						1	1	1			1		n
		1				1		1					1											o
		1				1		1	1				1							1				p
		1	1																					q
	1	1				1		1		1								1	1	1				r
	1	1				1				1								1	1			1		s
								1									1							t
										1														u
	1	1	1	1		1	1	1	1	1	1		1	1	1	1	1	1	1	1	cf	1		
1	2	2	0	0	0	2	0	4	2	0	0	0	2	2	0	0	0	1	1	1	0	1	0	
1									1															v
																								w
								1																x
								1	1				1					1	1	1				y
	1	1				1		1					1	1				cf						z
	1	1				1								1								1		aa
								1																ab
	1	1	1			1	1	1		1	1						1	1	1	1		1		
0	6	6	4	0	1	6	1	9	1	3	2	1	2	0	0	0	1	4	4	2	1	2	1	
								1																ac
								1																ad
	1	1				1		1		1												1		ae
								1			1							1	1					af
	1	1	1			1		1				1	1							1				ag
						1		1										1						ah
	1	1	1			1		1											1		1			ai
	1	1	1			1	cf	1		1								1	1					aj
	1	1																						ak
	1	1	1	cf	1	1	1	1	1	1	1		1	cf			1	1	1	1		1	1	al
1	1	1	1	1		1	1	1		1	1		1				1	1	1	1		1		
1	14	18	6	3	1	17	1	25	8	13	3	1	6	2	0	0	3	11	11	7	1	8	1	

: S. Jacomet / M. Bavaud 1992 (footnote 4), 103-111 and M. Dick / S. Jacomet, Verkohlte Pflanzenreste aus einem römischen Grabmonument beim Augster Osttor. Jahresberichte aus Augst und Kaiseraugst 6, 1986, 7-53. x : A. Schlumbaum / M. Petrucci-Bavaud, Die Pflanzenreste. In : S. Ammann (ed.) Fünf Gräber und eine Villa. Befunde und Funde der Römerzeit in Reinach (BL), Archäologie und Museum. Berichte aus Archäologie und Kantonsmuseum Baselland 46, 2003, 69-77. – y : M. Petrucci-Bavaud / A. Schlumbaum / S. Jacomet 2000 (footnote 99), 151-159 - z : M. Klee 1999 (footnote 135), 464-472 - aa: H.-P. Stika 1996 (footnote 27) 207. - ab: B. Pollmann 2003 (footnote 2). - ac: M. Petrucci-Bavaud 1999 (footnote 4), 165-184 - ad: M. Petrucci-Bavaud 1999 (footnote 4). - ae: H. Hüster Plogmann / S. Jacomet / M. Klee / U. Müller / V. Vogel Müller 2003 (footnote 170), 159-191 - af: Zehner 1996 (footnote 186), 103-113 - ag: H.-P. Stika 1996 (footnote 27) 207. - ah: B. Pollmann 2003 (footnote 2). - ai: Kuhn pers.comm - aj: own research - ak: H.-P. Stika 1996 (footnote 27) 207. - al: M. Rösch 1995 (footnote 189), 151-156 and Rösch pers.comm.

Roman archaeological sites in Central Europe[176]. Pistachio was also very rare in ancient Rome, nothing is known about its use as a food plant[177]. Almond is more common than pistachio. It is consumed fresh as well as dried or roasted like most nut species[178]. Finally, there is one imported food plant which is only registered in Oedenburg. It concerns the spice black cumin (*Nigella sativa*).

Considering those plants that were introduced in Roman times and possibly cultivated locally, they are more widespread in the area of comparison. Eight species are identified. We remark that fig (*Ficus carica*) (N of sites=20) and grapevine (*Vitis vinifera*) (N=21) are the commonest plant taxa of this group in the selected area. They are found charred and mineralised but are definitively more frequent in waterlogged environments. Their distribution is not directly connected to the type of settlement. Peach is much less common. We have evidence in eight of the considered sites. The majority of the peach stones were found waterlogged. The remaining food plants in this group are very unusual. Melon (*Cucumis melo*) could be identified on two sites[179]. It involves waterlogged findings in the *vici* of Baden-Baden (Excavation Gernsbacherstrasse 30[180]) and Horbourg-Wihr (Excavation Nouvelle Mairie[181]). In Augst (Excavation Tophaus)[182] there is a possible find of cucumber and/or melon. Remains of bottle gourd (*Lagenaria siceraria*) are equally rare[183]. Waterlogged seeds of bottle gourd were found in the wells of Lahr-Dinglingen[184]. The last economic plant in this group is safflower (*Carthamus tinctoria*). It is only recorded in Oedenburg.

In the last group of plants – representing those food plants that were introduced during the Roman period and where local cultivation is almost certain – only some species are very common; others remain rare findings. Among the common findings we count dill (*Anethum graveolens*) (N=14), celery (*Apium graveolens)* (N=18), coriander (*Coriandrum sativum)* (N=17), walnut (*Juglans regia)* (N=25), apple/pear (*Malus/Pyrus*) (N=13), cherry (*Prunus avium / cerasus*) (N=11) and plum (*Prunus domestica / insititia*) (N=11). Less common are beet (*Beta vulgaris*) (N=6), summer savory (*Satureja hortensis*) (N=8) and oregano (*Origanum vulgare*) (N=6). Caraway (*Carum carvi*), mulberry (*Morus alba* and *nigra*) and little hogweed (*Portulaca oleacea*) were registered in three sites, parsnip (*Pastinaca sativa)* and chestnut (*Castanea sativa*) in two sites. Findings of chestnut are generally very rare in archaeobotanical assemblages. Waterlogged chestnut was found in the 2nd Cent. AD well in the *vicus* of Lahr-Dinglingen[185]. Neuweiler[186] recorded a find of charred chestnut (*Castanea* sp..) in the so-called Schutthügel (large waste disposal area) of the legionary camp of Vindonissa. The remaining (garlic (*Allium sativum*), marjory (*Origanum majorana*), fennel (*Foeniculum vulgare*), common rue (*Ruta graveolens*) and thyme (*Thymus vularis*)) were found on single sites. Aniseed (*Pimpinella anisum*) and parsley (*Petroselinum crispum*) were only identified in Oedenburg. Thyme, marjory and chestnut were not found in Oedenburg.

176 See C. Bakels / S. Jacomet 2003 (footnote 50), 542-557 - There are many charred almond finds from offerings in incineration graves in western Switzerland (Arconciel FR), dating not yet confirmed (unpublished data, Basel Archaeobotany Lab)

177 J. André 1998 (footnote 44), 72f.

178 J. André 1998 (footnote 44), 71ff.

179 The remainder are doubtful identifications.

180 H.-P. Stika 1996 (footnote 22).

181 M. Zehner, Derniers résultats de la campagne de fouilles 1993 Horbourg-Wihr – »Nouvelle Mairie«. In: M. Fuchs (ed.) Horbourg-Wihr à la lumière de l'archéologie : histoire et nouveautés : mélanges offerts à Charles Bonnet. Actes d'ARCHIHW 2, 1996, 103-113.

182 H. Hüster Plogmann / S. Jacomet / M. Klee / U. Müller / V. Vogel Müller 2003 (footnote 165), 159-191.

183 It is found in waterlogged conditions only.

184 M. Rösch, Römische Brunnen in Lahr - Fundgruben für die Botanik. Archäologische Ausgrabungen in Baden-Württemberg 1994, 1995, 151-156. – M. Roesch pers. comm. – During the very recent excavations in Eschenz (early 1st Cent. AD) waterlogged bottle gourd remains (seeds, fruit wall) were detected (S. Jacomet, pers. comm.).

185 M. Roesch pers. comm.

186 E. Neuweiler, Pflanzenreste aus der römischen Niederlassung Vindonissa. Vierteljahrsschrift der Naturforschenden Ges. Zürich 53, 1908, 393-407.

Considering the plant spectrum, we note that those sites where waterlogging occurred, yielded the largest amount of the considered food plants. In addition, those sites where only charred remains are preserved – except the burnt layers in Vindonissa – yielded the lowest numbers of plant taxa. Taking into account the type of settlement, we observe that the presence of a military occupation can have a positive impact on the diversity of food plants as does the presence of sacrificial installations.

In comparison to the majority of Roman archaeological sites in the area of comparison, the plant assemblage in Roman Oedenburg is very rich, diverse and contains many imported food plants. On the whole, those sites in the area of comparison where the plant spectra are similar to those found in Oedenburg include the *vicus* of Lahr-Dinglingen and the military settlement of Vindonissa. Both of them have favourable conditions of preservation. The samples from Lahr-Dinglingen were taken in waterlogged deposits of three wells. The majority of plant remains is waterlogged. The plant assemblage recovered from the early Roman occupation layers in Vindonissa (Excavation Windisch-Breite) originate from the burnt destruction layers within dry deposits. Plant remains were preserved charred.

The rich and above all exotic plant spectrum found in Vindonissa is likely to be the result of the presence of the military[187]. This is also observed in other Roman sites with a military character, namely the military camps of Neuss[188] and Oberaden[189] [190]. The impact of a military occupation on the plant assemblage during the Roman times has been observed by several authors. Livarda and Van der Veen[191] discerned a connection between military occupied sites and the dispersal of condiments in North-West Europe during the Roman times. Bakels and Jacomet noticed a link between the distribution of luxury foods and the presence of military[192].

From our regional comparison it becomes apparent that the extraordinary plant assemblage found in Oedenburg is the result of several factors, basically outstanding conditions of preservation and the presence of a military occupation. However, after the abandonment of the military camp, we do not observe any »decline« in plant remains; the spectrum is as rich and »exotic« as during the military occupation. This is mainly due to the location of the settlement on an important transport route (the river Rhine and the river Rhone). As outlined in our introduction, at the beginning of the 1st Cent. AD, Oedenburg was located on the border of the Roman Empire; towards the second half of the 1st f. this border is suspended; Roman Oedenburg's location is secured. During the early Roman period, trading routes were established. As is known from other archaeological artefacts, trading activities intensified during the 2nd half of the 1st Cent. AD and the 2nd Cent. AD[193]. There is a development in the transport routes; watercourses are chosen to transport the bulk of imported goods as they are cheaper. Considering the expansion of the Roman Empire

[187] Although the majority of exotic food plants is from the pre-legionary camp phases, it is thought they are related to the presence of the military; see summary in S. Jacomet 2003 (footnote 3), 173-229.

[188] K.-H. Knörzer 1970 (footnote 22), 162.

[189] D. Kuçan, Die Pflanzenreste aus dem römischen Militärlager Oberaden. In: J. S. Kühlborn (ed.) Das Römerlager in Oberaden III. Die Ausgrabungen im nordwestlichen Lagerbereich und weitere Baustellenuntersuchungen. Bodenaltertümer Westfalens 27 (Münster 1992) 237-265.

[190] Plant remains originate respectively from burnt destruction layers and waterlogged deposits which can again be the cause for its more diverse and exotic plant spectrum. From these examples we can thus not conclude that the presence of a military occupation gave more access to a wide variety of food plants.

[191] A. Livarda / M. Van der Veen 2008 (footnote 125), 201-209.

[192] C. Bakels / S. Jacomet 2003 (footnote 50), 542-557.

[193] M.-A. Haldimann, Der Handel in römischer Zeit. In: L. Flutsch / U. Niffeler / F. Rossi (eds.) Römische Zeit. Verlag Schweiz. Ges. für Ur- und Frühgeschichte (Basel 2002) 187-196 .

and the secure location of the site on a very active trade route, it is not unusual that the plant spectrum in the 2nd Cent. AD is still of a very high standard. It is likely that Roman Oedenburg evolved as an important trade centre during and after the military occupation.

2.3. Vandorpe Patricia and Jacomet Stefanie (2007) Comparing different pre-treatment methods for strongly compacted organic sediments prior to wet-sieving: a case study on Roman waterlogged deposits. Environmental Archaeology 12, 2, p. 207-214.

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Comparing different pre-treatment methods for strongly compacted organic sediments prior to wet-sieving: a case study on Roman waterlogged deposits

Patricia Vandorpe and Stefanie Jacomet

Four pre-treatment methods have been tested on strongly compacted organic sediments prior to sieving. They comprise heating, freezing, soaking in $NaHCO_3$ (sodium bicarbonate) and heating with 10% KOH (potassium hydroxide). The aim of the experiment was to find out which pre-treatment method facilitates the sieving process without destroying the waterlogged plant remains recovered. Several methods are already described in the literature, but only few systematic comparisons of pre-treatment methods were undertaken. Of the four techniques tested, freezing the samples prior to sieving came out as the best option; it eases sieving and has the least damaging impact on the waterlogged plant remains. In addition, it is fast, uncomplicated and does not leave any chemical waste.

Keywords: archaeobotany, subfossil plant remains, methods, waterlogged deposits, pre-treatment, sieving

Introduction

Archaeological plant macro remains are commonly recovered by wet-sieving and flotation techniques that use water to separate the plant remains from the soil. Samples are, however, frequently encountered, which are very time-consuming if not impossible to sieve due to their soil composition. These are often categorised as problem soils (Pearsall 2000) and include in particular those with a high clay content. Clay soils are notorious for their poor dispersion in water. Where plant macro remains can only be isolated from the soil once discharged from adhering soil particles, this causes a problem as they are fragile and easily damaged. It is generally advised to agitate and crush the soil as little as possible during processing; however, this is often impossible and various authors have suggested pre-treatment methods to enhance the sieving process in order to minimise manual agitation and thus damage. Table 1 summarises the pre-treatment methods for different soil types described in the literature and/or known from archaeobotanical laboratories. While these techniques have proven to ease the process of sieving, the effects of different pre-treatment methods on the plant macro remains themselves, as indicated by Jacomet and Kreuz (1999, 115), are rarely mentioned. This is especially important for uncarbonised waterlogged remains which are often more fragile than carbonised remains.

For the following experiment, we have chosen archaeobiological samples originating from strongly compacted archaeological layers located under the current water level. Recently, while working on a Roman settlement, we experienced many difficulties in sieving such compacted sediments and needed to improve the techniques employed. The soil samples under study are characterised by their high organic content, uncharred waterlogged plant remains and a rich and diverse plant spectrum, as are common on waterlogged sites. As such we believe that this experiment has widely applicable results.

It was decided to test four existing pre-treatment techniques described in the literature and which are frequently used in archaeobotanical laboratories with the aim of evaluating their suitability for recovering

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plant material efficiently whilst causing minimal damage. In contrast to most former studies, all four methods were applied to the same archaeological soil samples, to facilitate direct comparison of the results. Similar studies were undertaken by Bending (2005) on peat deposits and modern plant material, and by de Moulins (1996) on modern charred and fossil material.

Our primary concerns were:

- how pre-treatment techniques can influence the sieving process in a positive manner, and where sieving is facilitated by pre-treatment, to identify which of the four methods is the best for processing strongly compacted organic sediments and how the results compare with untreated samples;
- the impact of the various pre-treatment methods on the uncarbonised plant macro remains. More than 98% of the material in our samples is subfossil, and many of the remains recovered are highly fragile, uncarbonised cereal remains like glumes or rachises. Will there be any visible damages to the plant macro remains as a result of those pre-treatment methods? How do the plant remains in the pre-treatment-samples differ from those in the untreated samples?

Material and methods

The samples

Three samples were selected from an assemblage of over 700 archaeobiological samples from the Roman site of *Oedenburg* at Biesheim-Kunheim, France, located in the Upper Rhine valley about 60 km North of Basel. The Roman layers are dated from the 1st to the 3rd centuries AD and the archaeological structures are under the current water level and well preserved. The authors have processed and analysed the larger bulk of these 700 samples. The samples chosen for the experiment represent our 'typical' problem samples with which we had so many problems while sieving.

- Sample 1 (BK99·1·352·2) is from a dark organic layer at the bottom of a large pit. The deposits were strongly compacted with macroscopically thin layers and even more compacted nodules of soil, reminiscent of dung deposits. These nodules were especially difficult to process and one was selected for the experiment.
- Sample 2 (BK39033B) comes from an archaeological layer located within a palaeochannel. It was a very organic and compacted layer and was chosen because of its very rich assemblage of cereal remains and accompanying cereal weeds.
- Sample 3 (BK14054) comes from a latrine deposit within a large pit. In contrast to the other samples, the composition of this sediment was not as compacted and consisted mainly of loam.

Plant remains from these three samples were predominantly recovered in a waterlogged state of preservation (as for the majority of the 700 samples taken on this site). Volumes of samples 1, 2 and 3 varied between 750 ml and 850 ml before sieving. All three samples were divided in five equal subsamples of approximately 150 ml volume. A grid system was used for random subsampling, as described by Van der Veen and Fieller (1982).

Table 1 Summary of the pre-treatment methods described in the literature and/or known from archaeobotanical laboratories

Pre-treatment method	Type of sediment	Time	Reference
Soaking	Loam and clay soil	1 to 24 hours	Jacomet and Kreuz (1999)
Boiling	waterlogged deposits	15 to 30 minutes	Pearsall (2000); Kenward *et al.* (1980)
Drying	any 'problem' soil	48 hours	Zibulski pers. comm.
Freeze/Thaw	clay-rich deposits	2 days	de Moulins (1996)
Sonic bath	peat	not specified	Bending (2005)
5% KOH (potassium hydroxide)	clay-rich deposits	not specified	Hellwig (1990)
5% KOH and boiling	peat	5 minutes	Grosse-Bauckmann (1986)
10% KOH	compact organic sediments	2 weeks	Behre (1983)
10% KOH and heating	clay soil	30 minutes	Ernst pers.comm.
10% HNO_3 (nitric acid)	compact organic sediments	several days	Körber-Grohne (1967)
10% $NaHCO_3$ (sodium bicarbonate)	clay soil	several hours	Pearsall (2000)
10% $NaPO_3$ (sodium hexametaphosphate)	clay soil	not specified	Pearsall (2000)
mix of NH_4OH (ammonia) and Na_2CO_3 (sodium carbonate)	clay soil	not specified	Pearsall (2000)
H_2O_2 (hydrogen peroxide)	clay soil	not specified	Pearsall (2000)
Na_2CO_3 (sodium carbonate)	peat	up to 5 days	Bending (2005)
$NaHPO_4$ (sodium pyrophosphate)	Loam and clay soil	not specified	Bollinger and Jacomet (1981)
10% NaOH (sodium hydroxide)	peat	several hours	Birks and Birks (1980); Kenward *et al.* (1980)

Pre-treatment and sieving

Four pre-treatment methods were tested on each sample; additionally one subsample was sieved without pre-treatment. As mentioned above, the four pre-treatment methods were chosen because of their frequent use in archaeobotanical laboratories. They comprise heating (Pearsall 2000; Kenward *et al.* 1980), freezing (de Moulins 1996), soaking with $NaHCO_3$ (Pearsall 2000) and heating with a 10% KOH solution (Behre 1983; Ernst pers. comm.). The sediment of the 15 subsamples was immersed in water before pre-treatment.

Heating

The subsamples were topped up with water to 600 ml. They were heated on a hotplate for half an hour to a temperature of approximately 50°C and were subsequently sieved.

Freezing

The subsamples were placed in a freezer at –18C° for two days and two nights. After that, they were taken out, left overnight to defrost and sieved the next day. At the time of sieving the subsamples were completely defrosted.

Soaking with $NaHCO_3$ (sodium bicarbonate)

One teaspoon of $NaHCO_3$ was added to the subsamples. They were topped up with water to 600ml, agitated a few times and left to soak for 24 hours.

Heating with a 10% KOH solution (potassium hydroxide)

About 15 ml KOH tablets (which equals 10% of the volume of the sample) were added to the subsamples and topped up with water to 600 ml. The subsamples were heated (at *c.* 50° C) in solution for half an hour on a hotplate under a chapel, and were stirred occasionally. After heating the subsamples were immediately sieved.

All samples, including the untreated ones, were sieved (at 4 mm, 1 mm and 0·35 mm) using ‘semi-flotation’ as described by Hosch and Zibulski (2003), which is the same as ‘wash-over’, previously described by Kenward *et al.* (1980).

Data analysis

To measure the effects of pre-treatment on the plant remains, the fragmentation and the state of preservation of different plant species/parts in the 1 mm fraction were investigated using indices (see Tables 2 and 3 for definitions). Selection of the plant species/parts was based mainly on their abundance within the sample to ensure that comparison between subsamples of one sample is possible. Four indices were used to measure fragmentation. As plant species/parts break up in different ways, different scoring criteria were used for each (see Table 2). Five indices were used to measure preservation (after Hubbard and al Azm 1990). Once more, scoring indices were created appropriate for each plant species/part (see Table 3). The average index is calculated from the scores for each index as follows: the number of items recovered for each score (e.g. Poaceae without pre-treatment (22 items): score 1, 10 items; score 2, 4 items; score 3, 5 items; score 4, 3 items) was multiplied by this score (1 x 10 = 10; 2 x 4 = 8; 3 x 5 = 15; 4 x 3 = 12); these numbers were added up (10 + 8 + 15 + 12 = 45) and divided by the total number of items recovered (45/22 = 2·0). This final number (2·0) represents the average index. High average indices values indicate badly preserved or highly fragmented remains.

To test the statistical relationship between our results we performed a pairwise comparison of the

Table 2 Definition of the fragmentation indices

Score	Panicum	Poaceae	Cereal glumes	Cereal rachis
1	whole glume	whole caryopse	spikelet fork	3 or more segments
2	3/4 glume	3/4 caryopse	glume base with 1 glume	2 segments
3	part of glume (L)	1/2 caryopse	glume	1 segment
4	fragment	less than 1/2	fragment of glume	fragment of segment

Table 3 Definition of the preservation indices (* after Hubbard et al. 1990)

Score	Preservation classes*	Solanum nigrum*	Cereal glumes	Cereal rachis
1	Perfect	Epidermis perfect	All diagnostics present (keel, scar, full length of glume …)	All diagnostics present
2	Virtually intact	Epidermis virtually intact	All but 1 present (keel, part of glume…)	All but 1 present
3	Incomplete	Epidermis incomplete	Incomplete glumes, species level	Incomplete rachis
4	Few feautures remaining	Only fragments of epidermis remaining	Few features remaining, genus level	Few features remaining
5	Gross Morphology only	Identifiable by gross morphology only	Identifiable by gross morphology only	Identifiable by gross morphology only

calculated average indices and the numbers recovered for all species. These coefficients were calculated using a Pearson's test with $\alpha = 0{\cdot}01$. The number of variables (N = average scores and total numbers recovered) used is 24 for fragmentation and 18 for preservation.

Results and discussion

Results of the sieving experiment

Heating

Heating the sediment had a minor effect on the sieving process. The very compacted organic nodules in Samples 1 and 2 were broken up more easily. It was not, however, clear whether this was a consequence of the pre-treatment as they did not dissolve during cooking, but only when slightly agitated by hand while sieving. That said, the difference to untreated samples was so small as to be ignored.

Freezing

Freezing had a much more noticeable effect on the ease of sieving the samples. The organic nodules in Samples 1 and 2 were, for the most part, broken up through freezing and defrosting and passed through the sieves very quickly without much hand agitation. Significantly less time was needed to sieve these subsamples. The floated residue did still contain some clay particles, which slows down the sorting of plant macro remains, but overall it was still faster than sorting a subsample without pre-treatment.

Soaking with $NaHCO_3$

While sieving the soda-treated subsamples no difference in processing was noted compared with the samples that did not receive a pre-treatment. A slight difference was noticed for the loamy Sample 3 but the effect was minimal. Thus while this method is often used for the processing of problem soils, e.g. with a high clay content (Pearsall 2000), it was not found to be useful for processing strongly compacted organic sediments.

Heating with a 10% KOH solution

The very compacted organic sediments of Samples 1 and 2 were broken up strongly during the heating process leaving a few, very small organic lumps. Sieving of the subsamples was clearly much faster and easier than any other of the tested pre-treatments. Furthermore, no clay particles were observed in the floated residue, the vegetative material seemed to be 'washed' thoroughly. As a result, sorting these floated residues was effortless. The treatment did, however, produce a very intense and repulsive smell and in comparison to the other pre-treatment methods, reduced the volume of organic material left after sieving. For these reasons, it was assumed that the chemical reaction of KOH and heating has caused more then just a breaking up the compacted organic sediments.

Summary

Of the four pre-treatment methods tested, freezing and heating with KOH solution, were shown to aid the sieving process for strongly compacted sediments. In addition sorting for plant macro remains was quickened. Purely heating or soaking in a $NaHCO_3$ solution had little impact on the sieving process. Based on these results it was decided to abandon further investigation of these pre-treatment methods and concentrate on the two successful methods, that is freezing and KOH-heating.

Effects of pre-treatment on the waterlogged plant remains

Analysis considered diversity, fragmentation and preservation of the plant macro remains within the sub-samples of a single sample. However, the size and nature of the sub-samples meant that in some cases, where the volumes were rather small, intra-sample diversity-variation is likely to be a result of sample size. In contrast, analysis of the fragmentation and preservation of the plant macro was possible in all cases.

Only one sample (Sample 2) yielded enough suitable plant macro remains to study preservation and fragmentation so the assessment of the impact of the pre-treatment on the plant species/parts was concentrated on this sample. We emphasise that the state of preservation of this archaeological layer (origin of Sample 2) is extremely good, as was observed during excavation. It has resulted in the recovery of an abundance of organic material.

The plant species/parts selected for analysis in Sample 2 comprised *Solanum nigrum* L. seeds, *Panicum miliaceum* L. glumes, caryopses of different wild Poaceae (Gramineae), cereal glume and rachis fragments. The subsamples of Sample 2 were entirely sorted for these five plant species/parts resulting in a total of 1415 items being extracted. Cereal glumes and cereal rachises have, for this experiment, not been identified to species level as no difference was observed in the way the different cereal species reacted to the pre-treatment methods. For the record, cereal glumes comprise *Triticum spelta* L., *Triticum dicoccum* Schubler and *Triticum monococcum* L.; rachis fragments comprise *Hordeum vulgare* L. and *Secale cereale* L.

A fragmentation and a preservation value was given to cereal glumes and cereal rachis fragments.

Table 4 Summary of the fragmentation index results

		No treatment	KOH and heating	Freezing
Panicum glumes	Total number recovered	85	20	64
	Average score	3·6	3·1	3·3
Poaceae (wild grasses) caryposes	Total number recovered	22	7	36
	Average score	2·0	2·9	2·2
Cereal glumes	Total number recovered	60	50	80
	Average score	3·1	3·3	2·9
Cereal rachises	Total number recovered	321	30	573
	Average score	3·6	3·3	3·4

Table 5 Summary of the preservation index results

		No treatment	KOH and heating	Freezing
Solanum nigrum seeds	Total number recovered	20	26	21
	Average score	3·2	2·5	2·8
Cereal glumes	Total number recovered	60	50	80
	Average score	3·7	4·5	2·8
Cereal rachises	Total number recovered	321	30	573
	Average score	3·8	4·7	3·5

Panicum miliaceum glumes and wild Poaceae caryopses were only given a fragmentation index whereas *Solanum nigrum* seeds were only given a preservation index (Tables 2 and 3). The attribution of fragmentation and preservation indices to the different species/plant parts was chosen as objectively as possible. The average indices of the above listed plant species/parts were calculated (*infra*). Table 4 summarises the results for the fragmentation indices, Table 5 the results for the preservation indices.

Fragmentation

For *Panicum miliaceum* glumes and cereal rachis fragments, KOH treatment is the better method with, respectively, average indices of 3·1 and 3·3; however, the difference from ‘freezing’ is very small. For cereal glume fragments freezing the subsample is beneficial with an average index of 2·9; for the wild Poaceae caryopses freezing only causes a slight deterioration.

These results should, however, be interpreted with caution. The difference in the total numbers of items recovered for each plant species/part (Table 4), especially the cereal rachis fragments varies considerably. Only 30 rachis fragments were recovered from the KOH-treated sample, against 321 in the untreated sample and 573 in the frozen sample. It is clear that far fewer fragments are found in the KOH sub-samples and that this is a direct result of treatment with this chemical. Characteristically the plant macro remains of the KOH-sub-sample, have a faded colour and thinner appearance (as discussed below). For that reason, it is very strongly suspected that a large amount of the uncarbonised plant macro remains has dissolved through heating with KOH. This has also been observed by Bending (2005) when using KOH for the disaggregation of peat deposits.

Table 6 Pearson’s correlations and p values between no treatment, KOH heating and freezing based on the fragmentation of Poaceae caryopses, *Panicum miliaceum*, cereal glumes and cereal rachis, where the number of variables = 24 with α = 0·01

	No treatment	KOH and heating	Freezing
No treatment		0·5018	0·9608
		0·0242	< ·0001
KOH and heating	0·5018		0·42035
	0·0242		0·0650
Freezing	0·9608	0·42035	
	<·0001	0·0650	

Considering the average fragmentation indices of the frozen and the untreated subsample (Table 4), it is obvious that uncarbonised plant macro remains have undergone the least fragmentation when frozen before sieving. In three of the four plant species/parts, it has proved the better method.

When interpreting the results from the Pearson’s correlation test (see Table 6), we can infer no significant difference between the plant species/parts from the untreated and the frozen subsamples (p values $<$0·0001), whereas a more significant difference is observed between the KOH and both frozen subsamples and untreated subsamples (P values = 0·0650 and 0·0242 respectively). These findings indicate a strong relationship between freezing and no treatment, while the KOH and heating method was not significantly correlated to either of the other two pre-treatment methods. This corroborates the findings from our visual analysis where the effects of

Figure 1 Difference between frozen (LEFT) and KOH-treated (RIGHT) *Triticum monococcum* spikelet fork. Photograph by G. Haldimann

KOH on the fragmentation of plant species/parts stand out against the effects of freezing and no treatment.

Preservation

Preservation indices were measured on *Solanum nigrum* seeds, cereal glume fragments and cereal rachis fragments (Table 5). The results are more explicit than those obtained from the fragmentation indices. Cereal glumes and cereal rachises are best preserved in the frozen subsamples with average indices of 2·8 and 3·5 respectively; *Solanum nigrum* seeds are best preserved in the KOH-treated subsample with an average index of 2·5.

The average preservation indices of cereal glume fragments and cereal rachis fragments clearly indicate

Figure 2 Difference between frozen (LEFT) and KOH-treated (RIGHT) *Triticum spelta* spikelet fork. Photograph by G. Haldimann

Figure 3 Difference between frozen (LEFT) and KOH-treated (RIGHT) Hordeum rachis. Photograph by G. Haldimann

that freezing the sample prior to sieving is the best pre-treatment method (Table 5). Since hardly any agitating by hand was necessary during sieving, most fragments of cereal chaff did not undergo much damage. On the whole, including the *Solanum nigrum* seeds, freezing gives better scores than sieving without pre-treatment.

Figure 4 Difference between frozen (LEFT) and KOH-treated (RIGHT) *Secale cereale* rachis. Photograph by G. Haldimann

Again this interpretation is confirmed when performing a Pearson's correlation test (see Table 7). The p values for freezing and no treatment are lower than 0·0001, whereas the p values for KOH and freezing equal 0·2993, and the p values for KOH and no treatment equal 0·1772. Thus we can conclude from these tests that there is a significant difference between KOH on one hand and freezing or no treatment on the other, as inferred from our visual analysis.

Considering the *Solanum nigrum* seeds, while scoring the preservation indices the fading colour of the seeds, caused by KOH, was not taken into account. In addition, although seeds pre-treated by KOH were very well preserved, there was a general observation of thinner and faded epidermis, and even to some extent transparent. This fading characteristic of KOH on uncarbonised plant remains has been observed before by Kühn (1999). The impact of KOH on waterlogged plant macro remains is thus very apparent, in particular on the cereal chaff. Figs 1–4 show the difference between frozen and KOH-treated *Triticum monococcum*, *Triticum spelta*, *Hordeum vulgare* and *Secale cereale*, respectively. These images illustrate the negative effects of KOH showing that the spikelet forks and rachis fragments fade in colour, and are also partly disintegrated. Given that the number of fragments is significantly smaller in the KOH-treated subsample (see Table 5), many plant macro remains are most likely entirely dissolved. In contrast to the cereal remains, the *Solanum nigrum* seeds have not undergone much damage. Nevertheless, as described by Hartwich (1896), the epidermis of *Solanum nigrum* is rather strongly lignified which may enable it to resist the impact of KOH and heating.

Conclusions

The results of our experiment have shown that pre-treatment of strongly compacted organic sediments is valuable in aiding the recovery of waterlogged plant remains. Several authors have previously established the positive influences of pre-treatment on 'problem soils' before (see Table 1). However, a cross-comparison of different pre-treatment methods on one sample has rarely been done, except by Bending (2005) and de Moulins (1996). For our samples, freezing, defrosting or heating the samples with KOH prior to sieving enhanced the dispersion of soil particles in water. This meant that manual agitation was less necessary during sieving; the sieving process was faster and less destructive for the plant remains.

Concerning the effects of the successful pre-treatment methods on the condition of the uncarbonised plant remains, we have found both positive and negative consequences. KOH-treatment clearly had a destructive nature with many of the uncarbonised plant remains being damaged, either in the form of faded surface colour and/or disintegration. As a result, we suggest that this pre-treatment is not used when dealing with uncarbonised waterlogged plant remains, as too much information will be lost. Of course we have tested only one application of KOH-treatment (addition of 10% KOH solution and heating the sample) and there might be other treatments where KOH is less destructive, e.g. a 5% solution and/or without heating (Bending 2005). Nevertheless this was beyond the scope of our experiment. The least intrusive effects on the uncarbonised plant remains were obtained from freezing the samples prior to sieving. In general those plant remains were best-preserved and least fragmented even in comparison with plant remains from untreated samples. In addition de Moulins (1996) has already stated that this method has minor effects on the carbonised remains.

From our experiment we, therefore, conclude: that to obtain the best retrieval and to ensure the least damage of waterlogged plant remains from strongly compacted organic sediments, it is advisable to freeze the samples in advance of sieving. It is an easy and cheap method that does not leave any chemical residues.

Table 7 Pearson's correlations and p values between no treatment, KOH heating and freezing based on the preservational state of *Solanum nigrum* seeds, cereal glumes and cereal rachis, where the number of variables = 18 with α = 0·01

	No treatment	KOH and heating	Freezing
No treatment		0·3328 0·1772	0·9617 < 0·0001
KOH and heating	0·3328 0·1772		0·2591 0·2993
Freezing	0·9617 < 0·0001	0·2591 0·2993	

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References

Behre, K.-E. 1983. *Ernährung und Umwelt der Wikingerzeitlichen Siedlung Haithabu*. Neumunster: Karl Wacholtz Verlag.

Bending, J. 2005. An experimental approach to the disaggregation of samples from peat deposits. *Environmental Archaeology* **10**, 81–8.

Birks, H. and Birks, H. 1980. *Quaternary Palaeoecology*. London: Edward Arnold.

Bollinger, T. and Jacomet, S. 1981. Resultate der Samen und Holzanalysen aus den Cortaillod-Schichten, pp. 37–67 in Ammann, B., Bollinger, T., Jacomet, S., Liese-Kleiber, H. and Piening, U., *Die Neolithischen Ufersiedlungen von Twann, Bd. 14: Botanische Untersuchungen*. Bern: Haupt.

de Moulins, D. 1996. Sieving experiment: the controlled recovery of charred plant remains from modern and archaeological samples. *Vegetation History and Archaeobotany* **5**, 153–56.

Grosse-Bauckmann, G. 1986. Analysis of vegetative plant macrofossils, pp. 591–618 in Berglund, B. E. (ed.), *Handbook of Holocene Palaeoecology and Palaeohydrology*. Chichester: J. Wiley and Sons.

Hartwich, C. 1896. Über die Samenschale der Solanaceen. *Vierteljahresschrift der Naturforschenden Gesellschaft* **41**, 366–82.

Hellwig, M. 1990. *Palaeoethnobotanische Untersuchungen an Mittelalterlichen und Frühneuzeitlichen Pflanzenresten aus Braunschweig* (Dissertationes Botanicae 156). Berlin-Stuttgrart: J. Cramer.

Hosch, S. and Zibulski, P. 2003. The influence of inconsistent wet-sieving procedures on the macroremain concentration in waterlogged sediments. *Journal of Archaeological Science* **30**, 849–57.

Hubbard, R. N. L. B. and al Azm, A. 1990. Quantifying preservation and distortion in carbonised seeds; and investigating the history of Friké production. *Journal of Archaeological Science* **17**, 103–06.

Jacomet, S. and Kreuz, A. 1999. *Archäobotanik: Aufgaben, Methoden und Ergebnisse Vegetations- und Agrargeschichtlicher Forschung*. Stuttgart: Ulmer.

Kenward, H. K., Hall, A. R. and Jones, A. K. G. 1980. A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits. *Science and Archaeology* **22**, 3–15.

Körber-Grohne, U. 1967. *Geobotanische Untersuchungen auf der Feddersen Wierde*. Wiesbaden: Franz Steiner.

Kühn, M. 1999. Otelfingen-Riedholz, Golfplatz ZH-Nord, 'Trocken' und 'Türengraben', 1999/129: Ergebnisse der Voruntersuchung der Makrorestproben. Unpublished report, University of Basel.

Pearsall, D. M. 2000. *Palaeoethnobotany. A Handbook of Procedures.* San Diego: Academic Press.

van der Veen, M. and Fieller, N. 1982. Sampling seeds. *Journal of Archaeological Science* **9**, 287–98.

2.4. Vandorpe Patricia and Jacomet Stefanie (in press) Remains of burnt vegetable offerings in the temple area of Roman Oedenburg (Biesheim-Kunheim, Alsace, France) – first results. In: J. Wiethold (ed.) Travaux d'archéobotanique (à la mémoire de Karen Lundstrom-Baudais). Bibracte (Glux en Glenne).

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REMAINS OF BURNT VEGETABLE OFFERINGS IN THE TEMPLE AREA OF ROMAN OEDENBURG (BIESHEIM-KUNHEIM, ALSACE, FRANCE) – FIRST RESULTS

Keywords : ROMAN PERIOD – TEMPLE – ARCHAEOBOTANY – OFFERING

Introduction

The Roman site Oedenburg is located in the Upper-Rhine valley between the present-day communities of Biesheim and Kunheim in Alsace, France (Fig.1). The first archaeological discoveries in Oedenburg were done at the end of the 17th C AD, however it is in the 19th C AD that its name is acknowledged. Several investigations have taken place from 1960 onwards. In 1998, a French-German team started an extensive excavation program under the direction of M. Reddé (University of Paris, France) and H.U. Nuber (University of Freiburg, Germany). In 1999, a team from the University of Basel (Switzerland) joined the French-German team.

The Roman settlement Oedenburg covers a surface of about 200 hectares; the relief is generally flat with the exception of two small hills Altkirch and Westergasse. Many paleochannels run through the area, most of them dried out after the canalisation of the Rhine in 1840. The majority of the archaeological structures are at present still located under the water level. Aerial photography, geo-magnetic survey and numerous excavations have revealed the presence of a military camp which is dated in the 1st C AD, a civil agglomeration which is dated from the 1st C AD until the 3rd C AD and a late Roman occupation represented by a fort (Valentinian), several churches and a *praetorium* (Constantinian). The spatial organisation of the site is very complex; for an extended summary of the archaeological research, we refer to previous publications (Nuber, Reddé 2002; Reddé *et al*. 2005; Ville de Biesheim 2001). The large extension of the site, the numerous public buildings and the extended road system present in Roman Oedenburg, are an indication of the high importance of the site in the Upper Rhine region (Schucany, Schwarz 2003).

Geomagnetic survey carried out in 2002 and 2003 in the southern part of the site, has revealed the presence of a sacred area. Artefactual evidence found on the surface had already established the existence of one Gallo-Roman temple (Schucany, Schwarz 2003). Yet, through geomagnetic survey the outline of several Gallo-Roman temples could be recognised (Fig. 2). And furthermore, it could be established that these temples belong to one large complex of temples, which anew confirms the central role of Oedenburg in the region. Based on the plans produced by the geomagnetic survey, three excavation seasons were planned in the temple complex. They have taken place in the summers of 2003, 2004 and 2005. Caty Schucany and Peter-Andrew Schwarz, both of the University of Basel, directed them.

The analysis of the archaeological findings in the temple complex is not finalised yet. The interpretation of the archaeological structures is still in a preliminary phase. It is clear that within the temple complex several chronological horizons could be defined. The first temples, dating to the 1st C AD and the beginning of the 2nd C AD (among others B1), are constructed in wood. At the beginning of the 2nd C AD the temple complex expands and the use of stone for building temples is established. The temple complex was in use until the end of the 3rd C AD (Schucany, Schwarz 2005). Several structures related to offering practices have been revealed during the course of the excavations. Two of those have yielded a remarkable assemblage of carbonised plant macro remains.

Figure 1. Geographical location of Oedenburg, after Nuber 2001.

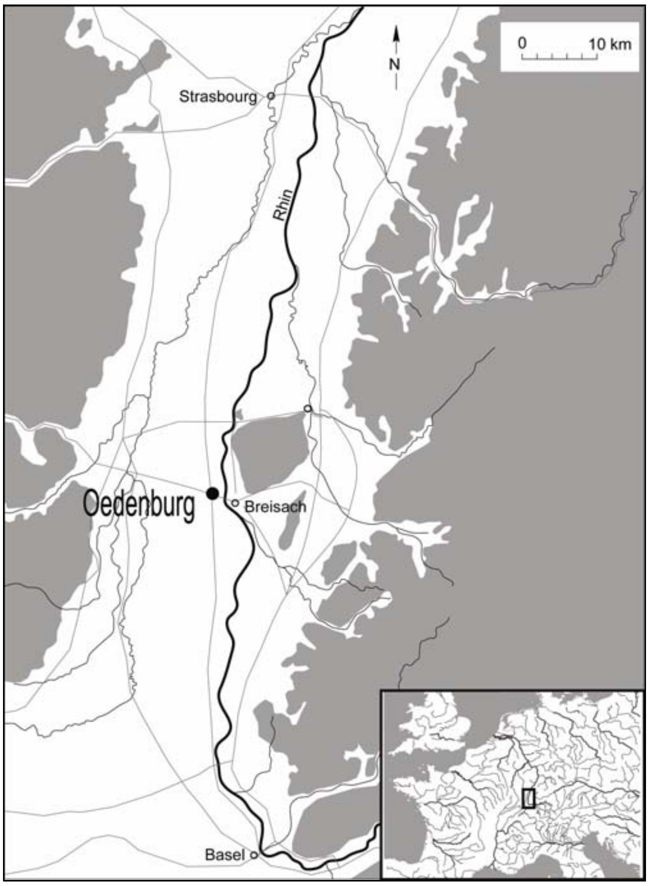
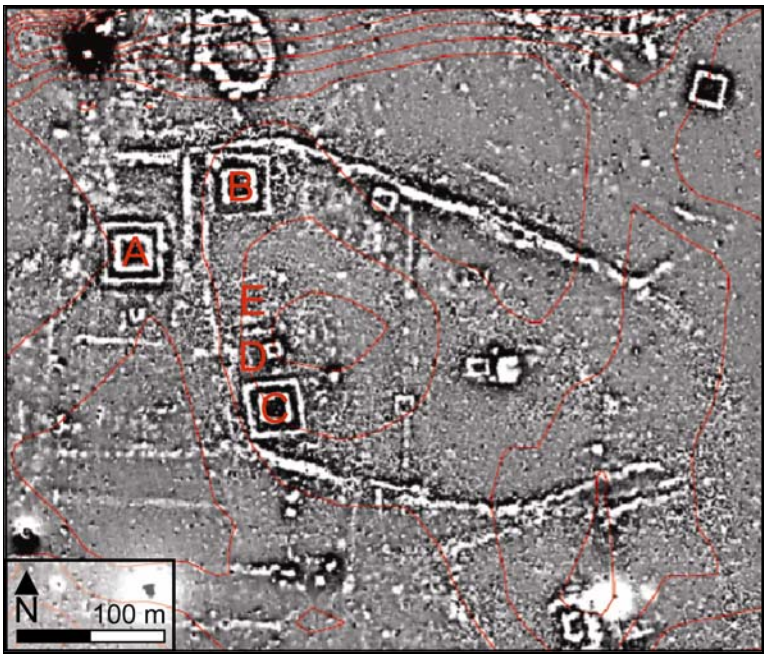


Figure 2. Plan of geomagnetic survey. Illustration made by Posselt and Zickgraf; additions made by Caty Schucany.



In the following we will discuss the results of the macrobotanical analysis from these two structures within the temple complex, dug in 2004 and 2005 respectively. The aim of our study is to place these findings in the larger context of vegetable offerings in the Roman Empire and to compare our results to other Roman vegetable offerings in temple complexes or structures with a sacrificial nature. We have opted not to include vegetable offerings found in graves for these comparisons. In addition we discuss the results from two structures within the temple complex only, other macro botanical findings at the site are mentioned only for reference where appropriate. Thus, for detailed information on the archaeobotanical studies of other parts of the site, we refer to previous publications (Reddé *et al*. 2005; Ville de Biesheim 2001; Jacomet *et al.* 2002; Vandorpe *et al.* 2003; Vandorpe *et al.* 2004; Vandorpe *et al.* 2005).

Materials and methods

The first group of samples originates from a very dark ashy layer excavated in the summer of 2004 (Fig. 3). This layer is located in the *porticus* of temple B1 (Structure 50) and is dated to the 1st C AD/beginning of the 2nd C AD. It was interpreted as a hearth, macrobotanical analysis revealed its sacrificial nature. It is not clear whether the carbonised plant remains recovered represent a single event or the accumulation of several events (Schucany, Schwarz 2004). It is thought that most of this layer has disappeared while it was found close to the present-day cultivation surface. Seven samples were taken from the hearth and analysed, volumes vary from 2 to 227 litres, a total of 303 litres was sieved, this covers almost the entire burnt deposit. The samples represent different spits within this layer. A spatial distribution of these spits was not available.

Figure 3. Structure 50 _ hearth. Photograph made by Sven Straumann.

The second group of samples comes from the fill of a pit (Structure 160/219) and was excavated in the summer of 2005 (Fig. 4). The pit is dug in the gravel and is dated in the mid 2nd C AD. Due to the abundance of small ceramic vessels (94 were recovered), the large chunks of charcoal and the large fragments of charred processed food visible while digging, the pit was rapidly recognised as an offering pit. According to the archaeologists the remains in the offering pit are the result of a single event and thus do not represent the accumulation of material over time (Schucany, Schwarz 2005). Nine samples were taken from the offering pit and examined; volumes vary between 3 and 31.5 litres, which results in a total of 140 litres. As for structure 50, samples represent different spits within this pit.

Figure 4. Detail display of small vessels within structure 160/219 _ offering pit. Photograph made by Matthias Flück.

In contrast to the majority of structures in Roman Oedenburg, the pit and the hearth in the temple complex originate from dry deposits located above the present-day water level. As a consequence only carbonised plant remains were recorded.

All samples were processed by means of semi-flotation as described by Hosch and Zibulski (2003), which is the same as „wash-over“, previously described by Kenward *et al.* (1980). Sieves of mesh sizes 4 mm, 1 mm and 0.35 mm were used. The dried flots and residues were sorted by means of a binocular microscope. For most of the 1mm and 0.35mm fractions, only a subsample was analysed. All subsamples were taken by means of a riffle box. Volumes of the subsamples measured approximately 100ml for the 1mm fraction, 50 ml for the 0.35mm fraction. All items of archaeological and ecological interest were recorded and extracted. The carbonised plant macro remains (mainly seeds and fruits) were identified using the modern reference collection in the laboratory of the Institute of Prehistory and Archaeological Science (IPAS) in Basel. Quantification of the plant remains was done using the following system : for cereal grains and pulses, whole ones and fragments with embryo end were counted as one, for the wild plants whole seeds were counted as one, fragments of fruit flesh and bread/dough were semi-quantified, for all others we refer to Table 1.

Results

Summary results of the macrobotanical analyses of the samples originating from the hearth and the pit are listed in Table 1. Total number of items recovered pro structure is given for each species, in addition the number of samples in which the item is present is listed. We have opted to put all samples together as no clear difference could be observed between the different spits while digging. This is especially true for structure 160/219, the offering pit, as it is the result of a single event (pers. com. P.-A. Schwarz). In the following, the results of the archaeobotanical analysis of the hearth and the pit in the temple complex are described, archaeobotanical results of other parts of the site are only mentioned for comparison.

When calculating the densities of the charred remains per litre per sample, we note a difference between 0.4 and 50.3 items per litre for structure 160/219; and between 1.8 and 11 items per litre for structure 50. This indicates that there exists a spatial variability of plant remains within the deposit.

Charcoal, charred fruit flesh and/or charred processed food were predominant in the samples of both the hearth and the offering pit. Additionally carbonised seeds and fruits of mainly cultural plants were frequent. The preservation of the plant remains can be classified from average to very good. Especially nuts of stone pine were very fragmented as well as the remains of fruit flesh and processed food.

Cereal remains are dominated by grains of naked wheats (*Triticum aestivum/durum/turgidum*), followed by common millet (*Panicum miliaceum*) and barley (*Hordeum vulgare*). Few grains of rye (S*ecale cereale*) and foxtail millet (*Setaria italica*) were found as well. Naked wheats are not very common in other structures like pits, wells etc. in Roman Oedenburg (Reddé *et al*. 2005). Their absence can most likely be explained by the preservational conditions in Oedenburg. The large majority of plant macro remains is preserved in a waterlogged state of preservation, the charred remains represent not even 10% of the total assemblage. So far the remains of uncarbonised cereal grain fragments, i.e. cereal bran, have not been identified but they are present in large amounts.

Note that much more charred cereal grains were found in the offering pit.

Pulses are represented by seeds of lentil (*Lens culinaris*), grasspea (*Lathyrus* sp.), pea (*Pisum sativum*) and broad bean (*Vicia faba*). They are more abundant and more diverse in the hearth. The offering pit yielded only two different species whereas in the hearth at least six species were recorded. Lentil and broad bean are commonly found in Roman Oedenburg, especially mineralised in latrine deposits. Grasspea and pea are less frequent, only carbonised remains have been recorded.

One, possibly two, cloves of garlic (*Allium sativum*) were recovered (Fig. 5). These are the only remains of garlic found so far in Oedenburg.

Table 1. Summary table of the carbonised macro plant remains found in structures 50 and 160/219 of the temple complex of Roman Oedenburg

	Structure n°	**Structure 50**		**Structure 160/219**	
		Hearth		**Offering pit**	
	Total n° of samples analysed	7		9	
	Total volume sieved in litres	303		140	
		Total n°of items	Number of samples in which the item is present	Total n°of items	Number of samples in which the item is present
Cereals					
Hordeum vulgare	grain	20	5	20	6
Secale cereale	grain			5	2
Triticum aestivum/durum/turgidum	grain	2	1	145	8
Triticum sp.	grain	1	1	31	4
Cerealia	grain	43	6	248	9
Panicum miliaceum	grain	9	2	83	4
Setaria italica	grain	1	1	2	1
Legumes					
Allium sativum	clove	1	1		
cf *Allium sativum*	clove			2	1
Fabaceae large	seed	2	1	19	4
Fabaceae	seed	31	4		
Lathyrus sp.	seed	4	2		
Lens culinaris	seed	22	4	24	2
cf *Lens culinaris*	seed			6	2
Pisum sativum	seed	1	1		
cf *Pisum sativum*	seed	4	2		
Vicia faba	seed	2	2		
Vicia sp.	seed	2	1	1	1
Nuts					
Corylus avellana	nut fragment	106	6	12	2
Juglans regia	nut fragment	123	4	6	2
cf *Juglans regia*	nut fragment	9	4		
Pinus pinea	nut fragment			596	8
Pinus pinea	whole nut			5	2
Pinus pinea	scale	5	3	34	5
Pinus pinea	cone fragment			1	1
Fruits					
Ficus carica	fruit fragment	23	4	148	8
Ficus carica	seed			120	3
Phoenix dactylifera	whole fruit			1	1
Phoenix dactylifera	fruit fragment	2	1	8	3
Phoenix dactylifera	stone			1	1
Phoenix dactylifera	stone fragment	3	1	10	4
Prunus persica	stone fragment	1	1		
Sambucus nigra/racemosa	seed			4	1
Vitis vinifera	pip	4	2	27	3
Indeterminate	fruit fragment	+ 200	7	+ 200	8
Indeterminate	bread/cake	present		present	
Weeds					
Chenopodiaceae	seed	27	3		
Galium boreale	seed	2	1		
Galium cf *spurium*	seed	4	3		
Poaceae	caryopsis	2	1		
Rumex obtusifolius type	seed	14	4	6	2
Silene alba	seed	16	1		
Sparganium sp	seed	5	2	1	1
Veronica hederifolia	seed	76	2	3	2

Figure 5. Clove of *Allium sativum*. Photograph made by G. Haldimann, © IPNA Basel University.

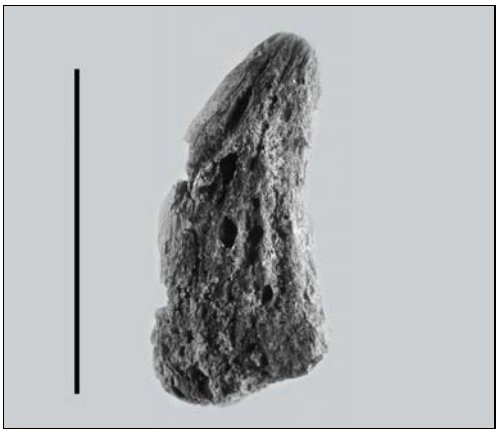
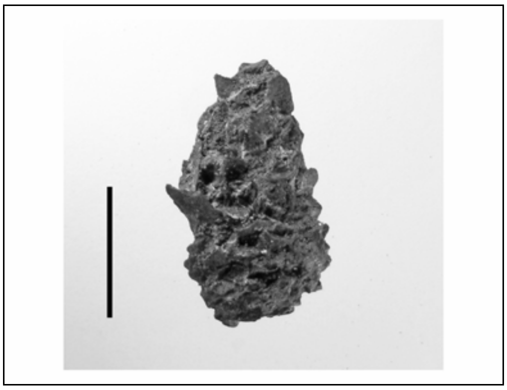


Figure 6. *Pinus pinea* – nuts. Photograph made by G. Haldimann, © IPNA Basel University.

Figure 7. *Pinus pinea* – apical end of cone. Photograph made by G. Haldimann, © IPNA Basel University.



Hazelnut (C*orylus avellana*), walnut (*Juglans regia*) and stone pine (*Pinus pinea*) represent the nuts in the temple complex. Hazelnut is widely used in Roman Oedenburg and found throughout the whole settlement. Macro remains of walnut are also rather common. In addition pollen analysis from a profile within the temple complex confirms the presence of a walnut tree (Wick 2004). Macro remains of stone pine in contrast are absent outside the temple area, except for one whole uncarbonised nut found in a drain in the civil settlement in 2005. Charred nut fragments (Fig. 6), uncarbonised nut found in a drain in the civil settlement in 2005. Charred nut fragments (Fig. 6), scales and a cone fragment (Fig. 7) of stone pine were among the findings in the hearth and the pit in the temple complex.

Fruits are dominated by fruit fragments and seeds of fig (*Ficus carica*). In addition remains of date (*Phoenix dactylifera*), peach (*Prunus persica*) and grape (*Vitis vinifera*) were found. Uncarbonised figs and grapes are very frequent in Roman Oedenburg, peach is also common. Date is rare in Oedenburg and was found only once before in a cremation urn (Reddé *et al*. 2005). Among the remains, a whole date fruit (Fig. 8) and a whole date stone (Fig. 9) were found.

Figure 8. Whole fruit of *Phoenix dactylifera.* Photograph made by G. Haldimann, © IPNA Basel University.

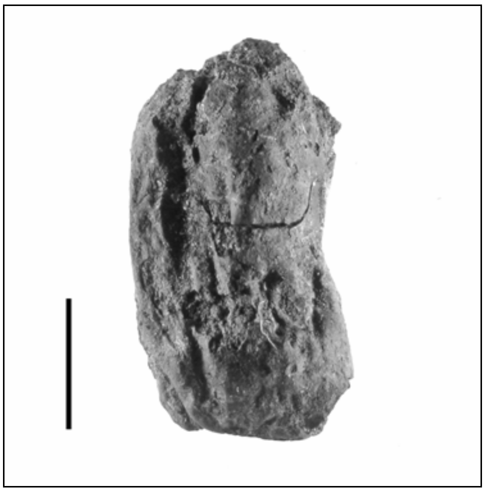


Figure 9. Stone of *Phoenix dactylifera*. Photograph made by G. Haldimann, © IPNA Basel University.

In both the hearth and the pit, many fragments of carbonised amorphous objects were found. They represent very likely fruit flesh and processed food. Only a part of the charred fruit flesh could be identified so far as a small number of fragments had the diagnostic features needed for more detailed identification. Fruit fragments of fig were identified, parts of date could also be recognised. The fragments of charred processed food most likely represent bread or dough. In future we would like to undertake a closer examination of the charred fruit flesh and processed food, in order to attempt some further identifications.

Non-cultural plants are present, particularly in the hearth. The majority of wild plants are characteristic of disturbed grounds and can thus represent the immediate surroundings. The presence of bur-reed (*Sparganium* sp), a perennial marsh plant, could also be anticipated as marshland surrounds the temple complex.

Discussion

Published records of archaeobotanical studies undertaken in Roman temples and places of worship to the Gods are scarce and very often originate from ‘old’ excavations. The latter implicates that very few indications are found as to the deposit in which they were found and as to the method of collection.

Table 2 summarises the results of archaeobotanical studies undertaken in thirteen temples, one sacrificial context within a house (House of the *Amaranthus* in Pompeii) and one pit at a Romano-British Shrine (Rocester). Several authors have already published overviews of these findings. Nevertheless we have encountered some shortcomings in these overviews. Therefore, after consulting most of the original publications, we decided to include another summary table in order to verify similarities between the different assemblages and the one found in Oedenburg.

The carbonised macro plant assemblage recovered from the temple complex in Oedenburg is to be interpreted as the remains of burnt vegetable offerings. Location of the plant remains (within the temple area) and contextual evidence (other artefactual evidence related to offering) gave already a first indication towards this interpretation. Secondly, the plants recovered are not usually in contact with fire for their consumption, therefore they are probably not accidentally burnt. And thirdly, remains of stone pine, date, fig, cereal and pulses among others are very frequently found as part of offerings in Roman sacred areas such as temples (Table 2) (Robinson 2002; Zach 2002; Beal 1994) and graves (Bouby, Marinval 2004; Petrucci-Bavaud, Jacomet 1997; Petrucci-Bavaud *et al*. 2000; Pradat unpublished).

From table 2 it is clear that macro remains of stone pine are most frequently found in sacred contexts, most of which are represented by complete cones and/or scales and nuts. They are present in twelve of the sixteen sites. Stone pines are native in the Mediterranean. Stone pine nuts in Oedenburg represent therefore imported goods. In Roman Oedenburg, imports are common, most of which are from the Mediterranean area (e.g. *Olea europea*, *Morus nigra*), some from further afield as India (*Piper nigrum*) and tropical Africa or Asia (*Lagenaria siceraria*) (Reddé *et al*. 2005; Erickson *et al*. 2005). Stone pine has, besides its domestic use, ritual associations. On the one hand stone pine nuts are widely used in Roman cooking. We mention here the findings of stone pine nuts in the kitchen of the Roman villa in Worb (Switzerland) (Brombacher 1998). On the other hand the cones and scales are used in ritual practices for its scent when burning (Kislev 1988; Robinson 2002).

Table 2. Overview of cultural plants found in Roman sacrificial contexts of temples

Site	cf Oryza sativa	Hordeum vulgare	Triticum sp free-threshing***	Triticum sp glumed***	Triticum sp not specified	Panicum miliaceum	Setaria italica	Cerealia	Allium sativum	Lathyrus sp	Lens culinaris	Pisum sativum	Vicia faba	Ficus carica	Phoenix dactylifera	Prunus cerasus	Prunus persica	Pyrus/Malus	Sambucus nigra/racemosa	Vitis vinifera	Castanea sativa	Corylus avellana	Juglans regia	Pinus pinea	Prunus dulcis	Linum usitatissimum	Olea europaea	Carbonised amorphous fragments**	Reference
Temple (1st/ 2nd C AD) Oedenburg (FR)		x	x		x	x	x	x	x	x	x	x	x	x	x		x		x	x		x	x	x				x	this article
Mithraeum (2nd half 3rd C AD) Tienen (BE)																												x	Cooremans 2004
Temple of Fortuna (3rd C AD) Nijmegen (NE)		x			x									x	x									x					Hänninen and Vermeeren 1997
Temple of Hercules (3rd C AD) Empel (NE)														x															Groenman-van Waateringe and Pals 1994
Le sanctuaire des basaltes (2nd C AD) Alba-La-Romaine (FR)														x	x									x			x		Beal 1994
Chapelle à Sucellus* (2nd C AD) Javols (FR)								x																					Beal 1994
Temple of Mithra (3th to 4 th C AD) Carrawburgh (ENG)																								x					Richmond 1951
Romano-British Shrine (late 1st to mid 2nd C AD) Rocester (ENG)					x			x							x			x				x		x					Monckton 2000
Temple of Mithras (1st -2nd C AD) London (ENG)																								x					Grimes 1968
Triangular Temple (2nd C AD) Verulamium (ENG)																								x					Wheeler and Wheeler 1936
Temple (2nd half 2nd C AD/ beginning 3rd C AD) Trier (GER)																								x					Gose 1972
Temple of Isis and Magna Mater (1st to 4th C AD) Mainz (GER)	x	x	x	x	x	x					x		x	x	x					x		x		x		x	x		Zach 2002
Temple of Mithra and Sol* (2nd and 3rd C AD) Novae (BULG)						x									x					x									Beal 1994
Iseum (1st C AD) Pompei (IT)														x	x						x	x	x	x					Tram Tan Tinh 1964, Overbeck 1884
House of Amaranthus (1st C AD) Pompei (IT)		x		x		x	x							x	x	x	x	x		x		x	x	x	x		x		Robinson 2002
Temple of Isis* (2nd and 3rd C AD) Andalusia (SP)											x			x	x									x					Lignereux after Megaloudi 2005
Total n°	1	4	2	2	3	4	2	3	1	1	3	1	2	8	9	1	2	2	1	4	1	5	3	12	1	1	3	2	

*original publication could not be checked

**represents fruitflesh and/or bread/pastry

***Triticum categories were simplified, all glume wheats are in one group, all free-threshing wheats in another

Stone pine nuts and scales are often found on archaeological sites especially in Roman sacred contexts. For an overview of the findings of stone pine see in the first place Kislev (1988), and furthermore Bakels and Jacomet (2003), Bouby and Marinval (2004) and Willcox (1977).
The second most frequently found plant in temple offerings is date, represented by whole fruits, stones and fruit flesh. It is recorded at nine of the sixteen sites. The third most commonly found plant is fig mostly present as whole fruits and parts of the fruit flesh, with an occurrence at eight sites. Both fruits, date and fig, represent Roman introductions in Oedenburg. The dates represent another import from the Mediterranean region. The cultivation of fig North of the Alps is a point of discussion, difficult to prove but plausible (Jacomet 2003).

Stone pine, date and fig seem to be the most important plants for offering. Their dominant presence is of course to some extent biased through the method of collection of macro plant remains. Assumed that plant remains were hand-collected at the majority of sites (9), it is fully logical that plant remains smaller and less recognisable by eye are/will be underrepresented. It is therefore thought that nuts other than stone pine, cereals and pulses were an equally important part of the offerings (see results of Mainz (Zach 2002); Pompeii (Robinson 2002) and Oedenburg). Very rare plants found in sacrificial deposits include rice (cf *Oryza sativa*) in the Isis temple in Mainz, chestnut (*Castanea sativa*) in the House of *Amaranthus* in Pompeii and garlic in Oedenburg. Findings of garlic are not very common in Roman times North of the Alps. Five findings of carbonised garlic cloves are known, they are from the graveyard at Windisch Dägerli (Petrucci-Bavaud *et al*. 2000), a grave in Augst (Petrucci-Bavaud 1996), another graveyard in Arconciel (Petrucci-Bavaud unpublished), a cellar in the *villa* in Gerlingen (Stika 1996) and the military camp in Novaesium (Knörzer 1966). Their almost absence in archaeological deposits is possibly due to preservational conditions (Bakels and Jacomet 2003).
In addition to the edible plants, in the House of *Amaranthus* in Pompeii some inedible ornamental plants as myrtle and cypress were recorded in the burnt offering deposits (Robinson 2002).

In general, it can be concluded that the plant assemblage recovered at the temple complex of Oedenburg is similar to the findings of other sacrificial sites in the Roman Empire. Moreover, it is interesting to note that plants for offering are similar or even identical throughout the Roman Empire regardless of the location of the site (Robinson 2002).

From our overview it is impossible to extract chronological tendencies as too many factors play a role in the composition of the assemblages (particularly the geographical location of the site and the method of collection of plant macro remains). However on a single site basis it is possible. In the House of *Amaranthus* in Pompeii, differences in offering practices have been established between pre-Roman deposits and Roman deposits. This could be interpreted either as a result of Romanisation and/or of urbanisation of the town (Robinson 2002). The burnt vegetable offerings from Roman Oedenburg result from two structures, which were not simultaneous in use, therefore chronological differences are investigated.

The plant macro remains found in the hearth and the offering pit differ. In the hearth, more sediment was sieved, less plant macro remains are recovered. The group of legumes is more diverse and represents a large part of the whole assemblage. Remains of hazelnut and walnut are much more plentiful. The exotic plant species are underrepresented, only five scale fragments of stone pine, one clove of garlic, some fruit and stone fragments of date and fruit fragments of fig were recorded. Though one fragment of peach stone was noted. Besides a fair amount of wild weeds were found. In the offering pit, the plant assemblage is dominated by nut fragments of stone pine, seeds and fruit fragments of fig and date and cereal grains. Few hazelnut, walnut and legumes are observed. Wild weeds are equally sparse.

How can we interpret these differences? Indeed, two different types of contexts are discussed. We know that the burnt remains from the offering pit are the result of a single event whereas the remains from the hearth could represent an accumulation over time. What is more, we assume that most of the hearth has not been preserved while it was found very near to the present surface. This is in contrast to the offering pit, which was preserved to a depth of approximately 0.5 m. Thus it can be expected to find lesser amounts of plant remains in the hearth. Nevertheless, there is also a difference in chronology, the hearth was used from the 1st C AD to the beginning of the 2nd C AD, the offering pit dates to the mid 2nd C AD. Could this therefore represent a difference in practices over time? In this respect we consider a study by Bouby and Marinval (2004) on plant offerings in Roman cremation graves in France. The study has shown that there exists a spatial variability in the plant spectrum between Central France/Limagne and Mediterranean France/Rhône valley. In the Limagne and Central France cereals and pulses are predominant in cremation graves whereas in the Rhône valley and Mediterranean France, exotic fruits such as date and pine nut, bread and pastry are more common. They conclude that this is a result of Romanisation, which was strongest on the Mediterranean/Rhône axis and expanded into the Rhine area (Bouby, Marinval, 2004). Accordingly, the difference in plant assemblage of the two structures under study could be regarded as an indicator of Romanisation in Oedenburg. Romanisation would be less established in the 1st C AD, along with our findings of predominantly pulses and cereals in the hearth, and well instituted in the 2nd C AD with the presence of almost exclusively exotic species and the absence of pulses in the offering pit. This is of course purely hypothetical and very hard to verify. Nonetheless, following (Bouby, Marinval 2004), we can extrapolate that the plant assemblage recovered from both structures is one typical of Roman practices and culture.

The total absence of stone pine, date and garlic in other parts of the settlement, adds to the special status of these plants in Oedenburg. It is clear that they were very exclusive and were only used for higher purposes. In this context we mention the absence of olive (*Olea europea*) in the temple complex. In other parts of the site we do have occasional finds of olive. Olive is also regarded as a luxury good and is often found in sacred contexts. Their absence in the temple area could be explained through the high oil content of the olive stones, which enforces complete burning of the stones (Jacomet 2003) and does not leave any trace.

Conclusion

Study of the literature confirms that the plant assemblage recovered from sacrificial contexts within the temple complex in Roman Oedenburg is one typical of Roman practices and culture. In comparison with other temple complexes, the list of offering plants found in Oedenburg is extensive. This can be partly due to the lack of detailed archaeobotanical studies at the majority of temple sites. Nevertheless it also confirms that the inhabitants of Roman Oedenburg had access to exotic plants as date and stone pine for the worship of the Gods. What is more, date and stone pine were possibly exclusively used for these purposes as no evidence is found within the very well preserved waterlogged archaeological layers of the civil settlement.

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Bibliography

Bakels, Jacomet 2003 : BAKELS (C.), JACOMET (S.) – Access to luxury foods in Central Europe during the Roman period: the archaeobotanical evidence. *World Archaeology* 34/3, 2003, p. 542-557.

Béal 1994 : Béal (J.-C.) – Le sanctuaire des basaltes à Alba-La-Romaine (Ardeche) et ses offrandes. *In:* GOUDINEAU (C.), FAUDUET (I.) and COULON (G.)(eds) – *Les sanctuaires de tradition indigène en Gaule Romaine*. Paris: Editions Errance – Musée d'Argentomagus, 1994, p. 161-168.

Bouby, Marinval 2004 : BOUBY (L.), MARINVAL (P.) – Fruits and seeds from Roman cremations in the Limagne (Massif Central) and the spatial variability of plant offerings in France. *Journal of Archaeological Science* 31, 2004, p. 77-86.

Brombacher 1998 : Brombacher (C.). – Archäobotanische Untersuchungen. *In:* RAMSTEIN (M.) – *Worb-Sunnhalde; Ein römischer Gutshof im 3. Jahrhundert*. Bern: Berner Lehrmittel- und Medienverlag, 1998, p. 105-108.

Cooremans 2004 : Cooremans (B.). – Palaeobotanical research. In: MARTENS (M.), DE BOE (G.) – Roman Mithraism: the evidence of the small finds. *Archeologie in Vlaanderen* 4, 2004, p. 49-51.

Erickson *et al*. 2005 : ERICKSON (D.L.), SMITH (B.D.), CLARKE (A.), SANDWEISS (D.H.), TUROSS (M.). – An Asian origin for a 10'000 year-old domesticated plant in the Americas. *PNAS* 102/51, p. 18315-18320.

Gose 1972 : GOSE (E.). – *Der gallo-römische Tempelbezirk im Altbachtal zu Trier; manuscript edited by R. Schindler*. Mainz: Zabern, 1972.

Grimes 1968 : GRIMES (W.F.). – *The excavation of Roman and Medieval London*. London: Routledge and Kegan Paul, 1968.

Groenman-van Waateringe, Pals 1994 : Groenman-van Waateringe (W.), Pals (J.-P.). – De vegetatie op en rondom het heiligdom. *In:* ROYMANS (N.), DERKS (T.)(eds) – *De tempel van Empel : een Herculesheiligdom in het woongebied van de Bataven*, Graven naar het Brabantse Verleden 2. s'Hertogenbosch: Stichting Brabantse Regionale Geschiedbeoefening, 1994, p. 72-81.

Hänninen, Vermeeren 1997 : HÄNNINEN (K.), VERMEEREN (C.). – Exotische offers. Botanisch onderzoek aan kuilen uit de Romeinse Fortuna-tempel op het Maasplein in Nijmegen. *BIAXiaal* 51, 1997, p. 1-11.

Hosch, Zibulski 2003 : HOSCH (S.), ZIBULSKI (P.). – The influence of inconsistent wet-sieving procedures on the macroremain concentration in waterlogged sediments. *Journal of Archaeological Science* 30, 2003, p. 849-857.

Jacomet *et al*. 2002 : Jacomet (S.) (in cooperation with Schlumbaum (A.), Klee (M.) and Vandorpe (P.)). – Les investigations archéobotaniques. *In*: REDDÉ (M.). – *Rapport Triennal (2000-2002) sur les Fouilles Franco-Germano-Suisses à Oedenburg (Haut-Rhin)*. Paris, Rapport scientifique non-publié, 2002, p. 283-307 + annexes.

Jacomet 2003 : Jacomet (S.). – Und zum Dessert Granatapfel - Ergebnisse der archäobotanischen Untersuchungen. *In*: HAGENDORN (A.), DOPPLER (H. W.), HUBER (A.), HÜSTER-PLOGMANN (H.), JACOMET (S.), MEYER-FREULER (C.), PFÄFFLI (B.), SCHIBLER (J.) – *Zur Frühzeit von Vindonissa. Auswertung der Holzbauten der Grabung Windsich-Breite 1996-1998*, 1. Veröff Ges pro Vindonissa 18, Brugg, 2003, p. 173-229.

Kenward, Hall 1980 : KENWARD (H.K.), HALL (A.R.). – A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits. *Science and Archaeology* 22, 1980, p. 3-15.

Kislev 1988 : Kislev (M.). – Pinus pinea in agriculture, culture and cult. *In:* KÜSTER (H.)(ed.) – *Der prähistorische Mensch und seine Umwelt (Festschrift Udelgard Körber-Grohne)*, Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 31, 1988, p. 73-79.

Knörzer 1966 : KNÖRZER (K.-H.). – Über römische Importfrüchte in Novaesium (Neuss/Rhein). *Bonner Jahrbücher* 166, 1966, p. 433-443.

Megaloudi 2005 : MEGALOUDI (F.). – Burnt sacrificial plant offerings in Hellenistic times : archaeobotanical case study from Messene, Peloponnese, Greece. *Vegetation History and Archaeobotany* 14/4, 2005, p. 329-340.

Monckton 2000 : Monckton (A.). – Charred plant remains. *In:* FERRIS (I. M.), BEVAN (L.), CUTTLER (R.) – *The Excavation of a Romano-British Shrine at Orton's Pasture*, Rocester, Staffordshire. BAR British Series 314, 2000, p. 67-71.

Nuber 2001 : Nuber (H.U.). – Le dispositif militaire du Rhin supérieur pendant l'antiquité tardive et la fortification d'Oedenburg. *In:* VILLE DE BIESHEIM, MUSÉE GALLO-ROMAIN (ed.) – *La frontière romaine sur le Rhin supérieur. A propos des fouilles récentes de Biesheim-Kunheim*, 2001, p. 37-40.

Nuber, Reddé 2002 : NUBER (H.U.), REDDÉ (M.). – Le site militaire romain d'Oedenburg (Biesheim-Kunheim, Haut-Rhin, France). Premiers résultats. *Germania* 80, 2002, p. 169-242.

Overbeck 1884 : OVERBECK (J.A.). – *Pompeji*. Leipzig: Wilhelm Engelman, 1884.

Petrucci-Bavaud 1996 : Petrucci-Bavaud (M.). – Pflanzliche Speisebeigaben in den Brandgräbern. *In:* HAEFFELÉ (C.) – *Die römischen Gräber an der Rheinstrasse 46 des Nordwestgräberfeldes von Augusta Raurica*, Jahresberichte aus Augst und Kaiseraugst 17, 1996, p. 253-259.

Petrucci-Bavaud, Jacomet 1997 : PETRUCCI-BAVAUD (M.), JACOMET (S.). – Zur Interpretation von Nahrungsbeigaben in römischen Brandgräbern. *Ethnographisch-Archäologische Zeitschrift* 38, 1997, p. 567-593.

Petrucci-Bavaud, Schlumbaum, Jacomet 2000 : Petrucci-Bavaud (M.), Schlumbaum (A.), Jacomet (S.). – Samen, Früchte und Fertigprodukte. *In:* HINTERMANN (D.) – *Der Südfriedhof von Vindonissa. Archäologische und naturwissenschaftliche Untersuchungen im römerzeitlichen Gräberfeld Windisch-Dägerli*, Veröffentlichungen der Gesellschaft Pro Vindonissa 17, 2000, p. 151-159.

Pradat unpublished : PRADAT (B.) – Analyse carpologique du Mausolée de Chavéria (Jura), „En rivière". DEA dissertation.

Reddé *et al*. 2005 : REDDÉ (M.), NUBER (H.U.), JACOMET (S.), SCHIBLER (J.), SCHUCANY (S.), SCHWARZ (P.-A.), GINELLA (F.), JOLY (M.), PLOUIN (S.), HÜSTER-PLOGMANN (H.), PETIT (C.), POPOVITCH (L.), SCHLUMBAUM (A.), VANDORPE (P.), VIROULET (B.), WICK (L.), WOLF (J.-J.), GISSINGER (B.), OLLIVE (V.), PELLISSIER (J.). – Oedenburg, une agglomération d'époque romaine sur le Rhin supérieur. *Gallia* 62, 2005, p. 215-277.

Richmond, Gillam 1951 : RICHMOND (I.A.), GILLAM (J.P.). – *The temple of Mithras at Carrawburgh.* Newcastle upon Tyne: The Society of Antiquities, 1951.

Robinson 2002 : ROBINSON (M.). – Domestic burnt offerings and sacrifices at Roman and pre-Roman Pompeii, Italy. *Vegetation History and Archaeobotany* 11, 2002, p. 93-99.

Schucany, Schwarz 2003 : Schucany (C.), Schwarz (P.-A.). – La zone des temples. *In:* REDDÉ (M.) – *Rapport sur les fouilles franco-germano-suisses à Oedenburg (Haut-Rhin)*. Paris: Rapport scientifique non-publié, 2003, p. 79-134.

Schucany, Schwarz 2004 : Schucany (C.), Schwarz (P.-A.). – La zone des temples. *In:* REDDÉ (M.) – *Rapport sur les fouilles franco-germano-suisses à Oedenburg (Haut-Rhin)*. Paris: Rapport scientifique non-publié, 2004, p. 61-94.

Schucany, Schwarz 2005 : Schucany (C.), Schwarz (P.-A.). – La zone des temples. *In:* REDDÉ (M.) – *Rapport sur les fouilles franco-germano-suisses à Oedenburg (Haut-Rhin)*. Paris: Rapport scientifique non-publié, 2005, p. 69-117.

Stika 1996 : STIKA (H.-P.). – Römerzeitliche Pflanzenreste aus Baden-Württemberg. *Materialhefte zur Archäologie in Baden-Württemberg* 36. Stuttgart: Konrad Theiss Verlag, 1996.

Tran Tam Tinh 1964 : TRAM TAM TINH (V.). – *Essai sur le culte d'Isis à Pompéi*. Paris: Broccard, 1964.

Vandorpe *et al*. 2003 : Vandorpe (P.), Wick (L.), Schlumbaum (A.), Jacomet (S.). – Biesheim-Kunheim 2003: Analyses botaniques préliminaires des échantillons archéobiologiques. *In*: REDDÉ (M.). – *Rapport sur les fouilles franco-germano-suisses à Oedenburg (Haut-Rhin)*. Paris: Rapport scientifique non-publié, 2003, p. 193-220.

Vandorpe *et al*. 2004 : Vandorpe (P.), Wick (L.), Schlumbaum (A.), Jacomet (S.). – Les analyses archéobotaniques de la zone des temples. *In*: REDDÉ (M.). – *Rapport sur les fouilles franco-germano-suisses à Oedenburg (Haut-Rhin)*. Paris: Rapport scientifique non-publié, 2004, p. 105-115.

Vandorpe *et al*. 2005 : Vandorpe (P.), Wick (L.), Schlumbaum (A.), Jacomet (S.). – Les analyses botaniques. *In*: REDDÉ (M.). – *Rapport sur les fouilles franco-germano-suisses à Oedenburg (Haut-Rhin)*. Paris: Rapport scientifique non-publié, 2005, p. 165-180.

Ville de Biesheim 2001 : VILLE DE BIESHEIM. – *La frontière romaine sur le Rhin supérieur. A propos des fouilles récentes de Biesheim-Kunheim*. Ville de Biesheim: Musée gallo-romain, 2001.

Wheeler, Wheeler 1936 : WHEELER (R.E.M.), WHEELER (T.V.). – *Verulamium : a Belgic and two Roman cities*. London: Society of Antiquaries, 1936.

Wick 2004 : Wick (L.). – Analyses de pollens. *In:* REDDÉ (M.) – *Rapport sur les fouilles franco-germano-suisses à Oedenburg (Haut-Rhin)*. Paris : Rapport scientifique non-publié, 2004, p. 104-105.

Willcox 1977 : WILLCOX (G.). – Exotic plants from Roman waterlogged sites in London. *Journal of Archaeological Science* 4, 1977, p. 269-282.

Zach 2002 : ZACH (B.). – Vegetable offerings on the Roman sacrifical site in Mainz, Germany – short report on the first results. *Vegetation History and Archaeobotany* 11, 2002, p. 101-106.

3. SYNTHESIS OF THE MAIN RESULTS AND FUTURE PERSPECTIVES

3.1. Main results of the archaeobotanical analysis

The Roman settlement Oedenburg is located in the Upper-Rhine valley among the Vosges Mountains and the Black Forest, between the present-day communities of Biesheim and Kunheim, Alsace, France (see Fig. 1 of this Volume). This southern part of the Upper-Rhine region is typified by a very mild and dry climate. The name 'Oedenburg' was first mentioned by Beatus Rhenanus in 1551 (Reddé *et al.* 2005). The first archaeological explorations date to the end of the 17th Cent. A.D.; in the 19th Cent. A.D. its name is acknowledged; since 1960 several investigations have taken place. Between 1998 and 2006 an extensive excavation program took place under the direction of Prof. M. Reddé. The main goal of the excavations was to find out more about the organisation of the settlement and its standing in the Upper Rhine region. More precisely, there are indicators towards an identification of Roman Oedenburg as *Argentovaria* (Reddé in press, Schucany in press). This hypothesis is however still questioned as no confirming inscription has been found so far (Reddé in press). *Argentovaria* is mentioned by Ptolemaeus as the *polis* of the Rauraci and later specified in the *Itinerarium* of *Antoninus* and the *Tabula Peutingeriana* (Reddé *et al*. 2005). The Rauraci are the indigenous people occupying the southern Upper Rhine Valley and part of the Hochrhein area, Oedenburg was an important settlement in the northern part of their territory. The archaeology of the Roman settlement is very complex; it comprises two successive 1st Cent. A.D. military camps, a civil agglomeration including a large temple complex (dated from the 1st to the 4th Cent. A.D.) and a Late Roman occupation (for a more detailed description of the archaeology see section 1.2 of this Volume).

The archaeobotanical record of the Roman site Oedenburg/Biesheim-Kunheim stands out. On the one hand this is through the excellent conditions of preservation of the archaeological layers, and, on the other hand through the intensity of the archaeobotanical investigation. The numerous excavations conducted in both the military camps and the civil agglomeration between 1999 and 2005 have yielded vast amounts of soil samples for archaeobotanical analysis. During the excavation seasons one or more archaeobotanists were present in the field for most of the time; this was to ensure a systematic sampling of features. The majority of sample processing was done during the excavation campaigns; for the first time very voluminous soil samples were processed and investigated (see section 2.2 and 3.2 of this Volume).

From the total of 986 taken and sieved samples, 315 were selected for this study because of their origin (civil agglomeration), chronology, and preservation (waterlogged). The results of 315 analysed samples originating from 90 different structures are analysed and discussed in this study. The large majority of these samples (310) are taken in the civil agglomeration (dated to the 1st and 2nd Cent. A.D.) (Reddé in press), few samples (5) originate from the 1st Cent. A.D. military camps (Reddé 2009). Within the civil agglomeration (based on the excavation results) three areas of interest are differentiated:

1) Civil East, a zone in the near vicinity and under strong influence of the military camp (dated from the 1st to the 3rd Cent. A.D.); 2) the Temple complex, an area enclosing several cultic buildings (dated from the 1st to the 4th Cent. A.D.); 3) the Surroundings of the temple complex, the area immediately to the north of the temple complex (dated from the 1st to the 4th Cent. A.D.)(see section 2.2 of this Volume, Fig. 7.1). The investigated structures comprise above all pits and layers, as well as ditches, postholes, vessel contents, and a basin (see section 2.2 of this Volume, Tables 1a, 1b and 1c); the majority

originate from waterlogged deposits, except for those in the temple complex which were taken in both waterlogged and dry deposits; all analysed structures are dated to the 1st or 2nd Cent. A.D. or could not be dated more precisely than Roman not specified (see section 2.1 and 2.2 of this Volume).

The emphasis of this study lies on structures from the civil agglomeration; this has been influenced by the conditions of preservation. In this part of the settlement the majority of the archaeological structures are located under the present water level. Consequently, waterlogging has taken place; organic remains are very well preserved; plant macro remains (i.e. seeds and fruits) are abundant. This is in contrast to the structures in the military camp. These were located in dry sediments. Thus, only mineralised and/or charred plant remains survived in the archaeological record and these are in general much less abundant (see section 2.1 of this Volume).

In total 303 plant taxa were identified; they were preserved mainly through waterlogging (292 plant taxa). Mineralised (57 plant taxa) and charred (58 plant taxa) plant remains were also recorded yet constitute only a minor part of the total assemblage. The registered plant spectrum is rich and diverse including many cultivated plants besides numerous wild plants.

3.1.1. The natural environment

The majority of plant macro remains found in the archaeological structures reached the settlement as a result of cultural activity. Consequently, it remains unclear from what distances plants were brought to the site. A reconstruction of the natural environment based on the study of plant macro remains is restricted; it has to be seen in relation to data from other sources such as on- and, mainly, off-site pollen profiles (see Wick and Schlumbaum 2009). Such profiles report that the natural vegetation in the area around Roman Oedenburg consisted of flood plain forests of both softwood and hardwood. Softwood forests, poor in species and dominated by willow (*Salix* sp.), alder (*Alnus* sp.), birch (*Betula* sp.) and poplar (*Populus* sp.) developed mainly in the lower areas which were prone to frequent flooding. Hardwood forest, very rich in species such as oak (*Quercus* sp.), beech (*Fagus sylvatica*), and common maple (*Acer campestre*) amongst others, developed primarily on the dry gravel terraces during periods of low water level. When the Romans arrived in the Upper Rhine region, they occupied a previously opened landscape which was cleared of most forests and intensively exploited by the indigenous Celtic societies (the Rauraci). They installed the settlement at the beginning of the 1st Cent. A.D. in the alluvial plains of the river Rhine; this area was characterised by the presence of many water courses, small islands and river terraces (Reddé et al 2005; Reddé in press). As stated above, numerous plant remains of the local vegetation of Roman Oedenburg have survived in the archaeological structures, both in pollen profiles and soil samples (see Wick and Schlumbaum 2009, section 2.2 of this Volume, p.71). These plant remains designate a moist environment with open and slowly flowing water. Many riverbank, reed, and aquatic plants are found which represent the immediate surroundings of the archaeological structures (see section 2.2 of this Volume, p. 57-58). The numerous findings of cereal remains, arable weeds and grassland vegetation in the archaeological structures point towards an open landscape of cereal fields, meadows and pastures in the near vicinity (see section 2.2 of this Volume, p. 53-56). This is supported by pollen analysis where low values were registered for arboreal pollen and high values of cereal and grassland pollen (Wick and Schlumbaum 2009).

3.1.2. Local nutrition

With the beginning of the Roman period many new food plants appear north of the Alps (Jacomet *et al.* 2002). They are introduced, imported, and in many cases then cultivated by the local population (see below). Compared with the Late Iron Age a change in nutritional pattern is perceptible in Roman Oedenburg. Furthermore, the plant spectrum exhibits a clear reflection of the Mediterranean alimentary habits.

As known from the archaeological record and written sources (André 1998), we assume that in Roman Oedenburg cereals and pulses were the main part of the basic diet. Cereal remains have been found in large quantities, especially waterlogged chaff remains and mineralised grains (see section 2.2 of this Volume, Fig. 7.3). The four most common cereal taxa are broomcorn millet (*Panicum miliaceum*) (waterlogged chaff in 29.1% of the samples, mineralised grains in 10.3% of the samples), spelt (*Triticum spelta*) (waterlogged chaff in 24.9 % of the samples, charred in 6.5% of the samples), emmer (*Triticum dicoccum*) (waterlogged chaff in 13 % of the samples, charred in 5.2% of the samples) and barley (*Hordeum vulgare*) (waterlogged rachis fragments in 10 % of the samples, charred grains in 10.6% of the samples). In much smaller amounts (less than 4% of the samples) oats (*Avena* sp.), rye (*Secale cereale*), naked wheat (*Triticum aestivum/durum/turgidum*), foxtail millet (*Setaria italica*) and einkorn (*Triticum monococcum*) were found. The assemblage of cereal species is similar to that attested on other Roman sites in the Upper Rhine region and the North of Switzerland (see section 2.2 of this Volume; Reddé *et al.* 2005). In the spectrum of cereals, no chronological difference/change is perceptible between the 1st and 2nd Cent. A.D.

Three pulses are attested in Oedenburg; they comprise lentil (*Lens culinaris*), broad bean (*Vicia faba*) and common pea (*Pisum sativum*). Mineralised seeds of pulses are present in 9% of the samples, charred seeds in 11.3% and waterlogged seeds in 5% of the samples. Their low representation is likely due to the conditions of preservation and does not reflect their actual significance (see section 2.2 of this Volume). Again no chronological distinction exists between the 1st and 2nd Cent. A.D.

A clear indicator of the Roman culinary habits is the use of spices. In total 12 different species were identified; the most common ones are coriander (*Coriandrum sativum*), dill (*Anethum graveolens*) and celery (*Apium graveolens*) (respectively found as waterlogged items in 33.7%, 26.8% and 18% of the samples); the most exotic ones include black pepper (*Piper nigrum*), aniseed (*Pimpinella anisum*) and black cumin (*Nigella sativa*) (present in less than 1% of the samples). The latter are very uncommon on other Roman archaeological sites north of the Alps (Reddé *et al.* 2005; see section 2.2 of this Volume, p. 89 and Tab. 6). Almost all spices found in Oedenburg were introduced during the Roman period. Most macro remains of spices are found in the area Civil East, this could be due to the type of deposits in this area (many latrine deposits); no chronological differentiation is noted in the distribution of spices.

Besides spices, there is evidence of various vegetables and salads. Of note are two stalks, many seeds and part of the fruit wall of bottle gourd (*Lagenaria siceraria*) and two cloves of garlic (*Allium sativum*). Both are introduced with the Romans and represent very rare findings north of the Alps (see section 2.2 of this Volume, p. 92, Fig. 7.6d, 7.7g and Tab. 6).

A last group of food plants are the nuts and fruits of which both gathered and cultivated taxa are abundant. Macro remains of fruits have the highest distribution within the samples; waterlogged specimen are found in 78% of the samples (see section 2.2 of this Volume, Fig. 7.4). Among the cultivated nuts and fruits there are some imported species; they include date (*Phoenix dactylifera*), olive (*Olea europaea*), and stone pine (*Pinus pinea*) (for the abundance in the studied samples see below). Others are introduced and possibly cultivated locally, they include, in order of abundance, fig (*Ficus carica*), grape (*Vitis vinifera*), apple and pear (*Malus domestica* and *Pyrus communis/pyraster*), cherry (*Prunus avium/cerasus*), walnut (*Juglans regia*), peach (*Prunus persica*), plum (*Prunus insititia/domestica*), melon and cucumber (*Cucumis melo and Cucumis sativa*), and black mulberry (*Morus nigra*). Among the gathered food plants, hazelnut (*Corylus avellana*) and elderberry (*Sambucus nigra/racemosa*) are the most frequent (present in respectively 43% and 39% of the samples), besides winter cherry (*Physalis alkekengi*), dewberry (*Rubus caesius*), and blackthorn (*Prunus spinosa*) (present in respectively 25%, 23% and 18% of the samples). Again no chronological difference between the 1st and 2nd Cent. A.D. is visible in the findings of fruits and nuts.

On the whole it can be said that the inhabitants of Roman Oedenburg had access to a wide variety of vegetable food. Their dishes were seasoned with typically Roman condiments, while fruits and nuts from both local and foreign sources were regularly consumed.

As conditions of preservation are different in the civil agglomeration and the military camp, a comparison between both plant spectra is not viable. In the military camp the plant assemblage is small, and no new species were found; it is dominated by mineralised plant macro remains of mainly cultivated plants such as millet (*Panicum miliaceum*), fig (*Ficus carica*), grapevine (*Vitis vinifera*), apple/pear (*Malus/Pyrus*), and lentils (*Lens culinaris*) (see section 2.1 of this Volume, Tab. 9.1).

In general, a modification or evolution between the 1st and 2nd Cent. A.D. is not discernable in the archaeobotanical record. Consequently with the end of the military occupation around 70 A.D. trading activities with, or food supplies from, the Mediterranean did not cease (see section 2.2 of this Volume).

Comparing the spectrum of food plants of Roman Oedenburg with other contemporary sites in the Upper Rhine region and the North of Switzerland, it is observed that the list of food plants in Oedenburg is extensive and varied (see section 2.1 of this Volume, Tab. 9.1; section 2.2 of this Volume, Tab. 3a, 3b, 3c and Fig. 7.12; section 2.4 of this Volume, Tab. 1). Very few, and often exotic, plants were not found in Roman Oedenburg, e.g. almond (*Prunus dulcis*) (Rösch pers.comm.), pomegranate (*Punica granata*) ((Jacomet et al. 2002; Jacomet 2003); see section 2.2 of this Volume, Tab. 6). In addition one exotic plant, black cumin (*Nigella sativa*), was only found in Roman Oedenburg (see section 2.2 of this Volume, p. 49, 81, 82, 92, Tab. 6 and Fig. 7.7.i).

Only two sites have a similar assemblage. They are: 1) the *vicus* of Lahr-Dinglingen (D), also situated in the Upper Rhine region, located in a similar environment, 50 km to the North of Oedenburg, on the other side of the river Rhine (Rösch 1995; Rösch pers. comm.); 2) the military settlement of Vindonissa (CH), located in NW-Switzerland, at the confluence of the rivers Aare and Reuss (Jacomet 2003), and at a distance of approximately 100 km from Oedenburg. Both sites have good conditions of preservation; in Lahr-Dinglingen the studied samples are from waterlogged deposits within a 2nd Cent. A.D. well; in the early Roman occupation layers of Vindonissa (Excavation Windisch-Breite) samples originate from burnt destruction layers. It is thought that the rich and exotic plant spectrum found in Vindonissa is the result of a military presence of highly-ranked officers before the foundation of the military camp, and later of the military occupation (Jacomet 2003). Such a trend is also observed in other Roman sites with a military character (Bakels and Jacomet 2003; Livarda and Van der Veen 2008). In Roman Oedenburg, both excellent conditions of preservation and a military occupation are present. The rich and diverse plant assemblage suggests a very important centre; yet is to be linked with the military occupation of the site and after that with its function as a centre of distribution (see section 2.2 of this Volume, p. 93-94; Reddé in press).

3.1.3. Import

It is acknowledged that many new food plants reached the Alsace with the beginning of the Roman period. The majority originate from the Mediterranean region, only some are from further distances. Many of these new food plants require similar climatic conditions to those found in Alsace. Due to its permeable calcerous substratum the Alsace characterised by a warm climate with low precipitation and dry summers (Moor 1962). The annual precipitation lies between 500 and 700 mm. The climate is very mild and almost sub Mediterranean which meant many of the new food plants could grow in Roman Oedenburg; others could not adapt to the local climate and are thus undoubtedly imported.

The definite imports include black pepper (*Piper nigrum*), black cumin (*Nigella sativa*), olive (*Olea europaea*), date (*Phoenix dactylifera*) and stone pine (*Pinus pinea*). Except for pepper, which is native to India, all are native to the Mediterranean region. Findings of these five plant taxa are uncommon in Roman Oedenburg, as well as on other sites north of the Alps (see section 2.2 of this Volume, Tab. 6). Black pepper is found in less than 1% of the samples; two waterlogged corns were found in the area Civil East, in a 1st and 2nd Cent. A.D. pit respectively. Findings of black pepper are rare north of the Alps (Reddé *et al*. 2005). Black cumin is found in less than 1 % of the samples, two mineralised seeds were recorded in a 2nd Cent. A.D. pit in the area Civil East. They represent the first Roman age findings of black cumin north of the Alps (see section 2.2 of this Volume, p. 82). As on other sites, olive is slightly more common than the other imports in Oedenburg (present in 5% of the samples; see section 2.2 of this Volume, Tab. 6); waterlogged stones were found in both the 1st and 2nd Cent. A.D. in the area Civil East and the Surroundings of the temple complex. Date is again very rare (in 2.3 % of the samples); a complete fruit, a stone, stone fragments and fruit fragments were found in a 2nd Cent. A.D. pit and hearth in the temple complex; they were part of vegetable offerings (see section 2.2. and section 2.4 of this Volume). In these same structures, remains of stone pine were found (see section 2.2. and section 2.4 of this Volume) (in 3.9% of the samples); they include nuts, scales and part of a cone. One waterlogged nutlet was found in the Surroundings of the temple complex (see section 2.2 of this Volume). Evaluating the presence of definite imports on Roman sites in the Upper Rhine region and the North of Switzerland, it can be said that most of them occur on sites where good conditions of preservation are encountered or where a link with sacrificial practices exists (see section 2.2 of this Volume, p. 89).

The imported food plants where local cultivation is theorised comprise bottle gourd (*Lagenaria siceraria*), fig (*Ficus carica*), melon (*Cucumis melo*), cucumber (*Cucumis sativa*), peach (*Prunus persica*), and grapevine (*Vitis vinifera*). Again the majority comes from the Mediterranean region except for bottle gourd which is native to Asia. The latter is confirmed by an on-going investigation of ancient DNA of the fruit and morphological study of the seeds of the Roman bottle gourd found in

Oedenburg (Schlumbaum and Vandorpe in prep.). It is thought that findings of these plant taxa in 1st Cent. A.D. assemblages represent imports (i.e. fig and grapevine were possibly dried prior to transport). As findings become more frequent towards the end of the 1st Cent. A.D., it is seen as a sign for the initiation of local cultivation. With the beginning of the Roman period, the development of gardening and fruit tree cultivation is noted (Wiethold 2003). The issue of local cultivation is very complex and can not be answered through investigation of plant macro remains only, so far data from pollen analysis which might prove local cultivation by the presence of flowering specimen is still lacking (see section 2.2 of this Volume, p. 82).

The introduced food plants where local cultivation is plausible (as they can also grow in central European climates) are: dill (*Anethum graveolens*); celery (*Apium graveolens)*; coriander (*Coriandrum sativum)*; summer savory (*Satureja hortensis*); caraway (*Carum carvi*); common rue (*Ruta graveolens*); aniseed (*Pimpinella anisum*); parsley (*Petroselinum crispum*); walnut (*Juglans regia)*; apple (*Malus domestica*); pear (*Pyrus communis/pyraster*); cherry (*Prunus avium /cerasus*); plum (*Prunus domestica / insititia*); black mulberry (*Morus nigra*); beet (*Beta vulgaris*); parsnip (*Pastinaca sativa)*; garlic (*Allium sativum*); fennel (*Foeniculum vulgare*). The majority of these plant taxa represent common findings in Roman Oedenburg, except for black mulberry, caraway, common rue, parsnip, garlic, and aniseed. It is clear that these food plants could be cultivated locally after initial introduction, it remains, however, unclear how widespread local cultivation of these new plants was. In this context, the presence of 19 arable weeds native in the Mediterranean area and appearing from the Roman period onwards north of the Alps is questioned; they could refer to the import of cereal grain (see below and section 2.2 of this Volume, p. 77-79).

Finally, one more imported plant was attested in Roman Oedenburg, namely safflower (*Carthamus tinctorius*). Numerous waterlogged seeds were found and interpreted as part of a seed transport for the initiation of local cultivation. Safflower is native to the Near East and Central Asia. It can grow in the lowlands of the river Rhine (Oberdorfer 1994). It is a plant used for dyeing (from the flowers) and oil extraction (seeds). So far other archaeological findings of safflower north of the Alps are absent in the Roman period (see section 2.2 of this Volume, p. 84 and Fig. 7.7k).

3.1.4. Agricultural practices

The presence of a military occupation at the site during the 1st Cent. A.D. is likely to be the direct cause for the need of large food supplies. While very few sites have been archaeobotanically analysed in the immediate surroundings of Oedenburg, we can obviously not exclude that the provisions of the civil and military settlement were supplied by other rural sites instead of cultivation by the local inhabitants. As stated above, the beginning of the Roman period is characterised by an open landscape with arboreal pollen not exceeding 20 to 30 %; the development of the herbaceous vegetation is at the expense of the woodland; an increasing abundance of cereal pollen and grassland pollen is recorded (Wick and Schlumbaum 2009).

Based on the arable weed flora and the grassland vegetation, the local agricultural practices in Roman Oedenburg were reconstructed. It is clear that a mixture of ecological types were exploited; they are a good reflection of the near surroundings of the settlement. From our data we infer that there was a large exploitation of garden plots for the cultivation of vegetables, spices, and pulses. These gardens were preferably located within the settlement area; a hypothesis which is supported by the archaeologists as large empty spaces are observed in the settlement area (Reddé in press). In addition, both summer and winter cereals were cultivated in the vicinity of the site. The arable weed flora indicates that different kinds of soil types are exploited for both the summer and winter crops; they include nutrient-rich soils of sand and loam and calcareous soils; there are also signs of soils with a high nitrogen content which indicates manuring.

As mentioned above, the arable weed flora in Oedenburg is characterised by large quantities of the 19 weeds belonging to the Order of the Secalietalia, Caucalion alliance (see Tab. 1). They are classified as weeds of winter cereals. Characteristic for weeds of the Caucalion alliance is a dry warm climate and their preference of calcareous soils. These weed species have been the trigger of many debates about the origin of cereals in Oedenburg. Were stocks of cereal grains imported over long distances from the Mediterranean? Were the weeds of the Caucalion alliance introduced to the region as part of these cereal transports? Or were these arable weeds already present before the arrival of the Romans? The archaeobotanical data-set of pre-Roman and Roman times in the Alsace region is still rather meagre. However, recent findings have demonstrated that many of the weeds of the Caucalion alliance found in Oedenburg were present in pre-Roman times in the region around Basel (Jacomet and Brombacher 2009) (see Tab. 1). This would be in favour of the hypothesis that cereals were grown locally. However four weeds attested in Oedenburg were not yet found before Roman times north of the Alps (see section 2.2 of this Volume, p. 77-79); they are muskweed (*Myagrum perfoliatum*), corn buttercup (*Ranunculus arvensis*), thorow-wax (*Bupleurum rotundifolium*), and devil-in-a-bush (*Nigella arvensis*).

Tab. 1. Weeds belonging to the Caucalion Alliance found in Oedenburg and findings of these weeds in the region around Basel before Roman times (after Jacomet and Brombacher 2009).

Species of the Caucalion alliance present in Roman Oedenburg	**Preservation in Oedenburg**			**First findings beyond Oedenburg (after Jacomet and Brombacher 2009)**			
	wl	ch	min	Neolithic	Bronze Age	Iron Age	Roman times
Ajuga chamaepitys	x				x		**x**
Avena fatua		x			x	x	**x**
Bupleurum rotundifolium	x						
Caucalis platycarpos	x	x	x		x	x	**x**
Euphorbia exigua	x			x	x	x	x
Galium spurium	x	x	x	x	x	x	x
Glaucium corniculatum	x	x				x	x
Myagrum perfoliatum	x	x					
Nigella arvensis	x						
Orlaya grandiflora	x				x	x	x
Ranunculus arvensis	x						
Scandix pecten-veneris	x				x	x	x
Silene cf *dichotoma*	x						
Stachys annua	x			x	x	x	x
Thymelaea passerina	x					x	x
Torilis arvensis	x				x	x	x
Vaccaria pyramidata	x		x		x		x
Valerianella dentata	x			x	x	x	x
Vicia cf *angustifolia*		x			x	x	x

Muskweed is the most frequently found Caucalion taxon in Oedenburg, of which its robust and slightly lignified siliques are found (see section 2.2 of this Volume, Fig. 7.8e); it is very consistently dispersed throughout the settlement; it was even found in the earliest layers within the temple complex (3/4 A.D.). Concerning the large quantity of weeds of the Caucalion alliance in Oedenburg, the following is hypothesized: it is not proven nor excluded that these arable weeds reached the settlement as part of imported cereal stocks from the Mediterranean area; whether this was a single event or a continuous practice is hard to verify; the diffusion of these weeds into the area can be explained by the sowing of the imported cereal grains on the calcareous gravel terraces, the latter providing a good substitute to their natural habitat. This remains a working hypothesis; future research in the area will hopefully clarify this matter.

The presence of meadows and pastures in the vicinity of the site is not only confirmed by the plant macro remains, it is also detected by pollen analysis. At the beginning of the Roman period, the percentage of grassland pollen is already very high (Wick and Schlumbaum 2009). The deposit of stable manure and/or bedding in one of the pits located in the area Civil East (BK99-04-01, see section 1.1 of Volume II, p. 4) suggests the management of meadows and pastures. This deposit included a very large and well preserved assemblage of grassland vegetation. It represents a unique deposit in Roman Oedenburg as grassland plants are generally scarce. Based on the flowering times of the different taxa found in this deposit, it was concluded that meadows were cut in late summer and hay was used as fodder or bedding in stables. This is in accordance with many other known results of grassland management during Roman times (see p. 79 of section 2.2 of Volume I).

3.1.5. Interpretation of archaeobotanical assemblages

The majority of archaeobotanical assemblages found in Roman Oedenburg derive from mixed deposits. Yet, it was possible to discern between plant assemblages of different human activities. We have evidence of waste disposal, wetland management and offering practices. In the last part of this section, we discuss the problems of identifying crop processing products and by-products in waterlogged deposits.

To define the nature of waste material, we used criteria such as the spectrum of plants, their preservation and their abundance. Similar criteria have been applied before by e.g. Hellwig (1989) in analysing medieval latrines or by Kenward and Hall (1997) on the use of indicator groups for the identification of stable manure. We identified five types of waste-deposits.

1) A very frequent deposit are <u>faecal remains</u>. In Roman Oedenburg – like in other, clearly defined latrine sediments - faecal remains are characterised by large amounts of cereal bran fragments, stone cells of pear, pericarp of apple/pear, small seeded food plants, and compacted organic remains. The number of remains is usually very high; their preservation is waterlogged as well as mineralised. Faecal remains are found predominantly in pits in the area Civil East (e.g. BK00/01-04-24 (p. 6-7 and Fig 3 of Volume II); BK01-04-38 (p. 16 and Fig. 6 of Volume II)) and the military camp (see section 2.2 of this Volume, p. 62 and section 2.1 of this Volume)

Faecal remains are an important tool in the understanding of past eating habits. Many seeds and/or fruits of food plants can survive the digestion process; others are destroyed by this process. Therefore studying faecal remains often gives a distorted image of the dietary pattern, under-representing the large-seeded food plants like cereals and pulses (see 3.1.1).

2) Organic layers were investigated / are found in and at the edges of the palaeochannels in the area Civil East and in the Surroundings of the Temple complex. In these layers we defined the presence of products and/or by-products of cereal processing. For reasons outlined below we did not define the exact stage of processing. However, the co-occurrence of large amounts of cereal chaff and arable weeds are a clear indication that on the one hand, they can be identified as processing debris and on the other hand they must have been deposited there deliberately (see section 2.2 of this Volume, p. 72); where the actual processing took place is not defined, it is possible that by-products were brought in from outside the settlement to serve other usage (see Van der Veen 2007, p. 974).

3) In a large pit (BK99-04-01, dated to the 2nd third of the 1st Cent. A.D. and contemporary with the military camp) in the area Civil East the presence of stable manure was determined (see section 2.2 of this Volume, p. 61 and section 1.1 of Volume II, p. 4 and Fig. 1). The lowest layer of this pit is characterised by a strongly compacted, dark brown, organic deposit. This deposit yielded merely waterlogged plant material. The plant spectrum of this deposit consisted of wild plants only, mainly of cultivated meadow and pasture communities. The preservation of these plant remains was excellent. In addition compacted organic material with lots of straw-like material was found. Similar deposits have been found in the Roman castle of Welzheim (Körber-Grohne and Piening 1983) and have been described by Kenward and Hall (1997).

4) In almost all structures, we could identify the presence of cooking activities. These deposits are characterised by charred plant material (above all cereal grains) and charcoal. While these plant remains were so scarce in the samples, we classified them equally as settlement noise indicating the near vicinity of cultural activity (see section 2.2 of this Volume, p. 34 and Tab. 3b).

5) The local vegetation of the Roman settlement was very frequently represented, particularly in the waterlogged samples. Based on the plant spectrum (these macro remains included many ruderal plants as well as plants indicating the presence of marshland and water, see section 2.2 of this Volume, p. 55-58), it is concluded that the local environment was characterised by ruderal communities on the one hand and by wetland on the other hand.

Besides waste disposal, the presence of wetland management is confirmed. The dumping of waste material in rivers and water courses is a known practice in Roman times. It has been registered in Solothurn Vigier (Jacomet *et al*. 1993) in the Swiss Mittelland (at the river Aare), and in Xanten (Knörzer 1981) in the lower Rhine area. In Roman Oedenburg, we equally find waste material in and at the edges of the palaeochannels especially large amounts of cereal processing debris. It is very likely that these deposits served other purposes, such as drainage. Besides the plant macro remains, layers of brushwood matting are deposited in these areas prone to flooding. They were installed in between wooden posts and are very effective in periods of heavy rainfall (see section 2.2 of this Volume, p. 72).

In the temple complex, the presence of vegetable offerings was determined. Offering of food plants is a known Roman tradition. Plants used for offering are even similar or identical throughout the Roman Empire despite the geographical location of the site (Robinson 2002). The most frequently found plant species in 14 studied temple complexes and/or structures with a sacrificial nature in the Roman Empire are stone pine, date and fig (see section 2.4 of this Volume, Tab. 2). However, we observed that the spectrum of plants is largely dependent on the recovery techniques used during excavation (see section 2.4 of this Volume). In Roman Oedenburg, we found a rich and varied assemblage of charred plant remains in both a hearth and a pit in the temple complex (see section 2.4 of this Volume, Tab. 1). The hearth and pit date respectively to the end of the 1st/beginning of the 2nd Cent. A.D. and to the mid 2nd Cent. A.D. The charred plant assemblage comprises fruit flesh and processed food as well as seeds and fruits of cultural plants. The latter are best represented by nut fragments (stone pine nut, walnut and hazelnut), cereals (above all naked wheat), fruits (fig) and pulses (lentil) (see section 2.2 of this Volume, Fig. 7.6; see section 2.4 of this Volume, Fig. 6-7). In addition, we registered findings of garlic (two cloves) (see section 2.4 of this Volume, Fig. 5) and date (fruit and stone fragments) (see section 2.4 of this Volume, Fig. 8-9). In the civil agglomeration of Roman Oedenburg stone pine and date are very rarely found; even though the archaeological structures are extensively studied and well-preserved. One waterlogged stone pine nut was found in the Surroundings of the temple complex, and remains of charred date were found in a cremation urn in the area Civil East (Reddé *et al*. 2005). Based on these findings it is thought that date and stone pine were exclusively used for sacred practices and not for daily consumption (see section 2.2 of this Volume, p. 73-74).

Inferring from the many findings of cereal remains and the large population inhabiting Roman Oedenburg, it must be clear that processing of crops was an important part of daily life. In addition, crop processing has a major impact on sample composition and therefore, variations due to crop processing should be detected before making assumptions about crop husbandry and economy (Jones 1987). Each step in the processing of the crops has an effect on the composition of a sample (Hillman 1984). An ethnographic study of present-day traditional agriculture has shown that the weed seed composition changes for every different stage in crop processing (winnowing, coarse sieving and fine sieving). This is according to three characteristics of the weed seeds, namely size, headedness, and aerodynamic qualities (Jones 1984; 1987). Jones developed a method to detect crop processing products and by-products in archaeobotanical samples using the weed seed composition of an archaeobotanical sample and comparing them to the ethnographic data gathered from Amorgos, Greece (Jones 1984; 1987). For the purpose of this analysis weed seeds are categorised according to the three characteristics named above. Using discriminant analysis samples are grouped according to their weed seed composition. For the application of this model, suitable samples need to be selected.
In her book about Neolithic farming, Bogaard (2004) summarises the criteria she used for the selection of suitable samples for her analysis: the ideal sample comes from a single deposit, is rich in crop

(minimum 100 items) and weed remains (more than 50 items), and represents a single crop type and crop processing stage.

1) For her analysis she omitted all waterlogged plant remains as the interpretation of such remains can be problematic. In waterlogged environments (almost) any plant material preserves; this implies that plant species from a very wide range of habitats can be found, and thus not only those weeds that charred together with the cultivated plants. As many potential arable weed species can also grow in non-arable environments, it is difficult to reconstruct the way they reached the settlement. So far no research has been done on the identification of crop processing stages in waterlogged plant material. Hosch and Jacomet (2004) used Spearman's rank correlation coefficient in order to find out which weed species could be identified as arable weeds in the Neolithic settlement of Arbon Bleiche 3. Through statistical analysis they discovered a high significance between nine different weed species and one or more cultivated plants. These nine weed species are still today arable weeds and possibly represented the most common arable weeds at that time. For Roman Oedenburg, we are confronted with the same problem, (which weeds represent arable weeds), but on a much larger scale as so many wild plants are recovered.

2) Another problem in the selection of samples quoted by Bogaard is their stratigraphic origin. As the model developed by Jones (1984) is based on the co-occurrence of arable weed species, it is important to select those samples which do not derive from mixed deposits. Ideally one would consider only 'closed contexts' which represent one single event. Such samples are however very rare.

As the majority of studied samples in Roman Oedenburg represent mixed deposits and a large part of the wild plants can not be exclusively attributed to one category of ecological unit, the identification of differences between the crop processing debris could not be undertaken. However, at least generally, it can be said that by-products of grain dehusking, fine sieving and coarse sieving were found.

3.2. Methodological issues

The archaeobotanical analysis of rich waterlogged archaeological deposits requires a well-considered strategy in order to obtain the maximum amount of information in the minimum amount of time, assuming that the objectives of the analysis are reached. Following these lines of thought, several methodological issues were considered at the beginning of the project:

a) the <u>sieving of bulk samples</u> from Roman waterlogged deposits was initiated, to make sure enough plant material was recovered in the largest fraction with the aim of reaching the minimum number of seeds to define the actual proportions of a taxon within an assemblage (see Van der Veen and Fieller 1982).

b) a <u>procedure</u> for the handling of bulk samples was defined, in order to process as many samples as possible during each excavation season. All samples have been sieved using "semi-flotation" as described by Hosch and Zibulski (2003) or "wash-over" previously described by Kenward and Hall (1980). Sieves of mesh sizes 4 mm and 1 mm were used, as these have proven most appropriate for collecting the majority of organic material. Before sieving, a sample of approximately 100ml was taken for the study of pollen and parasites; additionally a random one litre reference sample was taken (using the grid-system described by van der Veen and Fieller 1982). This reference sample was taken for the recovery of plant material from the smallest fraction (0.35 mm) as much less soil needs to be processed to achieve the minimum numer of seeds to be counted in this fraction; this reference sample was stored and processed at a later stage. All information concerning the samples (structure information, volume before and after sieving etc.) was registered in a sieving diary. This method is now successfully applied on other excavations supervised by the IPAS in Basel.

c) a way of analysing as many samples as possible in a short period of time was sought; as very large amounts of samples were taken during each excavation season. A systematic rapid screening of the 4 mm and 1 mm fractions was initiated. Several authors have previously acknowledged that semi-quantitative recording of plant remains can be very effective (Hall and Kenward 1990, Kenward and Hall 1995, Kenward and Hall 1997). Preceding examination of the different fractions of the samples has shown that most of the macro plant remains (seeds and fruits) are found in the 4 and 1 mm fraction, only occasionally new species were found in the 0.35 mm fraction. Therefore, only the 4 mm and 1 mm fraction of the sieved samples were included for rapid screening. The entire 4 mm organic fraction and a subsample of 100 ml in the 1 mm organic fraction were screened. All subsamples in the 1 mm fraction were taken using the grid system as described by Van der Veen and Fieller (1982) to ensure randomness within the subsamples. The abundance of the archaeological and/or ecological material (charcoal, waterlogged wood, insects, plants etc.) found within the 4 and 1 mm fraction was estimated by eye. The presence of macro plant remains was recorded using a binocular microscope, seeds and fruits were semi-quantified using a five-point-scale (1 = present, 2 = 2 – 10 items, 3 = 11 – 50 items, 4 = 51 – 500 items, 5 = 500+ items). The advantage of this system is: 1) a large amount of samples can be analysed in a short period of time, and 2) a good overview of the plant assemblage is obtained. The disadvantage of this system is: 1) the limitations concerning semi-quantitative data (e.g. no density of plant remains in a sample can be calculated), an 2) a good knowledge of the identification of plant macro remains is required.

d) processing of very compacted organic sediments can be problematic, very time-consuming and has the possibility of damaging fragile plant remains. In Roman Oedenburg, many samples originating from such ‘problem soils’ were encountered; the need to ease the sieving process was required. The solution to this problem was sought in the treatment of samples/sediment before sieving, a so-called pre-treatment method. Pre-treatment methods described in the literature and commonly used in archaeobotanical labs were tested (for details see section 2.3 of this Volume). The difference of this experiment to what is known from the literature lies in the fact that all pre-treatment methods were tested on the same sample/same material and the impact on the plant remains was considered. Practically, twelve subsamples taken from three samples were pre-treated. The four selected pre-treatment methods consisted of boiling the sediment in water, freezing the sediment and subsequently defrosting it, soaking the sediment in $NaHCO_3$ (sodium bicarbonate), and heating the sediment with 10 % KOH (potassium hydroxide). Four subsamples from each of the three samples were pre-treated with one of the four techniques and were subsequently sieved. The experiment showed that two pre-treatment methods enhanced the sieving of compacted organic sediment. They comprise heating with 10% KOH and freezing/defrosting. Analysis of the plant remains recovered with these two pre-treatment techniques gave an unambiguous answer as to which method is more appropriate. Heating with KOH has a very large influence on fragile plant remains and damages them severely in the form of fading and/or disintegrating, e.g. waterlogged cereal chaff (see section 2.3 of this Volume, Fig. 1-4). Freezing and defrosting samples, on the other hand, gave very good results. The plant remains are very well preserved and least fragmented even in comparison to plant remains from untreated samples. In addition freezing and defrosting is cheap and does not leave any chemical waste. Within the experiment only four methods were tested with special concern of the waterlogged plant material. However, previous work by de Moulins (1996) had already shown the minor effects of freezing on charred material. Since performing this experiment, the freezing of samples prior to sieving is largely applied in the archaeobotanical lab of the IPAS in Basel and has enhanced the processing of a wide range of soil types considerably.

3.3. Future prospects

The plant assemblage recovered from Roman Oedenburg is (as repeatedly stated) rich, diverse and, partly, exotic. For the purpose of this study, different research questions were investigated (see section 1.3 of this volume). However the material has a huge potential and is far from exhausted; further analysis could definitively add information to what has already been studied. For example, a detailed statistical analysis of the samples using a multi-variate approach could help confirm the classification of different deposits; it would equally allow a good comparison of deposits within and between structures. In addition, a detailed comparison between the results of plant macro remain analysis and on-site pollen analysis would be very interesting; to address, among others, the question of local cultivation.

4. Bibliography

André J. (1998) *Essen und Trinken im alten Rom*. Stuttgart, Philipp Reclam jun. GmbH & Co., 279.

Bakels C. and Jacomet S. (2003) Access to luxury foods in Central Europa during the Roman period: the archaeobotanical evidence. *World Archaeology* 34(3), p. 542-557.

Bogaard A. (2004) *Neolithic Farming in Central Europe. An archaeobotanical study of crop husbandry practices*. London, Routledge, 209.

Hall A.R. and Kenward H.K. (1990) Environmental evidence from the Colonia: General Accident and Rougier Street. *The Archaeology of York* 14 (6), p. 289-434.

Hellwig M. (1989) Botanischer Beitrag zur Funktionsanalyse an mittelalterlichen Feuchtsedimenten aus Braunschwieg. *Nachrichten aus Niedersachsens Urgeschichte* 58, p. 267-271.

Hillman G. (1984) Interpretation of archaeological plant remains: the application of ethnographic models from Turkey. In: van Zeist W. and Casparie W. (eds) *Plant and Ancient Man.* Rotterdam, A.A. Balkema Publishers, p. 1-41.

Hosch S. and Jacomet S. (2004) Ackerbau und Sammelwirtschaft. Ergebnisse der Untersuchung von Samen und Früchten. In: Jacomet S., Schibler J., Leuzinger U. (eds) *Die neolithische Seeufersiedlung Arbon Bleiche 3: Wirtschaft und Umwelt*. Amt für Archäologie des Kantons Thurgau, Archäologie im Thurgau 12, Frauenfeld, p. 112-157.

Hosch S. and Zibulski P. (2003) The influence of inconsistent wet-sieving procedures on the macroremain concentration in waterlogged sediments. *Journal of Archaeological Science* 30, p. 849-857.

Jacomet S. (2003) Und zum Dessert Granatapfel - Ergebnisse der archäobotanischen Untersuchungen. In: Hagendorn A., Doppler H. W., Huber A., Hüster-Plogmann H., Jacomet S., Meyer-Freuler C., Pfäffli B. and Schibler J. *Zur Frühzeit von Vindonissa. Auswertung der Holzbauten der Grabung Windsich-Breite 1996-1998*, 1. Veröff Ges pro Vindonissa 18, Brugg, p. 173-229.

Jacomet S., Wagner C., Wacker Feigenwinter K., Felice N. and Albrecht H. (1993) *Samen und Früchte aus vorrömischen, römerzeiltlichen und mittelalterlichen Ablagerungen in der Altstadt von Solothurn (Schweiz), Areale Vigier und Klosterplatz*, unpublished manuscript.

Jacomet S., Kucan D., Ritter A., Suter G., Hagendorn A. (2002), Punica granatum L. (Pomegranates) from early Roman contexts in Vindonissa (Switzerland). *Vegetation History and Archaeobotany* 11, p. 79-92.

Jacomet S., Schibler J., Maise C., Wick L., Deschler-Erb S. (2002) Mensch und Umwelt. In: Flutsch L., Niffeler U., Rossi F. (eds.) *Römische Zeit*. Basel, Verlag Schweiz. Ges. für Ur- und Frühgeschichte, p. 21-40.

Jacomet S. and Brombacher C. (2009) Geschichte der Flora in der Regio Basiliensis seit 7500 Jahren: Ergebnisse von Untersuchungen pflanzlicher Makroreste aus archäologischen Ausgrabungen. *Mitt. der Naturforsch. Ges. beider Basel* 11, p. 27-106.

Jones G. (1984) Interpretation of archaeological plant remains. In: van Zeist W. and Casparie W. (eds) *Plant and Ancient Man.* Rotterdam, A.A. Balkema Publishers, p. 43-61.

Jones G. (1987) A statistical approach to the archaeololgical identification of Crop processing. *Journal of Archaeological Science* 14, p. 311-323.

Kenward, H.K., Hall, A.R. and Jones, A.K.G. (1980) A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits. *Science and Archaeology* 22, p. 3-15.

Kenward H.K. and Hall A.R. (1995) Biological evidence from Anglo-Scandinavian deposits at 16-22 Coppergate. *The Archaeology of York* 14 (7), p. 435-797.

Kenward H.K. and Hall A.R. (1997) Enhancing Bioarchaeological Interpretation Using Indicator Groups: Stable Manure as a Paradigm. *Journal of Archaeological Science* 24, p. 663-673.

Knörzer K.-H. (1981) Römerzeitliche Pflanzenfunde aus Xanten. *Archäo-physika* 11.

Körber-Grohne U. and Piening U. (1983) Die Pflanzenreste aus dem Ostkastell von Welzheim mit besonderer Berücksichtigung der Graslandpflanzen. In: Körber-Grohne U., Kokabi M., Piening U., Plank D. (eds.) *Flora und Fauna im Ostkastell von Welzheim.* Stuttgart, Konrad Theiss Verlag, p. 17-88.

Livarda A. and Van der Veen M. (2008) Social access and dispersal of condiments in North-West Europe from the Roman to the medieval period. *Vegetation History and Archaeobotany* 17, p. 201-209.

Moor M. (1962) *Einführung in die Vegetationskunde der Umgebung Basels in 30 Exkursionen*. Basel: Lehrmittelverlag des Kantons Basel-Stadt, 464.

de Moulins D. (1996) Sieving experiment: the controlled recovery of charred plant remains from modern and archaeological samples. *Vegetation History and Archaeobotany* 5, p. 153–56.

Nuber H.U. and Reddé M. (2002) Le site militaire romain d'Oedenburg (Biesheim-Kunheim, Haut-Rhin, France). Premiers résultats. *Germania* 80, p. 169-242.

Oberdorfer E. (1994) *Pflanzen-soziologische Exkursionsflora.* Stuttgart, Ulmer.

Ollive V., Petit C., Garcia J.-P. and Reddé M. (2006) Rhine flood deposits recorded in the Gallo-Roman site of Oedenburg (Haut-Rhin, France). *Quaternary International* 150, p. 28-40.

Reddé *et al*. (1999) Oedenburg. Fouilles de 1999. Rapport intermédiaire. Paris, unpublished excavation report.

Reddé M. (2000) Oedenburg 2000. Premier rapport intermédiaire du programme triennal de fouilles sur le site de Biesheim-Kunheim. Paris, unpublished excavation report.

Reddé M. (2001) Oedenburg. Fouilles 2001, Rapport intermédiaire n°2. Paris, unpublished excavation report.

Reddé M. (2002) *Rapport Triennal (2000-2002) sur les Fouilles Franco-Germano-Suisses à Oedenburg (Haut-Rhin)*. Paris, unpublished excavation report.

Reddé M. (2003) *Rapport sur les fouilles franco-germano-suisses à Oedenburg (Haut-Rhin)*. Paris, unpublished excavation report.

Reddé M. (2004) *Rapport sur les fouilles franco-germano-suisses à Oedenburg (Haut-Rhin)*. Paris, unpublished excavation report.

Reddé M. (2005) *Rapport sur les fouilles franco-germano-suisses à Oedenburg (Haut-Rhin)*. Paris, unpublished excavation report.

Reddé M. (2009) *Oedenburg I. Les camps militaires julio-claudiens*. Mainz, Verlag des Römisch-Germanischen Zentralmuseum, 432.

Reddé M. (in press) *Oedenburg II. L'agglomération civile*. Mainz, Verlag des Römisch-Germanischen Zentralmuseum.

Reddé M., Nuber H.U., Jacomet S., Schibler J., Schucany S., Schwarz P.-A., Ginella F., Joly M., Plouin S., Hüster-Plogmann H., Petit C., Popovitch L., Schlumbaum A., Vandorpe P., Viroulet B., Wick L., Wolf J.-J., Gissinger B., Ollive V., Pellisier J. (2005) Oedenburg, une agglomération d'époque romaine sur le Rhin supérieur. *Gallia* 62, p. 215-277.

Robinson D.E. (2002) Domestic burnt offerings and sacrifices at Roman and pre-Roman Pompeii, Italy. *Vegetation History and Archaeobotany* 11, p. 93-99.

Rösch M. (1995) Römische Brunnen in Lahr - Fundgruben für die Botanik. *Archäologische Ausgrabungen in Baden-Württemberg* 1994, p. 151-156.

Schlumbaum and Vandorpe (in prep.) *Genetische und morphologische Untersuchungen am römischen Flaschenkürbissen aus der Nordwestschweiz*.

Schucany C. (in press) Exkurs : Überlegungen zu Ptolemaius, Argentovaria – und zu Oedenburg? In: M. Reddé (in press) *Oedenburg II. L'agglomération civile*. Mainz, Verlag des Römisch-Germanischen Zentralmuseum, p. 286-289.

Schucany and Schwarz (in press) Der Gallo-römischen Tempelbezirk und seine Umgebung. In: M. Reddé (in press) *Oedenburg II. L'agglomération civile*. Mainz, Verlag des Römisch-Germanischen Zentralmuseum, p. 35-284.

van der Veen M. (2007) Formation processes and carbonized plant remains – the identification of routine practice. *Journal of Archaeological Science* 34, p. 968-990.

van der Veen M. and Fieller N. (1982) Sampling seeds. *Journal of Archaeological Science* 9, p. 287-298.

Vandorpe P. and Jacomet, S. (2007) Comparing different pre-treatment methods for strongly compacted organic sediments prior to wet-sieving: a case study on Roman waterlogged deposits. *Environmental Archaeology* 12 (2), p. 207-214.

Vandorpe P. and Jacomet S. (2009) Pflanzliche Ernährung. In: M. Reddé (ed.) *Oedenburg I. Les camps militaires julio-claudiens*. Mainz, Verlag des Römisch-Germanischen Zentralmuseum, p. 365-368.

Vandorpe P. and Jacomet S. (in press) Plant economy and Environment. In: M. Reddé (ed.) *Oedenburg II. L'agglomération civile*. Mainz, Verlag des Römisch-Germanischen Zentralmuseum.

Vandorpe P. and Jacomet S. (in press) Remains of burnt vegetable offerings in the temple area of Roman Oedenburg (Biesheim-Kunheim, Alsace , France) – first results. In: J. Wiethold (ed.) *Travaux d'archéobotanique* (à la mémoire de Karen Lunstrom Baudais). Bibracte (Glux-en-Glenne in press).

Ville de Biesheim (2001) *La frontière romaine sur le Rhin supérieur. A propos des fouilles récentes de Biesheim-Kunheim*. Musée gallo-romain, Ville de Biesheim.

Wick L. and Schlumbaum A. (2009) Die natürliche Vegetation. In: M. Reddé (ed.) *Oedenburg I. Les camps militaires julio-claudiens*. Mainz, Verlag des Römisch-Germanischen Zentralmuseum, p. 37-43.

Wiethold J. (2003) How to trace the »Romanisation« of central Gaule by archaeobotanical analysis? - Some considerations on new archaeobotanical results from France Centre-Est. In: Actualité de la Recherche en Histoire et Archéologie agraire (ed.) *Actes du colloque international AGER V, septembre 2000*. Besançon, Presses Universitaires Franc-Comptoises, p. 269-282.

VOLUME II

1. Catalogue of structures

1.1. Catalogue of structures: Civil East

Structure N°	**BK99-04-01**
Type of structure	**Pit**
Area of excavation	**Civil East**

Archaeological description

Structure BK99-04-01 represents a very large pit. It was dug in 1999 and is located in the south eastern part of the excavated area. The pit is elongated in shape and measures approximately 13m (Length) by 7m (Width). The maximal depth of the pit is 1.60m. Its walls are inclined and irregular, its base is flat. Stratigraphical observations suggest that this pit was dug in alluvial deposits. After its primary use (possibly gravel extraction for the building of a road), it is thought that a rapid filling of the pit occurred. The lowest layer (US 310) which is located under the current water level represents a dark organic layer and is composed of waterlogged organic material mainly. Many wooden artefacts and wood working debris were recovered. The layer immediately above US 310 (US 306) is very different in composition, no waterlogging occurred. It contained above all ceramics, animal bones, metal objects and charcoal. The heterogeneous nature of the different layers in the pit is likely to be the result of similar activity namely waste disposal. It is suggested that Structure BK99-04-01 represents the first evidence of Roman activity in this area.

Illustration Fig. 1

Date

Based on artefactual evidence: 2nd third of 1st Cent. A.D.
Dendrochronological date: terminus post quem 62 A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK994009	5000	Rapid screening	PV	04	1	346.1
BK994010	5000	Rapid screening	PV	04	1	346.2
BK994013	5000	Rapid screening	PV	04	1	347.2
BK994015	4000	Rapid screening	PV	04	1	347.4
BK994021	7000	Rapid screening	PV	04	1	351.2
BK994023	7000	Rapid screening	SJ	04	1	351.4
BK994024	5000	Full analysis	PV	04	1	351.5
BK994024	5000	Rapid screening	PV	04	1	351.5
BK994026	5000	Rapid screening	SJ	04	1	352.1
BK994027	4000	Full analysis	PV	04	1	352.2

Archaeobotanical analysis

Nine samples were analysed. They originate from US 310 which represents the lowest layer of the fill of the pit. Hardly any inorganic material was found, organic material was abundant. The organic fraction of all samples consisted of strongly compacted waterlogged material in which many culms and compacted nodules of soil were found. Charred and mineralised plant material was nearly absent. Waterlogged seeds and fruits on the contrary were abundant. The large majority of the seeds and fruits represent wild weeds; economic species form only a minor part. The latter comprise above all cereal remains (barley (*Hordeum vulgare*), spelt (*Triticum spelta*) and broomcorn millet (*Panicum miliaceum*)), vegetables (carrot (*Daucus carota*) and cabbage (*Brassica* sp)) and spices (coriander (*Coriandrum sativum*), celery (*Apium graveolens*) and summer savory (*Satureja hortensis*)). No fruits were recorded. Exceptional is the find of not only the seeds but part of the stalk of a bottle gourd (*Lagenaria siceraria*). Only one other fragment of the fruit wall of a bottle gourd has been found in Oedenburg, in a layer in a palaeochannel (BK03-09-74), all other findings have been seeds. The spectrum of wild weeds is very diverse. Remarkable is the wide variety and large quantity of grassland species; they represent taxa growing in meadows, pastures and open swards. Besides cereal weeds, ruderal plants and weeds of reed fields and riverbanks are recorded. The composition of plant remains is of much interest as almost exclusively wild weeds have been recovered within this structure; and the composition of the samples before sieving was very characteristic and unique for the structures in Oedenburg. They were very compacted, composed of organic material only, homogenous in their composition and lots of large vegetative remains as stems were visible. Because of these different features, it is very likely that we are dealing here with the remains of stable manure and/or bedding.

Classification	**Pit, Horizon 1**
Reference	Reddé (in press) p. 427-440

Structure N°	**BK99-04-86**
Type of structure	**Pit**
Area of excavation	**Civil East**
Archaeological description	Structure BK99-04-86 represents a circular pit. It was discovered during the 1999 excavation campaign in the south-western part of the excavated area. It is located under the floor level of the complex of thermae and is interpreted as a well.
Illustration	Fig. 2
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK994047	4000	Rapid screening	SJ	04	**86**	230.1
BK994048	8000	Rapid screening	PV	04	**86**	235.1
BK994049	7000	Rapid screening	PV	04	**86**	235.2

Archaeobotanical analysis

Three samples from the lower levels of this pit were analysed. They contained a large organic fraction dominated by mineralised and waterlogged plant material. The mineralised remains consisted of wood, concretions (which strongly remind of latrine deposits) and seeds/fruits. The waterlogged remains consisted of mainly seeds and fruits. In addition few charred plant remains (charcoal and very few others) were registered. Fly papuaria, bone fragments and fish vertebrae were also recorded.
The spectrum of seeds and fruits is dominated by edible plants such as lentils (*Lens culinaris*), dill (*Anethum graveolens*), figs (*Ficus carica*), apple/pear (*Malus/Pyrus*) and grape (*Vitis vinifera*). Hardly any cereal remains were recovered. Wild weeds were sparse and include mainly ruderal plants.
The different types of conservation of seeds and fruits suggest different kinds of waste deposits. It is very likely that we are dealing with a mix of latrine deposits and other kinds of waste of human activity.

Classification	**Pit, Horizon 1**
Reference	Reddé (in press) p. 450-451

Structure N° **BK00/01-04-24**

Type of structure **Pit**

Area of excavation **Civil East**

Archaeological description

Structure BK00-04-24 was excavated in 2000. It was found in the north-eastern corner of the excavated area and primarily identified as a V-shaped ditch. The ditch measured approximately 2m and was about 80cm deep. Its bottom layer (US 04) is characterised by a very organic fill which is well preserved through its location under the current water level. In 2001, it was recognised that this structure was part of a very large elongated pit (BK01-04-24) and is located in the continuation of ditch BK00-04-24 dug in 2000. The pit is 1.5m long and has a depth of 0.5m. Its walls are inclined and its base is flat. It had a very dark brown organic fill.

Illustration Fig. 3

Date Based on artefactual evidence : 2nd half of the 1st C AD

Archaeobotanical analysis

Excavated in 2000

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK004002	8000	Rapid screening	SJ	04	**24**	P2
BK004003	8000	Rapid screening	SJ	04	**24**	P3
BK004003	8000	Practicum		04	**24**	P3
BK004004	1000	Rapid screening	SJ	04	**24**	P4
BK004006	2500	Rapid screening	SJ	04	**24**	P6
BK004007	4000	Rapid screening	SJ	04	**24**	P7
BK004008	6000	Rapid screening	SJ	04	**24**	P8
BK004008	6000	Practicum		04	**24**	P8
BK004009	2000	Rapid screening	SJ	04	**24**	P9
BK004010	3500	Rapid screening	SJ	04	**24**	P10
BK004011	7000	Rapid screening	SJ	04	**24**	P11

Excavated in 2001

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK14025	6000	Rapid screening	PV	04	**24**	01C
BK14026	8000	Rapid screening	PV	04	**24**	01D
BK14027	8000	Rapid screening	PV	04	**24**	01E
BK14029	8000	Rapid screening	PV	04	**24**	01G
BK14034	8000	Rapid screening	PV	04	**24**	02C
BK14035	6000	Rapid screening	PV	04	**24**	02D
BK14036	7000	Rapid screening	PV	04	**24**	02E
BK14038	4000	Rapid screening	PV	04	**24**	02G
BK14041	7000	Rapid screening	SJ	04	**24**	03A
BK14043	10000	Rapid screening	PV	04	**24**	03C
BK14044	9000	Rapid screening	PV	04	**24**	03D
BK14045	7000	Rapid screening	PV	04	**24**	03E
BK14047	5000	Rapid screening	PV	04	**24**	03G
BK14050	8000	Rapid screening	SJ	04	**24**	04A
BK14051	5000	Full analysis	PV	04	**24**	4B
BK14052	7000	Rapid screening	PV	04	**24**	04C
BK14053	8000	Rapid screening	PV	04	**24**	04D
BK14054	8000	Rapid screening	PV	04	**24**	04E
BK14064	17000	Rapid screening	PV	04	**24**	05B
BK14065	12000	Full analysis	PV	04	**24**	5C
BK14066	14000	Rapid screening	PV	04	**24**	05D
BK14069	10000	Rapid screening	PV	04	**24**	05E
BK14071	6000	Full analysis	PV	04	**24**	06B
BK14073	1000	Rapid screening	PV	04	**24**	04AD
BK14082	1000	Rapid screening	SJ	04	**24**	5/6 A/B

Structure N°	**BK00/01-04-24 (suite)**
Archaeobotanical analysis	Thirty six samples were analysed; nine are from the 2000 excavation campaign, 25 from the 2001 excavation campaign. The latter originate from a dark organic deposit (US 01) which has been sampled intensively. US 01 was dug in different spits (1 to 6). Each of these spits has been sampled using a chessboard system. The samples have delivered mineralised, charred and waterlogged remains of both edible and wild plants. In addition mineralised concretions representing faecal remains were identified. Edible plants are dominating the assemblage. They consist of a very rich and diverse assemblage of fruits, spices, cereals, vegetables and salads. The findings of a grain of pepper (*Piper nigrum*) (very rare in Roman context), olive stones (*Olea europaea*), seeds of melon or cucumber (*Cucumis melo/sativa*) and stones of cherry (*Prunus avium/cerasus*), plum are remarkable. Pepper and olive do not grow in north of the Alps and represent imported products. Besides edible plants many weeds were found. They include arable weeds, plants from meadows and pastures, ruderal plants, aquatic and riverbank plants. The different types of preservation, the plant spectrum and the mineralised concretions are indicative of the presence of faecal remains. In addition, fruit stone and charred macrofossils show that the pit was also used as a dump. It is obvious that some of the recorded wild plants reflect human activities, others come from the local vegetation. The pit was probably used a latrine and garbage dump.
Classification	**Pit, Horizon 1**
Reference	Reddé (in press) p. 410-415

Structure N°	**BK00-04-53**
Type of structure	**Pit**
Area of excavation	**Civil East**
Archaeological description	BK00-04-53 represents a pit possibly used for the evacuation of water (sinkhole). It was dug during the 2000 excavation season and is located within living quarters (ensemble A).
Illustration	Fig. 4
Date	2nd Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK004034	8000	Rapid screening	SJ	04	**53**	P34
BK004034	8000	Practicum (Full analysis)		04	**53**	P34

Archaeobotanical analysis

One sample was analysed. Predominantly waterlogged plant macro remains were preserved. It concerns mainly edible plants. Fig (*Ficus carica*), apple (*Malus domestica*), grape (*Vitis vinifera*) and unspecified stone fruits are the most commonly attested ones. Millet (*Panicum miliaceum*), pulses and spices were found in small quantities. Other than waterlogged plant material, mineralised seeds and fruits were found. The large majority of mineralised remains could not be identified, only millet (*Panicum miliaceum*) was identified. From the given findings, it is suggested that Structure BK00-04-53 was used as waste disposal and possibly as latrine.

Classification	**Pit, Horizon 2**
Reference	Reddé (in press) p. 473

Structure N°	**BK01-04- 02**
Type of structure	**Pit**
Area of excavation	**Civil East**
Archaeological description	Structure BK01-04-02 represents a pit. It is dug in 2001 and is located in the north-eastern part of the excavated area. Within the pit several layers could be observed. It is thought that the pit is part of a large area used as waste disposal.
Illustration	No
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK14007	6000	Rapid screening	SJ	04	**02**	05
BK14008	2000	Rapid screening	SJ	04	**02**	07

Archaeobotanical analysis	Two samples from two different layers within structure BK01-04-02 were analysed. They have yielded -in order of abundance- waterlogged, charred and mineralised plant remains. Above all edible plants were represented. The lowest layer US 07 gave more waterlogged material. In US 05 more charred material was found, namely cereal remains. The plant macro remains found within this pit suggest the presence of different kinds of waste material possibly faecal material.
Classification	**Pit, Horizon 1**
Reference	Excavation report 2001 (p.32)

Structure N°	**BK01-04- 08**
Type of structure	**Pit**
Area of excavation	**Civil East**
Archaeological description	Structure BK01-04-08 represents an elongated pit. It was dug in 2001. This pit, which is located in the north-eastern part of the excavated area, has been flattened by a small construction. It is possibly related to structure BK01-04-15.
Illustration	No
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	**Volume**	**Type of analysis**	**Who**	**Field**	**Structure**	**US**
BK14009	7000	Rapid screening	SJ	04	**08**	00

Archaeobotanical analysis	One sample from the bottom of this pit was analysed. It was not located under the current water level, thus no waterlogged plant remains were preserved. The organic material consisted of wood charcoal, few charred cereal remains and some hazelnut shell fragments. It is suggested that the seeds and fruits originate from settlement noise.
Classification	**Pit, Horizon 1**
Reference	Reddé (in press) p. 408

Structure N°	**BK01-04-14**
Type of structure	**Pit**
Area of excavation	**Civil East**
Archaeological description	Structure BK01-04-14 represents a pit used to secure a storage jar. It was dug in 2001 and is located in the north-eastern part of the excavated area. This structure was found as part of a collection of several jars or urns and possibly represents a ritual deposit.
Illustration	no
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK14015	5500	Rapid screening	SJ	04	**14**	02

Archaeobotanical analysis	One sample from the fill of the pit was analysed. Very few waterlogged plant macro remains were recovered. They consisted of millet (*Panicum miliaceum*) and hazelnut (*Corylus avellana*). Given these sparse findings, an interpretation based on the plant macro remains is not possible as it is likely that they derive from secondary deposits.
Classification	**Pit, Horizon 1**
Reference	Reddé (in press) p. 425

Structure N°	**BK01-04-15**
Type of structure	**Pit**
Area of excavation	**Civil East**
Archaeological description	Structure BK01-04-15 represents a pit. It was dug in 2001. This pit, which is located in the north-eastern part of the excavated area, has been flattened by a small construction. It is possibly related to structure BK01-04-08.
Illustration	No
Date	1st Cent. A.D.
N° of samples Type of analysis	

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK14017	13000	Rapid screening	SJ	04	**15**	02

Archaeobotanical analysis	One sample from the fill of this pit was analysed. As the pit lay above the current water level, no waterlogging has been observed. In the organic fraction mainly wood charcoal was recovered, very few charred cereal grains. Based on the plant macro remains, no indications as to the use of this pit can be given.
Classification	**Pit, Horizon 1**
Reference	Reddé (in press) p. 409

Structure N°	**BK01-04-25**
Type of structure	**Pit**
Area of excavation	**Civil East**
Archaeological description	Structure BK01-04-25 represents a pit. It was dug in 2001 and is located in the northern part of the excavated area. It has an irregular form and a depth of 0.70m. Its fill is heterogeneous. It is suggested that this pit is part of a large area used as waste disposal.
Illustration	Fig. 5
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	**Volume**	**Type of analysis**	**Who**	**Field**	**Structure**	**US**
BK14020	14000	Rapid screening	PV	04	25	01A
BK14021	12000	Rapid screening	SJ	04	25	01B
BK14022	12000	Rapid screening	PV	04	25	01C
BK14059	20000	Rapid screening	SJ	04	25	Fonds de fosse
BK14059	20000	Rapid screening	PV	04	25	

Archaeobotanical analysis

Four samples from the same layer were analysed. It concerns a very organic layer towards the bottom of the pit. Mineralised and charred plant remains are nearly absent, the samples are dominated by the presence of waterlogged plant remains. In contrast to other waterlogged refuse pits, edible and/or useful plants are rather rare except for some cereals (millet (*Panicum miliaceum*) and spelt (*Triticum spelta*)) and some spices (celery (*Apium graveolens*) and coriander (*Coriandrum sativum*)). Wild plants are more common and diverse. They are represented by weeds of winter cereal and summer crops and ruderal plants. We also note the almost absence of aquatic and riverbank plants.
From the reminder we can conclude that this pit has been used for waste disposal, possibly related to crop processing.

Classification	**Pit, Horizon 1**
Reference	Reddé (in press) p. 408

Structure N° **BK01-04- 27**

Type of structure **Pit**

Area of excavation **Civil East**

Archaeological description
Structure BK01-04-27 represents a sub-rectangular pit. It was dug in 2001 and is located in the north-western part of the excavated area. It is suggested that this pit is part of a large area used as waste disposal.

Illustration No

Date 1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK14078	6000	Rapid screening	SJ	04	**27**	01 1A
BK14184	8000	Full analysis	PV	04	**27**	01
BK14184	8000	Rapid screening	PV	04	**27**	01
BK14097	4000	Rapid screening	PV	04	**27**	02
BK14103	7000	Rapid screening	PV	04	**27**	02C
BK14104	5000	Rapid screening	PV	04	**27**	02D
BK14105	4000	Rapid screening	PV	04	**27**	03C
BK14102	7000	Rapid screening	PV	04	**27**	04

Archaeobotanical analysis
Seven samples from four different layers within structure BK01-04-27 were analysed. The composition of the samples is rather similar, however less plant remains were observed in US 03 and US 04. The organic material in the samples is constituted by mainly waterlogged and mineralised plant macro remains. Charcoal and charred plant remains are almost absent. Among the mineralised plant remains, many mineralised concretions were found, they comprise small vegetative material and are remains of faecal material. In addition seeds and fruits of edible plants were found such as millet (*Panicum miliaceum*), lentil (*Lens culinaris*), apple/pear (*Malus/Pyrus*) and others. The waterlogged plant material also contained many seeds and fruits of edible plants. They comprise cereals (testa fragments), spices (celery (*Apium graveolens*) and coriander (*Coriandrum sativum*)) and fruits (fig (*Ficus carica*), woodland strawberry (*Fragaria vesca*), apple/pear (*Malus/Pyrus*)). In addition weeds of winter cereal, of summer crops and ruderal plants were attested. Aquatic plants and riverbank plants are nearly absent.
The archaeobotanical analyses suggest the presence of faecal material and other kinds of waste material. It is therefore very likely that this pit was used as latrine and waste disposal.

Classification **Pit, Horizon 1**

Reference Reddé (in press) p. 404-405

Structure N°	**BK01-04- 33**
Type of structure	**Pit**
Area of excavation	**Civil East**
Archaeological description	Structure BK01-04-33 represents a square pit measuring 1.5m to 1.5m. Traces of a wooden framework were observed. The content of this structure consists of black organic waterlogged material. It is suggested that this pit is part of a large area used as waste disposal.
Illustration	No
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK14143	16000	Rapid screening	SJ	04	**33**	01

Archaeobotanical analysis	One sample was analysed. It consisted mainly of 'caked' organic material, twigs and roots. Seeds and fruits were generally scarce. Only some waterlogged plant macro remains were recorded. It consisted of very few edible plants and some ruderals. Mineralised and charred material were nearly absent. A clear indication as to the function of this structure is not present, although it is suggested that some waste material has been deposited.
Classification	**Pit, Horizon 1**
Reference	Reddé (in press) p. 399

Structure N° **BK01-04- 38**

Type of structure **Pit**

Area of excavation **Civil East**

Archaeological description

Structure BK01-04-38 represents a rectangular structure of 3.5m to 2.8m. It was built on a construction of oak posts which held a floor in fir tree. The walls were covered with planks. It is thought that this structure represents a wooden cave or cellar built on posts as precaution for the nearby water level; it is suggested that is was used as sanitary facility. In 2000 an East-West orientated trench was dug. One sample was taken in the trench. It is related to structure BK01-04-38.

Illustration Fig. 6

Date Based on coins terminus post quem 134-138

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK004030	7000	Rapid screening	SJ	04	Tr.5	P30
BK004030	7000	Practicum (full analysis)		04	Tr.5	P30
BK14100	6000	Rapid screening	SJ	04	38	02
BK14107	7000	Rapid screening	SJ	04	38	02
BK14115	1000	Rapid screening	SJ	04	38	02
BK14108	1000	Rapid screening	PV	04	38	02 09
BK14110	4000	Rapid screening	PV	04	38	02 09
BK14116	24000	Rapid screening	SJ	04	38	01 2
BK14123	6000	Rapid screening	PV	04	38	04
BK14124	8000	Rapid screening	SJ	04	38	04
BK14132	8000	Rapid screening	SJ	04	38	08
BK14151	6000	Rapid screening	PV	04	38	09 06
BK14155	10000	Rapid screening	PV	04	38	09 10
BK14166	5000	Rapid screening	PV	04	38	09b 04
BK14167	8000	Full analysis	PV	04	38	09b
BK14168	5000	Rapid screening	PV	04	38	09b 06
BK14169	5000	Rapid screening	PV	04	38	09b 07
BK14170	10000	Rapid screening	PV	04	38	09b 08
BK14171	7000	Full analysis	PV	04	38	09b 09
BK14171	7000	Rapid screening	PV	04	38	09b 09
BK14172	10000	Full analysis	PV	04	38	09b 10
BK14181	6000	Rapid screening	PV	04	38	09b 11
BK14182	6000	Rapid screening	PV	04	38	09b 12

Archaeobotanical analysis

Twenty one samples were analysed from different layers. All samples had a large organic fraction and provided a rich set of plant remains. In addition, insect remains, small mammal bone and fish bones were recorded. The plant remains were preserved mainly mineralised and waterlogged, charred remains were less abundant. The conservation was excellent. The waterlogged plant remains are composed of numerous food plants: fragments of bran, walnuts (*Juglans regia*) and hazelnut (*Corylus avellana*), seeds of vegetables, spices, fruits and salads were very frequent. Wild plants consisted primarily of arable weeds and ruderal plants. A large quantity of mineralised remains was also found. They contained among other concretions (fragments of coprolites), lentil (*Lens culinaris*), millet (*Panicum miliaceum*), grape (*Vitis vinifera*) and fig (*Ficus carica*) seed. Remarkable are the findings of dried raisins (*Vitis vinifera*), seeds of melon (*Cucumis melo*), cucumber (*Cucumis sativus*), olive (*Olea europaea*), bottle gourd (*Lagenaria siceraria*), mulberry (*Morus* sp) and black cumin (*Nigella sativa*). These plants are very rare in Oedenburg and the surrounding area. Archaeobotanical analysis of the pit shows a deposit of faecal matter. The assemblage of food plants, the state of conservation and the presence of mineralised concretions confirm this. In addition, it is likely that the pit has acted as a dump, as indicated by the presence of large fruit stones (e.g. peach (*Prunus persica*)).

Classification **Pit, Horizon 2**

Reference Reddé (in press) p. 481-497

Structure N°	**BK01-04- 50**
Type of structure	**Layer**
Area of excavation	**Civil East**

Archaeological description

Structure BK01-04-50 represents a remarkable structure. It was partly uncovered during the 2000 excavation campaign and was subsequently dug in 2001. It is located in the western part of the excavated area. It was firstly identified as a boat because of its shape. It measured approximately 4.3m length to 1.25m width, its profile was U-shaped and its shape was pointed towards one end. The 'boat' hypothesis was however rapidly abandoned. It is now considered as an installation of twigs and branches for handicraft use.
In 2000 an East-West orientated trench was dug within Field 04. One sample was taken; It is possibly related to structure BK01-04-50.

Illustration Fig. 7

Date 1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	**Volume**	**Type of analysis**	**Who**	**Field**	**Structure**	**US**
BK004026	6000	Rapid screening	SJ	04	Tr.4	P26
BK14130	6000	Rapid screening	SJ	04	50	01 4III
BK14131	6000	Rapid screening	SJ	04	50	01 4IV
BK14112	7000	Rapid screening	SJ	04	50	02 A
BK14113	9000	Rapid screening	PV	04	50	02B
BK14086	5000	Rapid screening	PV	04	50	02 1B
BK14090	5000	Rapid screening	PV	04	50	02 1F
BK14126	5000	Rapid screening	PV	04	50	02E
BK14118	7000	Rapid screening	PV	04	50	02H
BK14129	6000	Rapid screening	PV	04	50	02 II
BK14135	5500	Rapid screening	SJ	04	50	02 IV
BK14136	8000	Rapid screening	SJ	04	50	02 V
BK14136	8000	Rapid screening	PV	04	50	02 V
BK14175	5000	Rapid screening	SJ	04	50	A
BK14176	3000	Rapid screening	SJ	04	50	B

Archaeobotanical analysis

Fourteen samples were analysed. They originate from spatially diverse excavation units within the structure. US 02 represents the contents of the 'boat', US 01 and US A/B the eastern and southern part of the 'boat'. The organic fraction of the samples is dominated by waterlogged material, charred and mineralised plant material is nearly absent. Some differences -however small- can be observed between the excavated zones. US 02 is composed of mainly branches with bark, mosses, roots and rhizomes. US 01 and A/B are composed of many sprigs, twigs and bark. Cultural plants are present in very small amounts. Findings of cereals are restricted to US 01 and A/B. They consist of glumes of emmer (*Triticum dicoccum*), spelt (*Triticum spelta*) and millet (*Panicum miliaceum*). Cereal weeds however are found in both zones. Other cultural plants are equally recorded in both zones. They contain spices, vegetables and fruits (melon/cucumber (*Cucumis melo/sativus*), fig (*Ficus carica*), apple/pear (*Malus/Pyrus*), and peach (*Prunus persica*)). Findings of other wild weeds are observed in all zones. Their dispersion appears similar. They possibly represent the local vegetation.
From the archaeobotanical analysis, no clear indication as to the function of this structure can be given. There are no special indications for handicrafts or human activities. The most likely origin of the plant macro remains, that is the seeds and fruits, are the local vegetation and general settlement noise.

Classification **Layer, Horizon 1**

Reference Reddé (in press) p. 390-394

Structure N°	**BK01-04-71**
Type of structure	**Layer**
Area of excavation	**Civil East**
Archaeological description	Structure BK01-04-71 represents a thin layer of twigs and branches. These were deposited on the geological silt in order to cover the whole surface and enabled one to walk on the surface without sinking in the silt. It was dug in 2001 and is related to BK01-04-50 and BK01-04-72.
Illustration	no
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK14177	2000	Rapid screening	SJ	04	**71**	35
BK14178	5000	Rapid screening	SJ	04	**71**	37

Archaeobotanical analysis

Two samples were analysed. They originate from a dark organic layer. The majority of organic material consist of waterlogged plant remains, additionally few charcoals were found. The composition of seeds and fruits within these two samples is diverse as plant macro remains are less numerous in US 35. However both samples are dominated by cereal remains and cereal weeds. Especially in US 37 these are frequent. Barley (*Hordeum vulgare*), emmer (*Triticum dicoccum*), spelt (*Triticum spelta*) and millet (*Panicum miliaceum*) are recorded. Cereal weeds include white lace flower (*Orlaya grandiflora*), corncockle (*Agrostemma githago*), muskweed (*Myagrum perfoliatum*), garden cornflower (*Centaurea cyanus*) among others. Other wild weeds as e.g. the many sedges (Cyperaceae) possibly represent the local environment.
From the archaeobotanical analysis it is clear that some activity involving cereals has taken place in the near vicinity of BK01-04-71.

Classification	**Layer, Horizon 1**
Reference	Excavation report 2001 (p.35)

Structure N°	**BK01-04-72**
Type of structure	**Layer**
Area of excavation	**Civil East**
Archaeological description	Structure BK01-04-72 represents a thin layer of twigs and branches. These were deposited on the geological silt in order to cover the whole surface and enabled one to walk on the surface without sinking in the silt. It was dug in 2001 and is related to BK01-04-50 and BK01-04-71.
Illustration	no
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK14153	9000	Rapid screening	PV	04	**72**	07
BK14163	8000	Rapid screening	SJ	04	**72**	08
BK14164	8000	Rapid screening	SJ	04	**72**	08
BK14180	8000	Rapid screening	PV	04	**72**	08

Archaeobotanical analysis

Four samples were analysed, they originate from two different layers which appear to be different in composition of plant remains. One sample originates from US 07, it represents a peaty layer and contained a large amount of waterlogged vegetative material (seeds/fruits, roots, buds, wood etc.). In addition charcoal was recorded. The seeds and fruits are mainly of cereal and wild weeds. The three remaining samples originate from US 08 which represents a layer of twigs. These samples were also composed of waterlogged plant material only. The difference to US 07 is the presence of these twigs and the scarcity of seeds/fruits. Wild weeds are not frequent, they include ruderal plants. Cereal remains are nearly absent, one glume of spelt (*Triticum spelta*) was found. Other cultural plants include dill (*Anethum graveolens*), coriander (*Coriandrum sativum*), beet (*Beta vulgaris*) and amaranth (*Amaranthus* sp).
The composition of the plant remains in US 07 is very similar to what has been found in structure BK01-04-71 US 37. The composition of plant remains in US 08 is rather similar to the layers of twigs in structure BK01-04-50.

Classification	**Layer, Horizon 1**
Reference	Excavation report 2001 (p.35)

Structure N° **BK01-04-73**

Type of structure **Pit**

Area of excavation **Civil East**

Archaeological description
BK01-04-73 represents a quadrangular pit. It was dug in 2001 and is located in the north-western part of the excavated area. It is suggested that this pit is part of a large area used as waste disposal.

Illustration no

Date 1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK14148	8000	Rapid screening	SJ	04	**73**	02 2
BK14149	6000	Rapid screening	PV	04	**73**	02 01
BK14157	10000	Rapid screening	PV	04	**73**	01
BK14159	9000	Rapid screening	PV	04	**73**	01 n-s

Archaeobotanical analysis
Four samples were analysed. Within the samples, waterlogged plant material is dominant, mineralised and charred plant macro remains are present. Besides waterlogged wood splitter, roots, bark and many seeds/fruits were found. Edible plants are well represented by vegetables and salads, spices, fruits and cereals (many testa fragments were recorded). Wild weeds are dominated by weeds of winter and summer crops. Except for some sedge no aquatic and/or riverbank plants were found. The charred remains consist of charcoal mainly and some cereal grains (barley (*Hordeum vulgare*), naked wheat (*Triticum aestivum/durum/turgidum*) and millet (*Panicum miliaceum*)). The mineralised seeds and fruits are scarce and restricted to one sample. They consist of fruits such as fig (*Ficus carica*), melon/cucumber (*Cucumis melo/sativus*), apple/pear (*Malus/Pyrus*) and grape (*Vitis vinifera*).
Analysis of the plant macro remains give a strong indication for the presence of for faecal remains and thus latrine deposits. The latter is suggested by the presence of cereal testa fragments, stone cells of pear, small seeded edible plants and the mineralised seeds among others. In addition other waste material might have been thrown into the pit.

Classification **Pit, Horizon 1**

Reference Reddé (in press) p. 395

Structure N°	**BK02-04-15**
Type of structure	**Pit**
Area of excavation	**Civil East**
Archaeological description	Structure BK02-04-15 represents a quadrangular pit. It was dug in 2002 and located in the central part of the excavated area. It was only partly excavated while its other half was located under the berm. Within the pit three different layers were observed.
Illustration	Fig. 8
Date	2^{nd} Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK24007	4000	Full analysis	PV	04	**15**	01 A
BK24008	5000	Full analysis	PV	04	**15**	01 B
BK24009	4000	Full analysis	PV	04	**15**	03 A
BK24010	6000	Full analysis	PV	04	**15**	03 B
BK24011	5000	Full analysis	PV	04	**15**	03 C
BK24012	6000	Full analysis	PV	04	**15**	03 D

Archaeobotanical analysis

Six samples were analysed. The two samples from the upper layer (US 01) were not very rich in organic material. They contained charred as well as waterlogged material, only a single mineralised seed (*Amaranthus* sp) was found. The charred plant remains include charcoal, few cereal remains, a lentil (*Lens culinaris*) and a broad bean (*Vivia faba*). The waterlogged plant remains include, except for very sparse remains of edible plants (hazelnut (*Corylus avellana*), walnut (*Juglans regia*), peach (*Prunus persica*) and grape (*Vitis vinifera*)), a few weeds.

The remaining four samples originate from the lowest, very dark organic layer (US 03). The organic fraction obtained from this layer was mainly composed of waterlogged material. Few fragments of charcoal, fragments of moss and a thorn of Hawthorn were retrieved. Mineralised and charred seeds and fruits are hardly recorded. The waterlogged material was very rich in seeds and fruits. The majority of these were edible plants such as vegetables (amaranth (*Amaranthus* sp) and cabbage (*Brassica* sp)), nuts (hazelnut and walnut), spices (pepper (*Piper nigrum*), celery (*Apium graveolens*) and coriander (*Coriandrum sativum*)) and fruits (olive (*Olea europaea*), fig (*Ficus carica*), apple/pear (*Malus/Pyrus*), plum (*Prunus domestica/insititia*), peach and grape). Other useful plants included hemp and flax. Cereal chaff (emmer (*Triticum dicoccum*), spelt (*Triticum spelta*) and millet (*Panicum miliaceum*)) was retrieved. The wild non-edible plants, weeds, were equally numerous. Cereal weeds, ruderal plants, few plants that grow in forests and others that grow on riverbanks were present, in addition to various others.

From the archaeobotanical analysis we conclude that most of the plant remains made their way into this deposit as refuse material. No faecal material was identified in the samples, therefore it is unlikely that any latrine deposits were dumped here. This structure should be interpreted as a refuse pit, where waste of cultural activity was deposited (cooking, crop processing among others). Many of the recorded food products represent imports.

Classification	**Pit, Horizon 2**
Reference	Reddé (in press) p. 462

Structure N°	**BK02-04-18**
Type of structure	**Pit**
Area of excavation	**Civil East**
Archaeological description	Bk02-04-18 represents a circular pit. It was dug in 2002 and is located in the centre of the excavated area. It contained a detritus and organic fill.
Illustration	Fig. 8
Date	2^{nd} Cent. A.D.

N° of samples
Type of analysis

Sample n°	**Volume**	**Type of analysis**	**Who**	**Field**	**Structure**	**US**
BK24001	4000	Field analysis	PV	04	**18**	01
BK24002	4000	Field analysis	PV	04	**18**	01 N
BK24003	3000	Field analysis	PV	04	**18**	01 S

Archaeobotanical analysis

Three samples were analysed. They were dominated by charred material, the majority of which was charred wood. As for the seeds and fruits, only a few charred cereal remains and one mineralised millet (*Panicum miliaceum*) seed were among the more numerous waterlogged remains. The waterlogged remains consisted mainly of weeds such as ruderals and cereal weeds. Edible plants were rare (a few elderberry seeds (*Sambucus nigra/racemosa*) amongst others).
From the archaeobotanical analysis we suggest that the plant material is most likely derived from debris material. They belong to the period in which the pit (dug for the well) was re-used as a refuse pit. Some of the plants (ruderal plants) might be indicators of the local environment, thus growing in the neighbourhood of this pit. This environment was characterized by rather wet and nutrient rich soils.

Classification	**Pit, Horizon 2**
Reference	Reddé (in press) p. 476

Structure N°	**BK02-04-40**
Type of structure	**Pit**
Area of excavation	**Civil East**
Archaeological description	BK02-04-40 represents a dark organic layer. It was dug in 2002 and is located in the centre of the excavated area.
Illustration	No
Date	Roman, not specified

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK24004	5000	Full analysis	PV	04	**40**	02 1
BK24005	6000	Full analysis	PV	04	**40**	02 2
BK24034	6000	Full analysis	PV	04	**40**	03

Archaeobotanical analysis

Three samples were analysed. In US 02 the organic fraction was predominantly composed of charcoal, and in smaller amounts of waterlogged wood chips. Seeds and fruits were present in charred and waterlogged condition. Hazelnut (*Corylus avellana*), walnut (*Juglans regia*) and amaranth (*Amaranthus* sp) were the only edible species present in waterlogged preservation, the remaining were weeds of different habitats. Some charred cereal remains were found.
In US 03 the organic fraction contained mainly waterlogged wood chips, with sparse findings of charcoal. The plant spectrum is not very different from the layer above. A few more edible plants are attested, although for each species only a single seed. They comprise dill (*Anethum graveolens*), wild strawberry (*Fragaria vesca*), apple/pear (*Malus/Pyrus*) and grape (*Vitis vinifera*).
From the archaeobotanical analysis we suggest that the plant remains derive from waste material.

Classification	**Pit, Roman**
Reference	Excavation report 2002

Structure N°	**BK02-04-42**
Type of structure	**Installation**
Area of excavation	**Civil East**
Archaeological description	BK02-04-42 represents a longitudinal structure. It was dug in 2002 and located in the centre of the excavated area. It is measuring 2.7m length by 0.7m width and 0.5m depth. It is interpreted as an installation related to the use of water.
Illustration	Fig. 8
Date	2nd Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK24013	4000	Full analysis	PV	04	**42**	02 A
BK24014	2000	Full analysis	PV	04	**42**	02 B
BK24015	2000	Full analysis	PV	04	**42**	02 A

Archaeobotanical analysis

Three samples were analysed. The organic fraction is composed of charred, mineralised and waterlogged remains. The charred remains comprised wood charcoal and charred cereal remains (chaff of spelt (*Triticum spelta*) and emmer (*Triticum dicoccum*), grains of barley (*Hordeum vulgare*) and wheat (*Triticum* sp)). The mineralised remains were sparse, only a few cereals and some cereal weeds were found. The waterlogged remains are dominated by weeds such as ruderal plants and cereal weeds (muskweed (*Myagrum perfoliatum*) among others). Very few edible plants were recorded, some fig (*Ficus carica*), elderberry (*Sambucus nigra/racemosa*) and a single grape (*Vitis vinifera*) and blackberry seed (*Rubus fruticosus*). Three fragments of bottle gourd (*Lagenaria siceraria*) were also recorded.
From the archaeobotanical analysis we conclude that this deposit results from waste material.

Classification	**Pit, Horizon 2**
Reference	Reddé (in press) p. 467

Structure N° **BK02-04-55**

Type of structure **Layer**

Area of excavation **Civil East**

Archaeological description

Structure BK02-04-55 represents an organic layer. It was dug in 2002 and is located within the course of a palaeochannel. This layer is characterised by the presence of many twigs, fragments of worked wood, wooden artefacts, some wooden posts. It is thought that these were positioned on the alluvial clay in order to manage the marshland.

Illustration Fig. 9

Date 1st Cent. A.D.

N° of samples Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK24016	10000	Full analysis	PV	04	**55**	02 A
BK24023	14000	Rapid screening	PV	04	**55**	02A
BK24017	10000	Full analysis	PV	04	**55**	02 B
BK24024	13000	Full analysis	PV	04	**55**	02 B
BK24022	10000	Full analysis	PV	04	**55**	02 D
BK24026	10000	Full analysis	PV	04	**55**	03
BK24028	9000	Rapid screening	PV	04	**55**	03B
BK24029	7000	Full analysis	PV	04	**55**	03 C
BK24040	7000	Full analysis	PV	04	**55**	05 A
BK24042	7000	Rapid screening	PV	04	**55**	05C

Archaeobotanical analysis

Ten samples were analysed. The organic fraction of the samples was composed of almost exclusively waterlogged organic remains. Charred remains were sparse and mineralised remains were absent. Waterlogged chips of wood, twigs and bark compiled the sample. Preservation was very good in these samples as was proven by the recovery of a piece of leather that was found between the wood. Cereal chaff is abundant. Glume bases of mainly emmer (*Triticum dicoccum*) and spelt (*Triticum spelta*), and einkorn (*Triticum monococcum*) in much smaller amount, were identified. Other edible plants were also very frequent, among others walnut (*Juglans regia*), olive (*Olea europaea*), celery (*Apium graveolens*), coriander (*Coriandrum sativum*), apple (*Malus domestica*) and pear (*Pyrus communis/pyraster*), and grape (*Vitis vinifera*). Many weeds were present, cereal weeds, ruderal plants and riverbank plants.
The numerous chaff fragments and the accompanying cereal weeds inform us that some activity concerning cereals had taken place in this area, whether or not it was part of the crop processing, redistribution of already processed cereals, remains of fodder etc. is hard to distinguish. Remarkable is that no cereal grains were found in this area. The other edible plants are most likely the result of waste material. Very interesting is the absence of charred remains, which indicates the absence of kitchen refuse.
Lots of human activity was carried out here as is also proven by the many pieces of worked wood retrieved from this same area. Some of the wild plants represent the local environment. This environment was characterized by wet and nutrient rich soils. The presence of common water-plantain (*Alisma plantago-aquatica*) indicates open water in the neighbourhood and the presence of water pepper (*Polygonum hydropiper*), among others, indicates a wet boggy place.

Classification **Layer, Horizon I**

Reference Reddé (in press) p. 384

Structure N° **BK02-04-64**

Type of structure **Layer**

Area of excavation **Civil East**

Archaeological description
BK02-04-64 represents a layer. It was dug in 2002 and is located immediately north of Structure BK02-04-55. It consisted of wood splinter which possibly represents debris of construction.

Illustration Fig. 10

Date 1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK24045	11000	Full analysis	PV	04	**64**	01 A
BK24046	11000	Rapid screening	PV	04	**64**	01 B

Archaeobotanical analysis
Two samples were analysed. They comprise mainly waterlogged plant remains, chips of wood but also twigs and bark. Seeds and fruits are present in small amounts. Edible plants are represented by a few cereal remains, dill (*Anethum graveolens*), coriander (*Coriandrum sativum*) and fig (*Ficus carica*) among others. Ruderal plants and riverbank plants are also recorded.
The plant remains represent most probably waste material and parts of the local vegetation.

Classification **Layer, Horizon 1**

Reference Reddé (in press), p. 478

Structure N°	**BK02-04-65**
Type of structure	**Layer**
Area of excavation	**Civil East**
Archaeological description	BK02-04-65 represents an organic layer in the SE corner of the excavated area. It was dug in 2002. This layer is situated in between two flood layers.
Illustration	No
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK24021	6000	Full analysis	PV	04	**65**	01 B

Archaeobotanical analysis	One sample was analysed. Except for wood charcoal and one charred seed fragment, the sample is composed of waterlogged remains. The number of waterlogged seeds is very low and therefore not very significant. Two glume bases of emmer (*Triticum dicoccum*), three glume bases of spelt (*Triticum spelta*) and a few wild plants were identified. The presence of molluscs is high. No further interpretation can be given.
Classification	**Layer, Horizon 1**
Reference	Excavation report 2002

Structure N° **BK02-04-67**

Type of structure **Layer**

Area of excavation **Civil East**

Archaeological description Structure BK02-04-67 represents a dark organic layer in the southern baulk of Sector 4. It was dug in 2002.

Illustration no

Date 1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	**Volume**	**Type of analysis**	**Who**	**Field**	**Structure**	**US**
BK24032	7000	Full analysis	PV	04	**67**	01 B
BK24037	7000	Full analysis	PV	04	**67**	02

Archaeobotanical analysis

Two samples were analysed. Their composition is slightly different. The organic fraction of US 01 is dominated by charred remains, few waterlogged and few mineralised remains are recorded. Among the many fragments of wood charcoal, charred cereal remains were found. Grains of barley (*Hordeum vulgare*), spelt (*Triticum spelta*), millet (*Panicum miliaceum*) and oat (*Avena* sp) as well as glume bases of einkorn (*Triticum monococcum*), emmer (*Triticum dicoccum*) and spelt are charred. Remarkable is the presence of waterlogged muskweed (*Myagrum perfoliatum*), a weed of summer cereals. Hardly any other waterlogged remains were recorded.
Although the number of botanical items found in US 01 is rather low, the amount of cereal remains is high in comparison with other structures in Field 04. It is thought that this deposit is the result of human activity, most likely waste material from a hearth or kiln area.
The sample from US 02 also contained charred remains such as wood charcoal and charred cereal remains, but waterlogged plant remains are much more abundant. Pear stone cells (*Pyrus communis/pyraster*), coriander (*Coriandrum sativum*) and glume bases of spelt (*Triticum spelta*) and emmer (*Triticum dicoccum*) are the only traces of edible plants. The majority of the waterlogged plants is, however, represented by ruderal plants. It is thought that the plant remains recovered in US 02 are a mixture of waste material with seeds from plants growing in the local environment, which is characterized by wet and nutrient rich soils.

Classification **Layer, Horizon 1**

Reference Excavation report 2002

Structure N°	**BK02-04-78**
Type of structure	**Layer**
Area of excavation	**Civil East**
Archaeological description	BK02-04-78 represents an organic layer of interlacing branches. It was dug in 2002 and is located in the southern part of the excavated area. This layer contained lots of twigs which were positioned in the course of a palaeochannel and immediately on the alluvial clay.
Illustration	Fig. 11
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK24035	9000	Full analysis	PV	04	**78**	01
BK24043	10000	Rapid screening	PV	04	**78**	02
BK24044	7000	Full analysis	PV	04	**78**	02

Archaeobotanical analysis

Three samples were analysed. They are composed of waterlogged material mainly. In US 01 wood chips, twigs, bark and buds are preserved, except for fragments of charred wood, and two charred cereal glume bases, all organic material was waterlogged. The waterlogged material is dominated by wild plants, many different habitats are represented by small numbers of seeds. They include cereal weeds, ruderal plants and some riverbank plants. Edible plants were scarce, some fragments of hazelnut shell (*Corylus avellana*), a single coriander (*Coriandrum sativum*) seed and a single plum endocarp (*Prunus insititia/domestica*) were recorded. In addition to these, cereal chaff was recovered.
In US 02, the organic fraction is also composed of predominantly waterlogged material such as twigs, wood chips and bark. The composition of wild plants in this sample is very similar to the above (structure 78, US 01), except that in this sample (structure 78, US 02) they are present in much larger numbers. Remarkable is the absence of any edible plants, except then for the cereal chaff remains. These are rather frequent as are the ruderal plants and the riverbank plants.
From the archaeobotanical analysis we conclude that most of the plant remains are indicators of the local environment. This would have been a wet place with soils rich in nitrogen, and open water nearby. Some activity related to cereal processing must have taken place in this area, as is shown by the chaff fragments and the cereal weeds which normally are introduced to the site with the harvest. The botanical findings from structure 78 are very similar to those from structure BK02-04-55.

Classification	**Layer, Horizon 1**
Reference	Reddé (in press) p. 384

Structure N°	**BK02-04-1004**
Type of structure	**Trench**
Area of excavation	**Civil East**
Archaeological description	BK02-04-1004 represents a geological layer.
Illustration	no
Date	Roman, not specified

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK24036	14000	Full analysis	PV	04	**1004**	

Archaeobotanical analysis

One sample was analysed. It revealed very few botanical remains. Some twigs, a fragment of hazelnut shell (*Corylus avellana*), and a few riverbank plants, all waterlogged, were retrieved. Interesting is the presence of molluscs. No further interpretation can be given.

Classification	**Trench, Roman**
Reference	Excavation report 2002

Structure N°	**BK02-05-140**
Type of structure	**Pit**
Area of excavation	**Civil South**
Archaeological description	BK02-05-140 represents a large rectangular pit bordered by wooden planks. It is situated in sector 1 of the excavation field 05 dug in 2002. It was located under the current water level and only partially excavated due to time restrictions and safety hazards. At the bottom of the pit a large piece of waterlogged wood was visible. This is thought to be construction timber of a well.
Illustration	no
Date	1^{st} Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK25018	16000	Full analysis	PV	05	**140**	02
BK25031	500	Full analysis	PV	05	**140**	02

Archaeobotanical analysis

Two samples were analysed. They derive from the bottom of the pit. Except for some wood charcoal, charred remains were rare. Waterlogged and mineralised seeds and fruits, on the contrary, were abundant, as were mineralised organic concretions. The waterlogged remains comprised predominantly fruits and spices. Among the fruits were fig (*Ficus carica*), apple (*Malus domestica*) and pear (*Pyrus communis/pyraster*) (represented by flower, seeds and stone cells), winter-cherry (*Physalis alkekengi*), cherry (*Prunus avium/cerasus*), plum (*Prunus insititia/domestica*), peach (*Prunus persica*), blackthorn (*Prunus spinosa*), blackberries (*Rubus fruticosus*) and grape (*Vitis vinifera*). Spices were represented by celery (*Apium graveolens*), dill (*Anethum graveolens*) and coriander (*Coriandrum sativum*). Non-edible wild plants were very poorly represented, only a few cereal weeds (among others muskweed (*Myagrum perfoliatum*) and narrow fruit corn salad (*Valerianella dentata*) and some other wild plants. Remarkable is the presence of hawthorn (*Crataegus* sp), which grows in woods. Riverbank plants are absent. Mineralised plant remains consisted mainly of grape pips. Seeds of fig, winter-cherry and broad bean (*Vicia faba*) were also mineralised.
The waterlogged plant assemblage, the mineralised remains and the numerous organic concretions indicate the presence of a latrine-deposit. The large fruit stones and non-edible plants, could have entered the pit as refuse material. Therefore, it is suggested that this pit was at the time of deposition used as a waste and latrine pit. Remarkable is that more edible wild plants are found in this pit than in structures from Field 04.

Classification	**Pit, Horizon I**
Reference	Reddé (in press) p. 6

1.2. Catalogue of structures: Temple complex

Structure N° **BK03-05-16**

Type of structure **Ditch**

Area of excavation **Temple complex**

Archaeological description

Structure BK03-05-16 is a ditch. It is running E-W and is located to the South of Temple A. It was dug in the gravel. The fill of the ditch is characterised by its dark colour and high organic content. The ditch was sampled at 1m intervals, taking one sample from the upper part of the fill and one from the lower part of the fill. The bottom layer is located at the level of the current water table. According to the archaeologists, the ditch was in use from the beginning of Phase 3 to the end of Phase 5 which corresponds to the middle of the 2nd Cent. A.D. until the end of the Roman occupation (mid 4th Cent. A.D.). It is contemporary with the use of the second temple (Temple A3) and probably served as a draining channel for the temple area.

Illustration Fig. 12

Date 2nd Cent. A.D. - 4th Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK35002	9000	Rapid screening	PV	05	**16**	03
BK35005	9000	Rapid screening	PV	05	**16**	07
BK35006	7000	Rapid screening	PV	05	**16**	10
BK35009	8000	Rapid screening	PV	05	**16**	09
BK35010	8000	Rapid screening	PV	05	**16**	08
BK35019	6000	Rapid screening	PV	05	**16**	14
BK35020	5000	Rapid screening	PV	05	**16**	12
BK35021	5000	Rapid screening	PV	05	**16**	11
BK35022	8000	Rapid screening	PV	05	**16**	13
BK35023	7500	Rapid screening	PV	05	**16**	15
BK35024	5000	Rapid screening	PV	05	**16**	16
BK35025	6000	Rapid screening	PV	05	**16**	17
BK35026	7000	Rapid screening	PV	05	**16**	18
BK35032	16000	Rapid screening	PV	05	**16**	20
BK35037	18000	Rapid screening	PV	05	**16**	21

Archaeobotanical analysis

A total of 15 samples were analysed. They were taken in the lower and upper layer of the ditch. As a difference in botanical composition was noticed between these two layers, they will be discussed separately.

Samples taken in the upper layer are: *US 03 (BK35002), US 08 (BK35010), US 09 (BK35009), US 11 (BK35021), US 13 (BK35022), US 15 (BK35023), US 17 (BK35025) and US 20 (BK35032).*
Eight samples from the upper layer of the ditch were analysed. They were very poor in organic material; predominantly waterlogged (modern?) small roots are recorded among fragments of charcoal and waterlogged wood. Molluscs (modern?) are present in all samples, fly papuaria only in a few. In general, waterlogged seeds and fruits are scarce and not very diverse. Mainly riverbank plants as schoenoplectus (*Schoenoplectus*), bur-reed (*Sparganium*) and pondweed (*Potamogeton*) and ruderal plants as annual mercury (*Mercurialis annua*), dwarf elderberry (*Sambucus ebulus*) and creeping buttercup (*Ranunculus repens*) are found. However, a better preservation and higher abundance in plant remains is recorded in the western part of the ditch (US 15, 17 and 20). More wild plants are found and some remains of edible plants: hazelnut (*Corylus avellana*), elderberry (*Sambucus nigra/racemosa*), winter cherry (*Physallis alkekengi*) and a single find of grape (*Vitis vinifera*) and blackberry (*Rubus fruticosus*) were present.

Samples taken in the lower layer are: *US 07 (BK35005), US 10 (BK35006), US 12 (BK35020), US 14 (BK35019), US 16 (35024), US 18 (BK026), US 21 (BK35037).*
Seven samples from the lower layer of the ditch were analysed. The composition of the lower layer is similar to the upper layer. However there is a higher organic content resulting in the presence of waterlogged twigs and bark and more waterlogged wood. The preservation of plant macro remains is good and a wider range of species is recorded in this lower layer. Charred remains are sparse; the majority of the seeds and fruits are waterlogged. Along with the ruderal plants and the riverbank plants mentioned for the upper layer, additional ruderal plants are found, and new are the weeds of winter cereals. They consist of muskweed (*Myagrum perfoliatum*), carrot bur parsley (*Caucalis platycarpos*) and yellow bugle (*Ajuga chamaepitys*) among others. These species, favouring calcareous soils, are not frequently found on Roman sites North of the Alps (see main text Volume 1). The edible plants are still scarce but more diverse in the lower layer: amaranth (*Amaranthus*), carrot (*Daucus carota*), celery (*Apium graveolens*), coriander (*Coriandrum sativum*), elderberry (*Sambucus nigra/racemosus*), winter cherry (*Physalis alkekengi*) and grape (*Vitis vinifera*) are present. On top one chaff fragment of millet (*Panicum miliaceum*) was found. Another useful plant recovered is black henbane (*Hyoscyamus niger*) which was used for its medicinal potential.

Structure N°	**BK03-05-16 (suite)**
Archaeobotanical analysis	Archaeobotanical analysis of the ditch revealed a wide range of aquatic and riverbank plants. It is very likely that the ditch was filled with water most of the time. The small numbers of edible plants and cereal weeds indicate that some human waste material ended up in the ditch. It represents most likely secondary deposits. According to the small number of waste material, the ditch must have been kept fairly clean. Furthermore a difference in sample composition has been observed between the upper and lower layer of the ditch. First of all, in the lower layer more plant species and more plant macro fossils have been recorded. Secondly, weeds of winter cereals were absent in the upper layer. Different reasons can be at the cause of these observations. On the one hand, the conditions of preservation could play a role. As the current water table hardly reaches the lower layer of the ditch, it is likely that many of the plant species in the upper layer have decayed. This is e.g. indicated by the mere presence of robust seeds in the upper layer. Seeds of elderberry and schoenoplectus can easily survive waterlogged in dry deposits. On the other hand, the difference in botanical composition can be interpreted as a chronological difference since the ditch was in use over a century.
Classification	**Ditch, 2nd to 4th Cent. A.D.**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK03-05-38**
Type of structure	**Layer**
Area of excavation	**Temple complex**
Archaeological description	Structure BK03-05-38 represents a layer of shifted alluvial clay. It possibly contains material from Phases 1, 2 and 3.
Illustration	no
Date	120 AD to 130/140 A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK35004	8000	Rapid screening	PV	05	**38**	05

Archaeobotanical analysis

One sample was analysed. It contained only a small organic fraction. Few fragments of charcoal and waterlogged wood are recorded. Molluscs are found in large amounts. The waterlogged plant remains are poor, nevertheless present. A small number of wild plants as muskweed (*Myagrum perfoliatum*), common spikerush (*Eleocharis palustris*), celery-leaved buttercup (*Ranunculus sceleratus*) and sedges (*Carex*) are noted amongst very few edible plants: hazelnut (*Corylus avellana*), elderberry (*Sambucus nigra/racemosus*) and grape (*Vitis vinifera*). The origin of the plant remains is most likely the local vegetation (wet nutrient-rich soils) and waste material.

Classification	**Layer, 2nd Cent. A.D.**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK03-05-39**
Type of structure	**Layer**
Area of excavation	**Temple complex**
Archaeological description	Structure BK03-05-39 represents a layer located within the *porticus* in the eastern part of temple A3. This layer is dated to Phase 3.
Illustration	no
Date	120 A.D. to 130/140 A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK35033	5000	Rapid screening	PV	05	**39**	11

Archaeobotanical analysis	One sample was analysed. It has a small organic fraction which is composed of charcoal, small waterlogged roots, molluscs and plant macro fossils. Only some charred grains of wheat (*Triticum*) and barley (*Hordeum*) are among waterlogged seeds. The latter consist of wild plants mainly with the exception of fig (*Ficus carica*). These plant remains originates from waste and locally growing plants.
Classification	**Layer, 2nd Cent. A.D.**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK03-05-53**
Type of structure	**Layer**
Area of excavation	**Temple complex**
Archaeological description	Structure BK03-05-53 is interpreted as marshland. It has developed on the alluvial clay (BK03-05-56). BK03-05-53 is described as a very organic loamy layer in which a lot of decayed wood was recovered. It was identified in several areas in the southern part of the excavated area. It is chronologically situated in Phase 1 which corresponds to the 1st Cent. A.D.
Illustration	Fig. 12
Date	3/4 AD to 75/80 A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK35007	4000	Rapid screening	PV	05	**53**	03
BK35008	4000	Rapid screening	PV	05	**53**	04
BK35013	10000	Rapid screening	PV	05	**53**	01
BK35017	7000	Rapid screening	PV	05	**53**	17
BK35018	9000	Rapid screening	PV	05	**53**	18
BK35027	6000	Rapid screening	PV	05	**53**	15
BK35028	6000	Rapid screening	PV	05	**53**	16
BK35029	3000	Rapid screening	PV	05	**53**	14

Archaeobotanical analysis

Eight samples were analysed. Their composition is very similar. The organic fraction consisted mainly of silt concretions, small roots and waterlogged twigs/wood. Leaves, mosses and insect remains are occasionally found. Charcoal is sparse. Seeds and fruits are waterlogged, their density is rather low. However, a large variety of plants were identified. The majority represent ruderal plants. Additionally weeds of winter cereals were found. They include muskweed (*Myagrum perfoliatum*), yellow bugle (*Ajuga chamaepitys*), carrot bur parsley (*Caucalis platycarpos*) and white lace flower (*Orlaya grandiflora*). Other recorded wild plants are bittersweet (*Solanum dulcamarra*) and rose (*Rosa*) both growing in forests and forest fringes. Finally plants favouring watersides, reeds and riverbanks were attested, e.g. burreed (*Sparganium*) and sedges (*Carex*).
The greater part of the useful and/or edible plants are fruits: fig (*Ficus carica*), winter cherry (*Physalis alkekengi*), pear (*Pyrus*), peach (*Prunus persica*), blackberry (*Rubus*), elderberry (*Sambucus nigra/racemosus*) and grape (*Vitis vinifera*). Others include hazelnut (*Corylus avellana*), carrot (*Daucus carota*), bottle gourd (*Lagenaria siceraria*) and seeds of hemp (*Cannabis sativa*). Some seeds of black henbane (*Hyoscyamus niger*) were also recovered.
Archaeobotanical investigations of the marshland area BK03-05-53 has yielded information on the local environment of the marsh as well as on human activity. The local vegetation is characteristic of a moist environment with nutrient rich soils. An indication for cultural activity is given by the presence of the economic plants and the cereal weeds. Remark that the composition of botanical remains of structure BK03-05-53 is very similar to the lower layer of structure BK03-05-16. Of special interest is the fragment of a bottle gourd seed (*Lagenaria siceraria*), which possibly represents the earliest find north of the Alps.
It is very likely that this area was not frequented much by the inhabitants of early Roman Oedenburg, meaning that living quarters must have been located further afield. This is suggested by the small amount of waste material in the samples. We note the difference with the organic layers found in the excavations Civil East and the surroundings of the temple complex. In these layers large amounts of twigs and cereal chaff were found and were possibly deposited to manage the wet areas (see catalogue Civil East and the Surroundings of the temple complex).

Classification	**Layer, 1st Cent. A.D.**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK03-05-56**
Type of structure	**Layer**
Area of excavation	**Temple complex**
Archaeological description	Structure BK03-05-56 represents a layer of alluvial clay located immediately above the gravel terraces of the river Rhine. It is located under structure BK03-05-53 and belongs to the same Phase 1. It is recorded in the eastern part of the excavated area. Waterlogged wood and a high organic content were observed in the field.
Illustration	Fig. 12
Date	3/4 A.D. to 75/80 A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK35012	7000	Rapid screening	PV	05	**56**	07
BK35014	5000	Rapid screening	PV	05	**56**	07
BK35015	8000	Rapid screening	PV	05	**56**	08
BK35016	4000	Rapid screening	PV	05	**56**	09
BK35030	2000	Rapid screening	PV	05	**56**	10
BK35034	6000	Rapid screening	PV	05	**56**	10

Archaeobotanical analysis

Six samples were analysed. Differences are observed between the stratigraphical units.
The samples from US 07 are composed of charcoal mainly. Preservation of the plant macro fossils is poor and they are not very diverse. Waterlogged seeds of elderberry (*Sambucus nigra/racemosa*) and dwarf elderberry (*Sambucus ebulus*) are registered. US 08 is located directly under US 07. Its sample is mainly composed of waterlogged wood and again few plant macro remains. US 09 and US 10 have in comparison to US 07 and 08, a higher organic content. They include mostly small root-like vegetative parts. Seeds are scarce, and indicate the presence of plants favouring riverbanks and waste grounds.
The plant macro fossils found in structure BK03-05-56 refer to the local environment. This environment was characterized by moist, nutrient rich soils and waste ground.

Classification	**Layer, 1st Cent. A.D.**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK03-05-65**
Type of structure	**Posthole**
Area of excavation	**Temple complex**
Archaeological description	BK03-05-65 represents a posthole possibly belonging to temple A2. It is dated to Phase 2.
Illustration	no
Date	75/80 A.D. to 110/120 A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK35031	5500	Rapid screening	PV	05	**65**	01

Archaeobotanical analysis	One sample was analysed. The organic fraction consisted of waterlogged wood and few charcoals. Seeds and fruits were as good as absent.
Classification	**Posthole, 2nd Cent. A.D.**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK03-05-75**
Type of structure	**Layer**
Area of excavation	**Temple complex**
Archaeological description	Structure BK03-05-75 represents a layer containing lots of twigs. They were most likely intentionally positioned on the marshland (BK03-05-53) to stabilize its underground. This layer was identified in the western part of the excavated area. It is dated to Phase 2.
Illustration	Fig. 12
Date	75/80 A.D. to 110/120 A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK35038	6000	Field analysis	PV	05	**75**	01
BK35522	not known	Field analysis	PV	05	**75**	01

Archaeobotanical analysis

Two samples were analysed. They were rich in organic material and are composed of predominantly waterlogged twigs and bark, some charcoal and some molluscs. Waterlogged plant macro remains are frequent. Wild plants include weeds of winter cereals: horned poppy (*Glaucium corniculatum*), corn cockle (*Agrostemma githago*) and black bindweed (*Fallopia convolvulus*). Others comprise plants growing in meadows, among others small scabious (*Scabiosa columbaria*), ruderals and various reed and riverbank plants. The latter two groups most likely representing plants that grew locally, indicating very wet soils rich in nutrients. Cereal remains are very rare. One spikelet fork of einkorn (*Triticum monococcum*) is recorded. Other edible and/or useful plants are hemp (*Cannabis sativa*), amaranth (*Amaranthus*), carrot (*Daucus carota*), coriander (*Coriandrum sativum*) and bottle gourd (*Lagenaria siceraria*).
The macro plant remains show a wide range of plant species, representing on the one hand the locally growing vegetation and on the other hand human waste material. In comparison to the other structures in Phase 2, these samples seem to be more diverse. More aquatic and riverbank plants are attested which, in combination with the many twig fragments, could indicate that this area was wet and less accessible and thus managing of the bog/drainage was more necessary.

Classification	**Layer, 2nd Cent. A.D.**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK04-05-17, BK04-05-19**
Type of structure	**Layer**
Area of excavation	**Temple complex**
Archaeological description	Structures BK04-05-17 and BK04-05-19 constitute a black layer, rich in artefacts, situated respectively in the *porticus* and *cella* of Temple C. This layer has accumulated over a large period of time (Phases 1 to 3). The different stratigraphical units can be attributed to different phases. As plant macro remains were very sparsely preserved within these layers, there will be no differentiation between the phases.
Illustration	no
Date	3/4 AD to 130/140 AD

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK45018	6000	Rapid screening	PV	05	**17**	06
BK45019	6000	Rapid screening	PV	05	**17**	07
BK45024	7000	Rapid screening	PV	05	**17**	21 D
BK45025	9000	Rapid screening	PV	05	**17**	21 C
BK45026	6000	Rapid screening	PV	05	**17**	21 B
BK45027	6000	Rapid screening	PV	05	**17**	21 A
BK45063	8000	Rapid screening	PV	05	**17**	30
BK45064	7000	Rapid screening	PV	05	**19**	24
BK45017	6000	Rapid screening	PV	05	**19**	08
BK45045	7000	Rapid screening	PV	05	**19**	19
BK45046	8000	Rapid screening	PV	05	**19**	18

Archaeobotanical analysis	Eleven samples were analysed. The samples from structure BK04-05-17 were mainly composed of charcoal, many small bone fragments (waterlogged and carbonised), molluscs and some fish vertebrae. Only few carbonised plant macro remains have been recovered. Cultural plants comprise cereal grain, cf lentil (*Lens culinaris*) and hazelnut (*Corylus avellana*). Wild plants include bedstraw (*Galium sp*) and grass seeds (*Poaceae*). Structure BK04-05-19 yielded a similar sample composition as structure BK04-05-17. Less carbonised material was recovered. The plant assemblage is generally poor and originates most likely from refuse material. No area of particular use could be defined.
Classification	**Layer, 1st and 2nd Cent. A.D.**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK04-05-32**
Type of structure	**Layer**
Area of excavation	**Temple complex**
Archaeological description	BK04-05-32 represents a layer of sand in the near vicinity of the ditch BK04-05-49. It is dated to the same phase (Phase 1).
Illustration	no
Date	3/4 A.D. to 75/80 A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK45007	3000	Rapid screening	PV	05	**32**	01
BK45001	3000	Rapid screening	PV	05	**32**	02
BK45003	3000	Rapid screening	PV	05	**32**	08

Archaeobotanical analysis	Three samples were analysed of which two (BK45001 and BK45007) did not yield any plant macro remains except for some elderberry seeds (*Sambucus nigra/racemosus*). The content of the remaining sample (BK45003) is very similar to the fill of the ditch BK04-05-49 and will be discussed there.
Classification	**Layer, 1st Cent. A.D.**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK04/05-05-49**
Type of structure	**Ditch**
Area of excavation	**Temple complex**

Archaeological description

Structure BK04/05-05-49 represents a ditch surrounding the temple area. It was partly excavated in 2004 and in 2005. According to the archaeologists, it is dated in the 1st Cent. A.D., filled at the end of the 1st Cent. A.D./ beginning of the 2nd Cent. A.D. and at that time replaced by a *temenos* wall which was constructed in exactly the same spot. Only a small part of the ditch was excavated in the North of the excavated area. In section a V-shaped outline was noticed. The fill of the ditch consisted of dark brown organic material including wood splitter and twigs, in addition stones and other artefacts were found. Towards the bottom of the ditch, more organic material could be observed. Micromorphological analysis of the ditch has confirmed its very heterogeneous fill. It also showed that the ditch was slowly and gradually filled. At the bottom of the ditch, dark circular marks were recognised which were interpreted as the remains of postholes.

Illustration Fig. 12, 13

Date 3/4 A.D. to 75/80 A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK45002	3000	Rapid screening	PV	05	**49**	02
BK45004	2000	Rapid screening	PV	05	**49**	01
BK45005	3000	Rapid screening	PV	05	**49**	03
BK45006	5000	Rapid screening	PV	05	**49**	05
BK45008	5000	Rapid screening	PV	05	**49**	08
BK45010	4000	Rapid screening	PV	05	**49**	04
BK45013	5000	Rapid screening	PV	05	**49**	02
BK45050	3000	Rapid screening	PV	05	**49**	10
BK45053	4000	Rapid screening	PV	05	**49**	09
BK55016	10000	Rapid screening	PV	05	**49**	33
BK55017	11000	Rapid screening	PV	05	**49**	34
BK55021	10000	Rapid screening	PV	05	**49**	20

Archaeobotanical analysis

In total, twelve archaeobiological samples were analysed. In 2004, nine samples were taken in the fill of the ditch. They are from top to bottom: US 1 (BK45004), US 2 (BK45002), US 3 (BK45005), US 4 (BK45010), US 5 (BK45006), US 6 (BK45013) and US 8 (BK45008), in addition US 9 (BK45053), US 10 (BK45050) and Structure 32: US 8 (BK45003). In 2005 an additional three samples were taken.
The organic fraction constitutes a large segment of this archaeological layer and is very well preserved. Waterlogged material dominates the samples. Charred wood is common. Predominant in the samples are waterlogged wood, twigs, bark and plant macro fossils. In addition charcoal, waterlogged roots, insect remains, bone fragments and daphnia were recorded. Towards the bottom of the ditch more waterlogged organic material is preserved, resulting in a more diverse spectrum of plants in the lowest layers. Waterlogged cereal remains include, glumes of spelt (*Triticum spelta*) and millet (*Panicum miliaceum*) and rachis of barley (*Hordeum vulgare*). Several cereal weeds were recorded, among others corn cockle (*Agrostemma githago)*, yellow bugle (*Ajuga chamaepithys)*, carrot bur parsley (*Caucalis platycarpos)*, narrow-fruited cornsalad (*Valerianella dentate)* and by far the best represented muskweed (*Myagrum perfoliatum)*. These species are frequently found in roman Oedenburg and are weeds favouring calcareous soils (see main text Volume 1). Ruderal plants are dominated by fat hen (*Chenopodium album*), maple-leaved goosefoot (*Chenopodium hybridum)* and creeping buttercup (*Ranunculus repens* type). Various aquatic plants were recorded, especially in the lower part of the ditch (among others water dropwort (*Oenanthe fistulosa)*, yellow iris (*Iris cf pseudacorus*) and water pepper (*Polygonum hydropiper*)).
Economic plants other than cereals include nuts (walnut (*Juglans regia*) et hazelnut (*Corylus avellana*)), oil and fibre plants (hemp (*Cannabis sativa*)), legumes (beet (*Beta vulgaris*) and carrot (*Daucus carota*)) and many fruits (fig (*Ficus carica*), winter cherry (*Physalis alkekengi*), pear (*Pyrus sp*), peach (*Prunus persica*), elderberry (*Sambucus nigra/racemosa*), cf cherry (cf *Prunus avium/cerasus*), grape (V*itis vinifera*), dewberry (*Rubus caesius*)).
The archaeobotanical analyses confirm the heterogeneous nature of the ditch. In general, a wide range of well-preserved plant macro fossils were found in the samples of the ditch, representing human activity and the local vegetation. The large majority of vegetative material, however, was compiled by waterlogged wood, twigs and charcoal. Different kinds of human waste material have been identified within the fill of the ditch. The many cereal remains and cereal weeds indicate the presence of crop processing debris. These are likely to have come from the adjacent civil agglomeration where vast amounts were recovered. The large variety of cultural plants, in particular the fruits and nuts, are possibly the remains of kitchen refuse. As to the local environment of the ditch, only in the lowest levels, some aquatic plants have been recorded, they are a sign of a moist environment. This could indicate that there was standing water in the ditch during its use. This is also confirmed by pollen analysis.

Structure N°	**BK04/05-05-49 (suite)**
Archaeobotanical analysis	Within the ditch some differences could be observed between the upper and lower layers. Towards the bottom of the ditch a more varied and abundant plant assemblage was found, e g cereal remains and cultural plants originate from the lower levels only. The difference between the upper and the lower part of the fill of the ditch has to be interpreted as a consequence of conditions of preservation. First of all, the current water level hardly reaches the lower levels of the ditch. No distinction between layers was observed during excavation. And finally, it is a tendency that is also observed in the pollen spectrum of the ditch (Lucia Wick pers. comm.). Pollen concentrations are equal within the ditch but preservation deteriorates towards the higher levels. Thus, it is likely that many of the macro plant remains in the upper layers have decayed.
Classification	**Ditch, 1st Cent. A.D.**
Reference	Schucany and Schwarz (in press), p. 70-77

Structure N° **BK04-05-50**

Type of structure **Layer**

Area of excavation **Temple complex**

Archaeological description

Structure BK04-05-50 is a layer located in the *porticus* of temple B1. It consists of a very dark ashy layer. It was interpreted by the archaeologists as a simple hearth. In 2005, Structure BK05-05-181 was excavated, it represents a layer and appeared to be part of structure BK04-05-50 which was excavated in 2004 and is thus discussed here. Structure BK04-05-50 is dated to Phase 3.

Illustration Fig. 12, Fig. 14

Date 120 AD to 130/140 AD

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK45009	9000	Full analysis	PV	05	**50**	02
BK45011	9000	Full analysis	PV	05	**50**	02
BK45030	3000	Full analysis	PV	05	**50**	07
BK45034	6000	Full analysis	PV	05	**50**	05
BK45044	2000	Full analysis	PV	05	**50**	10
BK45059	47000	Full analysis	PV	05	**50**	13
BK45060	227000	Full analysis	PV	05	**50**	12
BK55008	16000	Rapid screening	PV	05	**181**	01

Archaeobotanical analysis

Eight samples were analysed. Charcoal, charred fruit flesh and/or charred processed food were predominant in the samples. In addition charred seeds and fruits of cultural plants were recovered. They comprise cereal grains, pulses (cf lentil (*Lens culinaris*), cf pea (*Pisum sativum*) and faba bean (*Vicia faba*)), nuts (pine nut (*Pinus pinea*), walnut (*Juglans regia*) and hazelnut (*Corylus avellana*)), fruits (fig (*Ficus carica*), date (*Phoenix dactylifera*), peach (*Prunus persica*) and grape (*Vitis vinifera*)) and a clove of garlic (*Allium sativum*). Due to the preservation of the majority of charred fruit flesh fragments no detailed identification was possible. Only a few fragments had the diagnostic features needed for more detailed identification. Fruit fragments of fig were identified, parts of dates could also be recognised. The fragments of charred processed food most likely represent bread or dough. Within the plant assemblage, hardly any wild plants were found.
The archaeobotanical analyses of structure BK04-05-50 revealed a remarkable plant assemblage, which clearly indicates the presence of burnt vegetable offerings. Especially the findings of garlic, date and pine nuts are notable while almost absent throughout the civil and military settlement of Oedenburg/Biesheim-Kunheim and in Roman settlements north of the Alps in general. Remark that pine nuts and garlic were not found before in Oedenburg/Biesheim-Kunheim, date was only once found in a cremation urn.

Classification **Layer, 2nd Cent. A.D.**

Reference Schucany and Schwarz (in press)

Structure N°	**BK04-05-63, BK04-05-80, BK04-05-83, BK04-05-84, BK04-05-86, BK04-05-88, BK04-05-123, BK04-05-135**
Type of structure	**Posthole**
Area of excavation	**Temple complex**
Archaeological description	We analysed the fill of the above mentioned postholes. These fills are dated to Phase 2 and belong to temple C1. Their fill is the same as the black layer represented by structures BK04-05-17 and BK04-05-19.
Illustration	no
Date	75/80 to 110/120 A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK45020	6000	Rapid screening	PV	05	**63**	01
BK45043	6000	Rapid screening	PV	05	**80**	01
BK45035	4000	Rapid screening	PV	05	**83**	01
BK45031	5000	Rapid screening	PV	05	**84**	01
BK45032	8000	Rapid screening	PV	05	**86**	01
BK45038	1000	Rapid screening	PV	05	**88**	01
BK45062	9000	Rapid screening	PV	05	**123**	01
BK45070	8000	Rapid screening	PV	05	**135**	01

Archaeobotanical analysis	Eight samples from eight different postholes were analysed. Only very few carbonised plant macro fossils (single grains of cereal, pulses and bedstraw (*Galium*) as well as some hazelnut shell) were retrieved from these fills. They were mainly composed of charcoal, small bone fragments and molluscs. The plant assemblage and sample composition of these posthole fills is very similar to structures BK04-05-17 and BK04-05-19. They unfortunately do not provide further information as to the use of this area.
Classification	**Posthole, 2nd Cent. A.D.**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK04-05-106**
Type of structure	**Posthole**
Area of excavation	**Temple complex**
Archaeological description	Structure BK04-05-106 represents a large posthole. It was founded in Phase 1 and belonged to Temple B1. The fill is dated to the 3rd Phase when temple B1 was abandoned.
Illustration	no
Date	120 to 130/140 A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK45052	4000	Rapid screening	PV	05	**106**	03
BK45055	2000	Rapid screening	PV	05	**106**	04
BK45056	2200	Rapid screening	PV	05	**106**	05
BK45057	8000	Rapid screening	PV	05	**106**	06

Archaeobotanical analysis	Four samples were analysed. They were composed of charred material mainly. Charcoal, bone fragments, molluscs and a few plant macrofossils were recovered. The plant remains consisted of single finds of cereal grain, pulse, hazelnut (*Corylus avellana*) and bedstraw (*Galium*). They possibly originate from waste material.
Classification	**Posthole, 2nd Cent. A.D.**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK04-05-138, BK04-05-139**
Type of structure	**Posthole**
Area of excavation	**Temple complex**
Archaeological description	Structures BK04-05-138 and BK04-05-139 represent postholes. They belong to the boundary of the temple complex and are dated to Phase 1
Illustration	no
Date	3/4 A.D. to 75/80 A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK45069	4000	Rapid screening	PV	05	**138**	01
BK45067	6000	Rapid screening	PV	05	**139**	01

Archaeobotanical analysis	One sample from each posthole was analysed. The samples are, except for some charcoal, composed of waterlogged material such as waterlogged wood and twigs. Some molluscs were found. Waterlogged plant macro remains comprised only wild plants which are likely to have grown locally.
Classification	**Posthole, 1st Cent. A.D.**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK04-05-02**
Type of structure	**Layer**
Area of excavation	**Temple complex**
Archaeological description	Structure BK04-05-02 represents a layer in a trench, it was not excavated by hand but taken by machine digging. It is closely related to structure BK03-05-75 and partly mixed with Structure BK03-05-56. It is dated to Phase 2.
Illustration	no
Date	75/80 A.D. to 110/120 A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK45012	5000	Rapid screening	PV	05	**02**	04

Archaeobotanical analysis	One sample was analysed. Within the organic fraction, the majority of vegetative material was composed of waterlogged wood and twigs. Hardly any charred material was found. Plant macrofossils were scarce, some cereal weeds (among others muskweed (*Myagrum perfoliatum*), corn chamomile (*Anthemis arvensis*) and bittersweet (*Solanum nigrum*)) were found and some cultural plants (hazelnut (*Corylus avellana*), cf hemp (*Cannabis sativa*) and carrot (*Daucus carota*)). The origin of the plant remains is most likely the local vegetation (wet nutrient-rich soils) and waste material.
Classification	**Layer, 2nd Cent. A.D.**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK04-05-12**
Type of structure	**Ditch**
Area of excavation	**Temple complex**
Archaeological description	Structure BK04-05-12 represent a ditch.
Illustration	no
Date	Roman, not specified
N° of samples Type of analysis	see table below

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK45022	6000	Rapid screening	PV	05	**12**	04

Archaeobotanical analysis	One sample was analysed. It has a small organic fraction which is composed of charcoal, molluscs and charred plant macrofossils. One charred cereal grain and very few wild plants compile the sample.
Classification	**Ditch, Roman**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK04-05-66, BK04-05-70**
Type of structure	**Layer**
Area of excavation	**Temple complex**
Archaeological description	Structures BK04-05-66 and BK04-05-70 represent a layer of destruction debris.
Illustration	no
Date	Roman, not specified
N° of samples Type of analysis	

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK45021FA	4000	Rapid screening	PV	05	**66**	02
BK45023FA	4000	Rapid screening	PV	05	**70**	02

Archaeobotanical analysis	One sample of each structure was analysed. They have a small organic fraction which is composed of charcoal, molluscs and charred plant macrofossils. A small number of charred cereal grain, hazelnut and wild plants compile the sample.
Classification	**Layer, Roman**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK04-05-92**
Type of structure	**Ditch**
Area of excavation	**Temple complex**
Archaeological description	BK04-05-92 represents a ditch. It was dated to Phases 1 to 4.
Illustration	no
Date	1st Cent. A.D. to 4th Cent. A.D. (Phases 1 to 4)

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK45036	4000	Rapid screening	PV	05	**92**	01

Archaeobotanical analysis	This sample consists of a small organic fraction, dominated by charcoal. Macro plant remains are rare, only one cereal grain was recovered.
Classification	**Ditch, Roman**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK04-05-137**
Type of structure	**Ditch**
Area of excavation	**Temple complex**
Archaeological description	BK04-05-137 represents a small ditch located near building C1. It was used in Phase 2 and abandoned in Phase 3. Its fill is dated to Phase 3.
Illustration	no
Date	120 to 130/140 A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK45071	6000	Rapid screening	PV	05	**137**	01

Archaeobotanical analysis	One sample was analysed. Its organic fraction was very small. Little charcoal, few molluscs and one charred seed of bedstraw (*Galium*) were recovered. From these findings, no further information can be inferred.
Classification	**Ditch, 2nd Cent. A.D.**
Reference	Schucany and Schwarz (in press)

Structure N°	**BK05-05-174**
Type of structure	**Posthole**
Area of excavation	**Temple complex**
Archaeological description	Structure BK05-05-174 is a posthole. It belongs to temple B1 and is dated to Phase 3.
Illustration	no
Date	120 to 130/140 A.D.
N° of samples Type of analysis	

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK55008	12000	Rapid screening	PV	05	**174**	04

Archaeobotanical analysis	One sample was analysed. It contained charcoal, fragments of bone and a single fragment of hazelnut shell (*Corylus avellana*).
Classification	**Posthole, 2nd Cent. A.D.**
Reference	Schucany and Schwarz (in press)

Structure N° **BK05-05-180**

Type of structure **Concentration of vessels**

Area of excavation **Temple complex**

Archaeological description

Structure BK05-05-180 represents a concentration of ceramic vessels in which many coins were found. This concentration of ceramic vessels is located to the North of Temple D1. The different vessels could be attributed to different phases of the temple complex. It is thought that these vessels were used for offering practices. Four samples representing four vessels were studied, two of them have yielded plant remains. They concern ceramic vessel n° 6 (BK55013) dated to Phase 1 and ceramic vessel n° 9 (BK55012) dated to Phase 3.

Illustration Fig. 15

Date

BK05-05-180 US 35 : 1st Cent. A.D. (Phase 1)
BK05-05-180 US 48 : 2nd Cent. A.D. (Phase 3)

N° of samples
Type of analysis

Sample n°	**Volume**	**Type of analysis**	**Who**	**Field**	**Structure**	**US**
BK55012	6000	Rapid screening	PV	05	**180**	48
BK55013	7000	Rapid screening	PV	05	**180**	35

Archaeobotanical analysis

The organic fraction of all four samples is very small. It consists of some charcoal, few bone fragments and some molluscs. In two of the samples (US 11 and 23) no plant remains were recovered. In the other two (US 35 and 48) very few carbonised plant remains were recovered. In ceramic vessel n° 6 fragments of pine nuts (*Pinus pinea*), of hazelnut (*Corylus avellana*) and of unidentified fruit flesh and/or processed food were found. In ceramic vessel n° 9 hardly any plant remains were found. Single findings of unidentified fruit flesh and/or processed food were found.
Traces of fire were absent in the vicinity of the vessels. As a result the chances of preservation of plant remains are small. Therefore it is likely that the charred plant remains found within the vessels are not the result of sacrificial practices but come from settlement noise or secondary deposits.

Classification **Vessel, 1st and 2nd Cent. A.D.**

Reference Schucany and Schwarz (in press)

Structure N°	**BK05-05-160/219**
Type of structure	**Pit**
Area of excavation	**Temple complex**

Archaeological description

Structure BK05-05-160/219 was discovered at the beginning of the 2005 excavation season when the excavation trench was being dug. Two small ceramic vessels appeared. A very dark organic discolouration became visible and was soon recognised as the fill of a pit. The pit was dug in the gravel. Due to the abundance of small ceramic vessels (94 were recovered), the large chunks of charcoal and the large fragments of charred processed food visible while digging, the pit was rapidly recognised as a pit for offering. According to the archaeologists the remains in the offering pit are the result of a single event and thus do not represent the accumulation of material over time. The pit was dated to Phase 4.

Illustration Fig. 12, 16, 17

Date Mid 2nd Cent. A.D. (Phase 4)

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK55001	26000	Full analysis	PV	05	**160**	06
BK55002	31500	Full analysis	PV	05	**160**	07
BK55003	8000	Full analysis	PV	05	**160**	08
BK55004	15000	Full analysis	PV	05	**160**	09
BK55009	13000	Full analysis	PV	05	**219**	04
BK55010	3000	Full analysis	PV	05	**219**	05
BK55011	22500	Full analysis	PV	05	**219**	06
BK55018	14000	Full analysis	PV	05	**219**	07
BK55019	7000	Full analysis	PV	05	**219**	07

Archaeobotanical analysis

Nine samples have been analysed. As no substantial differences were observed between the samples (except for US 08 where no plant remains were recovered), they are discussed together. The organic fraction of the samples is predominantly composed of large pieces of charcoal and charred plant material, few bone fragments as well as some molluscs. The charred plant remains contain nuts (*Pinus pinea* (whole seeds, fragments of seeds, scales and part of a cone), *Corylus avellana* and *Juglans regia*), pulses (*Lens culinaris, Vicia faba*), fruits (*Phoenix dactylifera* (a whole fruit, a whole seed, seed fragments and fragments of fruit flesh), *Ficus carica* (seeds and fruit flesh), *Sambucus nigra/racemosa*, *Vitis vinifera*) and cereals (grains of *Triticum aestivum/durum/turgidum*, of *Hordeum vulgare* and of *Secale cereale*). In addition large quantities of charred fruit flesh (more detailed identification has not yet been possible) and processed food (as bread or dough) were recovered. Two seeds of ivy-leaved speedwell (*Veronica hederifolia*) were recovered, they represent the only wild plants recovered. The preservation of the plant remains is average to very good.
The plant macrofossils recovered in structure BK05-05-160/219 are to be interpreted in close connection to offering practices. They represent burnt vegetable offerings. Especially the findings of date, stone pine, fig, walnut, cereal and pulses are very typical for this kind of context and are very frequently found as part of offerings in Roman sacred areas such as graves and temples. Remarkable are the findings of a whole date, various fragments of date stones, fragments of pine nuts, pine scales and one pine cone. These are rather rare in Roman settlements North of the Alps. They are, however, often found in such connection. It is most probable that the majority of recorded plant macrofossils are a direct result of the sacrificial practices and therefore are part of the offered goods.

Classification **Pit, 2nd Cent. A.D.**

Reference Schucany and Schwarz (in press)

Structure N°	**BK05-05-211**
Type of structure	**Layer (Arms depot)**
Area of excavation	**Temple complex**
Archaeological description	Structure BK05-05-211 represents a depot of arms located inside building B1. A large concentration of iron and bronze object were found, many of them representing *Militaria*. Additionally a large amount of cleats were found, they are very likely part of *caligae* (military sandals). This structure was dated to Phase 2.
Illustration	
Date	75/80 to 110/120 A.D.
N° of samples Type of analysis	

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK55014	9800	Rapid screening	PV	05	**211**	01

Archaeobotanical analysis	One sample was analysed. Only very few plant macrofossils were recovered from this sample. It had a small organic fraction which contained predominantly charcoal. In addition few bone and mollusc fragments were found as well as some charred plant remains. The latter include single finds of barley (*Hordeum vulgare*), grape (*Vitis vinifera*) and hazelnut (*Corylus avellana*). The plant macro remains are most likely the result of secondary deposits of waste material.
Classification	**Layer, 1st Cent. A.D.**
Reference	Schucany and Schwarz (in press)

1.3. Catalogue of structures: Surroundings of the temple complex

Structure N°	**BK03-09-29**
Type of structure	**Pit**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	BK03-09-29 represents a pit. It was identified within a machine trench (Trench 5). Its fill consisted of humid organic soil containing charcoal. According to the archaeologists, the morphology and organic content of the pit suggests its use as a latrine. This structure can be linked with BK03-09-193 and BK03-09-194.
Illustration	Fig. 18
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK39005	8000	Rapid screening	PV	09	**29**	01

Archaeobotanical analysis	One sample was analysed. The organic fraction of the sample was mainly composed of wood charcoal, in addition few fragments of waterlogged wood and buds, some insect remains and little bone fragments were found. Plant macrofossils are rare. Two charred cereal grains were recovered. They include barley (*Hordeum vulgare*) and naked wheat (*Triticum aestivum/durum/turgidum*). The waterlogged plant macrofossils include single seeds of the knotweed family (Polygonaceae), of dwarf elder berry (*Sambucus ebulus*) and of sedges (Cyperaceae). It is suggested that the plant macro fossils retrieved from BK03-09-29 result from waste material and/or settlement noise. The presence of faecal material could not be confirmed
Classification	**Pit, 1st Cent. A.D.**
Reference	Reddé (in press), p. 293-299

Structure N°	**BK03-09-67**
Type of structure	**Layer**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	Structure BK03-09-67 represents a linear structure (part of the wharf-wall). It is located along the eastern side of the 'western' palaeochannel. It consists of three piles of stones which form the framework of this construction. The gaps between the stone piles are filled with heterogeneous, humid clayey soil. Structure BK03-09-212 is located under structure BK03-09-67.
Illustration	No
Date	Roman

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK39032	3000	Rapid screening	PV	09	**67**	02

Archaeobotanical analysis	One sample was analysed. The composition of the sample is dominated by waterlogged wood remains. Charcoal, bone fragments, fish scales and plant macro remains complete the sample. Except for few charred cereal grains, the macro plant remains are waterlogged and not very frequent. Edible plants comprise hazelnut (*Corylus avellana*) and grape (*Vitis vinifera*). Wild plants include ruderals and a rare cereal weed namely spurge flax (*Thymelea passerina*). It is likely that the plant macro fossils derive from secondary deposits of waste material.
Classification	**Layer, Roman**
Reference	Schucany and Schwarz (in press), p. 37 and 42

Structure N°	**BK03-09-74**
Type of structure	**Layer**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	BK03-09-74 represents an archaeological layer located in the northern extension of the excavated area. Samples were taken at spatially diverse locations.
Illustration	Fig. 19
Date	Roman, not specified

N° of samples Type of analysis

Sample n°	**Volume**	**Type of analysis**	**Who**	**Field**	**Structure**	**US**
BK39011	6000	Rapid screening	PV	09	**74**	03 1
BK39012	7000	Rapid screening	PV	09	**74**	03 2
BK39013	8000	Rapid screening	PV	09	**74**	03 3
BK39014	7000	Rapid screening	PV	09	**74**	03 4
BK39030	5000	Full analysis	PV	09	**74**	03 5
BK39034	2000	Rapid screening	PV	09	**74**	03

Archaeobotanical analysis

Six samples were analysed. The organic fraction constitutes a large segment of this archaeological layer and is very well preserved. Waterlogged material dominates the samples. Charred remains are common, mineralised remains are practically absent. Charcoal, charred cereal grains and wild plants compose the charred fraction. Wood, twigs, bark, roots, cereal remains, seeds and fruits compile the waterlogged material. In addition insect remains, fragments of animal bones, fish scales, egg shells and molluscs are recorded.
The waterlogged plant macro remains, mainly seeds, are plentiful and very diverse. They compile an extensive list of species of which the economic plants form the largest share. The edible and/or useful plants are nuts (hazelnut (*Corylus avellana*) and walnut (*Juglans regia*)), vegetables (amaranth (*Amaranthus* sp), orache (*Atriplex* sp) and bottle gourd (*Lagenaria siceraria*)), spices (coriander (*Coriandrum sativum*), celery (*Apium graveolens*) and dill (*Anethum graveolens*)) and fruits (melon/cucumber (*Cucumis melo/sativus*), fig (*Ficus carica*), apple/pear (*Malus/Pyrus*), plum (*Prunus insititia/domestica*) and grape (*Vitis vinifera*)), as well as hemp (*Cannabis sativa*) and olive (*Olea europaea*). Waterlogged cereals were not so common, only few chaff fragments of millet and spelt (*Triticum spelta*) were documented. Then again cereal weeds are very numerous. By far the most frequent are carrot bur-parsley (*Caucalis platycarpos*) and muskweed (*Myagrum perfoliatum*). Another cereal weed, for the first time found in Oedenburg is devil-in-a-bush (*Nigella arvensis*). This weed was very rare in Roman times and also belongs to the ´exotic' weeds found in Oedenburg. Other wild plants include ruderal plants and less abundant plants preferring riverbank environments, forests or meadows. Henbane (*Hyoscyamus niger*) and vervain (*Verbena officinalis*) are found, they can both be used for medicinal purposes. Exceptional is the find of not only the seeds but part of the stalk and pericarp (fruit wall) of a bottle gourd (*Lagenaria siceraria*). This is the only known find of such a large part of a bottle gourd for the Roman period. It is proof of the excellent conditions of preservation in Oedenburg. One other fragment of a stalk has been found before, also in Oedenburg in structure BK99-04-01, all other findings have been seeds. Findings of bottle gourd are always remarkable, as they are rare and can only be conserved in waterlogged environments.
Some differences in the range and abundance of species can be detected between the samples indicating the spatially diverse nature of this deposit. Two of the samples are considerably richer in species. They contain mainly weeds and the majority of the cereal remains. These were taken in the area where the bottle gourd was discovered. One sample is poor in plant remains in comparison to the others and is dominated by charcoal.
In general, structure 74 US 03 yielded the largest number of useful plant remains. Many imported plants (olive, bottle gourd, melon/cucumber, and fig) are found. These are proof of the variety of food supplies the inhabitants of Oedenburg could dispose of. The plant remains including wood represent mainly waste material from human activity, like cooking or building activity debris. Somehow unsolved is the presence of a whole bottle gourd. As they can be consumed as vegetable, it would be unlikely to throw away.

Classification	**Layer, Roman**
Reference	Schucany and Schwarz (in press), p. 49-50

Structure N°	**BK03-09-89**
Type of structure	**Pit**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	BK03-09-89 represents a pit.
Illustration	No
Date	Roman, not specified

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK39009	22500	Rapid screening	PV	09	**89**	01

Archaeobotanical analysis

One sample was analysed. The organic fraction retrieved from this sample is very small and is composed mainly of charcoal. Molluscs are frequent. The plant macro remains are rare and consist of some charred cereal grains and a few waterlogged wild plants. Their origin is most likely to be waste material and the immediate surroundings.

Classification	**Pit, Roman**
Reference	Excavation report 2003

Structure N°	**BK03-09-90**
Type of structure	**Pit**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	BK03-09-90 represents a pit. It was dug for the retrieval of stones and is located immediately above BK03-09-129.
Illustration	Fig. 18
Date	Roman not specified

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK39010	4500	Rapid screening	PV	09	**90**	02

Archaeobotanical analysis	One sample was analysed. A small organic fraction is recovered. Little charcoal, little waterlogged wood and some waterlogged seeds and fruits are found. The latter represent a mixture of ruderal plants and riverbank plants. It is clear that the plant material derives from secondary deposits or settlement noise.
Classification	**Pit, Roman not specified**
Reference	Reddé (in press), p. 293-299

Structure N°	**BK03-09-129**
Type of structure	**Pit**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	BK03-09-129 represents a well. It is located in the south-western part of the excavated area. It was lined with wooden planks of fir tree. Its shape is quadrangular.
Illustration	Fig. 18
Date	Roman, not specified

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK39047	5000	Rapid screening	PV	09	**129**	01

Archaeobotanical analysis

One sample was analysed. Its organic fraction contained mainly waterlogged material. In addition some charcoal, a few charred cereal grains and fly papuaria are recorded. Waterlogged wood, buds, seeds and fruits are present. Edible plants are well represented, in particular fruits. Figs (*Ficus carica*), pear/apple (*Pyrus/Malus*), black mulberry (*Morus nigra*), plum (*Prunus domestica*), dewberry (*Rubus caesius*) and grape (*Vitis vinifera*). Other edible plants include hazelnut (*Corylus avellana*) and amaranth (*Amaranthus* sp). Glumes of spelt (*Triticum spelta*) and millet (*Panicum miliaceum*) are also found. The remaining plants are ruderals and various other wild plant species. It is clear from the macro plant remains that the fill of the well comprises among other the remains of human waste material. Black mulberry is rather rare among the plant remains in Oedenburg and was imported during Roman times. The ruderal plants are likely to have grown in the near vicinity of the well.

Classification	**Pit, Roman**
Reference	Reddé (in press), p. 293-299

Structure N°	**BK03-09-151**
Type of structure	**Layer**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	BK03-09-151 represents an archaeological layer located on top and around wooden planks in the northern extension of the excavated area (Sondage 2003). BK03-09-215 represents the same deposit as BK03-09-151 US 11 and therefore discussed here.
Illustration	Fig. 19
Date	Roman, not specified

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK39061	9000	Rapid screening	PV	09	**151**	10
BK39060	7000	Rapid screening	PV	09	**151**	11
BK39041	5000	Rapid screening	PV	09	**151**	01 1
BK39042	5500	Rapid screening	PV	09	**151**	01 2
BK39043	5500	Rapid screening	PV	09	**151**	01 3
BK39058	0	Rapid screening	PV	09	**215**	

Archaeobotanical analysis

Six samples were analysed. They were taken in spatially different locations within structure BK03-09-151. Differences in the composition of plant remains have been observed.
In the north-eastern corner (US 01), the organic fractions of the samples are, except for some wood charcoal, composed of waterlogged and mineralised material. Both waterlogged and mineralised seeds and fruits are abundant, as are mineralised organic concretions. In these concretions parts of seeds (e.g. fig seeds) could be observed. Insect remains, fragments of animal bones, fish vertebrae and fish scales were recorded. The plant macro remains are almost exclusively edible plants. Except for ruderals, wild plants are scarce. In mineralised preservation, millet (*Panicum miliaceum*), lentil (*Lens culinaris*), broad bean (*Vicia fava*) and grape (*Vitis vinifera*) are the most frequent. The waterlogged seeds and fruits are above all remains of fruits like apple/pear (*Malus/Pyrus*), grape (*Vitis vinifera*), plum (*Prunus insititia/domestica*), cherry (*Prunus avium/cerasus*), hawthorn (*Crataegus* sp) and a large concentration of fig seeds (*Ficus carica*). The samples taken in the north-eastern corner show the characteristics of a latrine deposit. The presence of edible plants and mineralised concretions is typical for such deposits. The mineralised concretions can be identified as faecal remains, and are almost certainly representing human faecal remains. To be noticed is the absence of ‘cereal bran’ (testa and hilum fragments of cereal grains) which is commonly found in these contexts. The ruderal plants are most likely belonging to the local environment, thus growing in the surrounding area.

In the south-eastern area (US 10), the sample composition is dominated by waterlogged organic remains. Root-like wood, wood chips, culm nodes, twigs, buds and many other small vegetative parts compile the sample. Additionally seeds, fruits and ‘cereal bran’ concretions are abundant. The spectrum of plants includes many wild plants besides various economic plants. Plants growing in waste grounds, meadows and some on riverbanks are present. Among others more widely spread cereal weeds, the presence of white lace flower (*Orlaya grandiflora*) is worth to mention, a ´exotic’ wild plant growing on calcareous soils. Economic plants as cereals (waterlogged hilum), millet, fennel (*Foeniculum vulgare*), summer savory (*Satureja hortensis*), celery (*Apium graveolens*), figs and apple/pear are recorded. This plant assemblage suggests a mixture of remains from cultural activity (cereal and fruits) and remains from the local environment (ruderal and aquatic plants). The local environment representing a moist disturbed waste area.
In the south-western area (US 11), the composition of the samples is made up of waterlogged organic material, that is wood, small roots, organic concretions and plant macro remains. Unlike the other samples from structure BK03-09-151, only a few species are recorded. However, a large number of items are observed. Eye-catching was the presence of whole maloidaea pericarps. This is that part in apple/pear enclosing the seeds. Usually when found archaeologically, they are very fragmented. However in these samples, large numbers of complete pericarps were found, thus suggesting very good conditions of preservation. The seeds of apple/pear were also recorded. Besides the maloidaea pericarps, a large amount of cereal bran was found. They were mostly congealed into organic concretions. The cereals have so far not been identified to species as this requires very extensive study. Other edible plants include hazelnut, fig, celery and coriander and only constitute a very small number of the plant remains. Wild plants altogether are as good as absent. The interpretation of these samples is rather difficult. Finds of cereal bran are often associated with latrine deposits. Nevertheless, the maloidaea pericarps are so well preserved that they are not likely to have passed through a digestive system. In addition the complete absence of mineralised remains is also atypical for latrine deposits. Therefore, it is suggested that this plant assemblage represents some cooking activity. It might have been remains from food preparation or could have been leftovers thrown away after the meal. Because of the uniformity of the plant remains and their excellent preservation, it is very likely that it is the result of a single event and represents a primary deposit.

Classification	**Layer, Roman**
Reference	Schucany and Schwarz (in press), p. 49-50

Structure N°	**BK03-09-163**
Type of structure	**Layer**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	BK03-09-163 represents a wattle bordering (twigs of alder and willow). It was found on the western edge of the 'western' palaeochannel. BK03-09-166 represents the floor area to the west of BK03-09-163. As the sample composition of both structures is very similar, it is thought that the plant remains represent a single event/deposition.
Illustration	No
Date	Dendrochronology : 9-13 AD

N° of samples
Type of analysis

Sample n°	**Volume**	**Type of analysis**	**Who**	**Field**	**Structure**	**US**
BK39048	20500	Rapid screening	PV	09	**163**	02
BK39057A	9000	Rapid screening	PV	09	**166**	02
BK39057D	8000	Rapid screening	PV	09	**166**	02
BK39057I	10000	Rapid screening	PV	09	**166**	02

Archaeobotanical analysis

Four samples were analysed. Both structures show a very high organic content, dominated by waterlogged wood chips and twigs. Whereas structure BK03-09-163 is almost entirely composed of waterlogged twigs with bark originating from the wattle, structure BK03-09-166 has more wood chips than twigs. Many small vegetative parts have been observed in both structures. Waterlogged plant macro remains are equally frequent. The large majority of the plant remains consist of waterlogged seeds with glumes of millet (*Panicum miliaceum*), followed by rachis fragments of barley (*Hordeum vulgare*) and other unidentified cereal chaff. Preservation of the millet seeds is exceptionally good. Other economic plants are limited. Only some hazelnut (*Corylus avellana*), dill (*Anethum graveolens*), celery (*Apium graveolens*) and hemp (*Cannabis sativa*) have been recorded. Wild plants constitute a small part of the plant remains: cereal weeds, ruderals, riverbank plants and meadow plants. Acorns (*Quercus* sp) were also found.
Large quantities of millet grains have not been found before on a floor level in Oedenburg. It is suggested that the abundance of very well preserved millet seeds might indicate some kind of storage facilities, although no other indications are found. There is a near absence of other economic plants. It is suggested that the plants represent cultural activity, probably waste material from crop processing. Note the difference between plant assemblages on both sides of the wattle structure. In Sondage 26 most cereal remains were waste material of barley, cf rye and glume wheats, whereas on the other side in structure 166 millet seeds were plentiful. Another observation is the presence of acorns in structure 166.

Classification	**Layer, 1st Cent. A.D.**
Reference	Schucany and Schwarz (in press), p. 41

Structure N°	**BK03-09-193**
Type of structure	**Pit**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	BK03-09-193 represents a quadrangular pit. Its content has a phosphate and organic character. According to the archaeologists, the morphology and organic content of the pit suggests its use as a latrine. This structure can be linked with BK03-09-29 and BK03-09-194.
Illustration	Fig. 18
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK39053	6000	Rapid screening	PV	09	**193**	01

Archaeobotanical analysis	One sample was analysed. This sample consists of a small organic fraction, dominated by charcoal. Macro plant remains are rare. A small number of charred cereal grains and wild plants compile the sample. No indications as to the presence of faecal material can be deduced from the archaeobotanical analysis.
Classification	**Pit, 1st Cent A.D.**
Reference	Reddé (in press), p. 293-299

Structure N°	**BK03-09-194**
Type of structure	**Pit**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	BK03-09-194 represents a square pit. Its content has a phosphate and organic character. According to the archaeologists, the morphology and organic content of the pit suggests its use as a latrine. This structure can be linked with BK03-09-29 and BK03-09-193.
Illustration	Fig. 18
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK39054	6000	Rapid screening	PV	09	**194**	01 A
BK39056	6000	Rapid screening	PV	09	**194**	01 C

Archaeobotanical analysis

Two samples were analysed. In these samples the organic fraction contained mainly charcoal, and few fragments of animal bones and molluscs. Charred plant remains represent above all cereals. They include glumes of spelt (*Triticum spelta*), rachis of barley (*Hordeum vulgare*) and single grains of emmer (*Triticum dicoccum*), oat (*Avena* sp) and millet (*Panicum miliaceum*). The waterlogged plant remains are not frequent however represent a wide range of species. Edible plants are dominated by spices (dill (*Anethum graveolens*), celery (*Apium graveolens*) and coriander (*Coriandrum sativum*)). Wild plants cover weeds of winter cereals, ruderals and riverbank plants. The latter two were most likely growing in close vicinity of this pit. It is clear that secondary deposits of waste material have been deposited. The presence of faecal material could not be confirmed.

Classification	**Pit, 1st Cent. A.D.**
Reference	Reddé (in press), p. 293-299

Structure N°	**BK03-09-212**
Type of structure	**Layer**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	Structure BK03-09-212 represents a layer located under structure BK03-09-67. Structure BK03-09-67 represents a linear structure (part of the wharf-wall) located along the eastern side of the 'western' palaeochannel.
Illustration	No
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	**Volume**	**Type of analysis**	**Who**	**Field**	**Structure**	**US**
BK39059	5000	Rapid screening	PV	09	**212**	01

Archaeobotanical analysis	One sample was analysed. It contained a large organic fraction which was composed of charcoal, waterlogged wood and twigs, insect remains, molluscs and bone fragments. The plant macro remains are abundant, well preserved and primarily waterlogged. A wide range of edible and/or useful plants have been recorded. They include cereals as emmer (*Triticum dicoccum*) and millet (*Panicum miliaceum*), and others as hemp (*Cannabis sativa*), hazelnut (*Corylus avellana*), carrot (*Daucus carota*), coriander (*Coriandrum sativum*), melon/cucumber (*Cucumis melo/sativus*), figs (*Ficus carica*) and cherry (*Prunus avium/cerasus*). Wild plants contain riverbank plants, many ruderals and weeds of winter cereals. It is suggested that the plant remains result from waste material and the local environment.
Classification	**Layer, 1st Cent. A.D.**
Reference	Reddé (in press), p. 293-299

Structure N°	**BK03-09-Son 2**
Type of structure	**Trench**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	BK03-09- Son 2 represents a trench dug by machine. One sample is taken at the bottom of this trench during machine digging. Unfortunately no stratigraphical information is available. It originates from a very organic layer located under the current water table.
Illustration	No
Date	Roman, not specified

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK39001FA	5000	Rapid screening	PV	09	**Son 2**	

Archaeobotanical analysis	One sample was analysed. It was composed mainly of waterlogged twigs with bark and fragments of wood. Waterlogged plant remains are well preserved, varied and numerous. They consist of barley rachis (*Hordeum vulgaris*) and glumes of millet (*Panicum miliaceum*). Other edible plants are hazelnut (*Corylus avellana*), walnut (*Juglans regia*) and amaranth (*Amaranthus* sp). The large majority of the seeds and fruits are wild plants. Weeds of winter cereal in particular are plentiful as well as ruderal plants and various others. This plant spectrum is one frequently found in palaeochannel areas in Oedenburg. They must be the remains of cereal processing debris.
Classification	**Layer, Roman**
Reference	Excavation report 2003

Structure N°	**BK03-09-Son 5**
Type of structure	**Trench**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	BK03-09-Son5 represents a trench dug by machine. One sample was analysed for which no stratigraphical information is known.
Illustration	No
Date	Roman, not specified

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK39008	19000	Rapid screening	PV	09	**Son 5**	20

Archaeobotanical analysis	One sample was analysed. It was composed of waterlogged wood, waterlogged plant remains, charcoal and molluscs. Weeds of winter cereals and ruderal plants are frequent. Hazelnut (*Corylus avellana*), amaranth (*Amaranthus* sp) and blackberry (*Rubus fruticosus*) compile the edible plants. As the exact origin of this sample is not known, no further information can be given.
Classification	**Trench, Roman**
Reference	Excavation report 2003

Structure N°	**BK03-09-Tr. 26 and BK03-09-Tr. 27**
Type of structure	**Trial Trench**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	Two trial trenches (BK03-09-Tr. 26 and BK03-09-Tr. 27) were dug along the course of the 'western' palaeochannel. They are located in the north-western part of the excavated area. As the observed depositional dynamics are identical for both trenches, they will be treated together. The 'western' palaeochannel is north-south orientated. It has a width of approximately 12m to 14m and represents a broad depression in profile. Within the palaeochannel, different layers have been identified. Samples have been taken at spatially diverse locations within each layer in order to detect depositional differences.
Illustration	no
Date	Roman not specified

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK39039	5000	Rapid screening	PV	09	**Son 26**	32
BK39044	13000	Rapid screening	PV	09	**Son 26**	28b
BK39015	4000	Rapid screening	PV	09	**Son 26**	26 A
BK39018	4000	Rapid screening	PV	09	**Son 26**	26 D
BK39019	3000	Rapid screening	PV	09	**Son 26**	26 E
BK39022	8000	Rapid screening	PV	09	**Son 26**	26 H
BK39023	3500	Rapid screening	PV	09	**Son 26**	39 A
BK39024	1500	Rapid screening	PV	09	**Son 26**	39 B
BK39026	6000	Rapid screening	PV	09	**Son 26**	39 D
BK39027	4000	Rapid screening	PV	09	**Son 26**	39 E
BK39036	7000	Rapid screening	PV	09	**Son 26**	28a
BK39033	9000	Rapid screening	PV	09	**Son 26**	27 B
BK39033	7000	Rapid screening	PV	09	**Son 26**	27 H
BK39035	7000	Rapid screening	PV	09	**Son 27**	26
BK39037	6000	Rapid screening	PV	09	**Son 27**	27-28

Archaeobotanical analysis

Fifteen samples were analysed. A stratigraphical overview is given from the botanical evidence starting from the youngest layer.

Layer 26 (BK39015, BK39018, BK39019, BK39022) (from Sondage 27: BK39035)
Samples from layer 26, only had small organic contents. They contained mainly charcoal, very few seeds of wild plants, some bone fragments and molluscs. Charred cereal grains were recorded too. One sample, taken in the southern part of layer 26, does not fit this description. It comprises waterlogged wood and has a high density of plant macro remains. The plant remains represent above all plants growing on waste ground and/or arable land such as fat hen (*Chenopodium album*) and maple-leaved goosefoot (*Chenopodium hybridum*). In addition few economic plants are found: glumes of spelt (*Triticum spelta*), seeds of hemp (*Cannabis sativa*) and amaranth (*Amaranthus* sp). The complete absence of aquatic plants and plants favouring wet places, could indicate that at the time of deposition of this layer, this area was dry.
The sample taken in Sondage 27, also gives a different picture. It contained a considerable amount of waterlogged seeds, wild plants are predominant. Note the presence of small water-pepper (*Polygonum minus*) and water pepper (*Polygonum hydropiper*) both dwelling in moist areas.

Layer 39 (BK39023, BK39027)
In contrast to layer 26, layer 39 had a high organic content mainly composed of waterlogged material. Wood, twigs, bark, buds and plant macro remains are abundant. The plant remains represent predominantly cereals and wild plants. Many chaff fragments of barley (*Hordeum vulgare*), glume wheats and millet (*Panicum miliaceum*) make up the cereal remains. Weeds of winter cereals are as rich, with an extremely high number of corn cockle (A*grostemma githago*). Besides, ruderal plants and various other wild plants are identified. Other than cereals, economic plants are limited to hazelnut (*Corylus avellana*), dill (*Anethum graveolens*), coriander (*Coriandrum sativum*) and plum (*Prunus domestica/insititia*).
Some activity related to cereal processing must have taken place in this area, as is shown by the chaff fragments and the cereal weeds which normally are introduced to the site with the harvest. Study of the plant remains in Oedenburg up till now ascertains that remains of cereals are often deposited in wet areas, i.e. palaeochannels. It must have served for drainage purposes. As to the high number of corn cockle, these are often found with cereal refuse. The intake of large quantities of them is poisonous.
Only two samples were so far studied from this layer. A difference in plant macro remains between these two samples is again clear, with one sample being richer in cereal remains, the other in wild plants. A more detailed study of all samples from this layer needs to be done to draw conclusions about this layer. Remarkable is the near absence of aquatic and riverbank plants as this layer is located in the palaeochannel.

Structure N°	**BK03-09-Tr. 26 and BK03-09-Tr. 27 (suite)**

Archaeobotanical analysis

Layer 27 (BK39033b) (from Sondage 27: BK39037)
This layer contains even more organic material than layer 39. Preservation of the remains is merely waterlogged. Large pieces of wood, twigs, bark, buds, small vegetative parts and macro plant remains compile the sample. Cereal remains are predominant, that is in particular rachis fragments of barley and non-specified cereals. Preservation and fragmentation of the rachis fragments did not allow more detailed identification. Nevertheless, it is thought that they could be of rye (*Secale cereale*). Glumes of emmer (*Triticum dicoccum*) and spelt (*Triticum spelta*) are less rich. Other edible plants are absent. Wild plants are almost exclusively weeds of winter cereals and ruderals. Again the plant remains must be the result from crop processing practices.

Layer 28a (BK39036)
This layer consists mainly of waterlogged wood, twigs, buds and small vegetative parts. Organic silty concretions, insect remains, and molluscs are present. Plant macro remains are dominated by wild plants. Interesting is the presence of a wide range of plants growing in meadows, yellow trefoil (*Medicago lupulina*), self-heal (*Prunella vulgaris*) and clover (*Trifolium* sp) among others, and the presence of aquatic and riverbank plants. Cereal weeds, ruderals and various others are present. One seed of red bryony (*Bryonica dioica*) was identified which is a very poisonous plant. Cereal remains and other edible plants are scarce. It is likely that during the deposition of this layer, the area was characterized by a wet and boggy environment. As in none of the layers so far discussed, aquatic and riverbank plants were found except for this one, it is suggested that during this period of deposition the palaeochannel must have been active.

Layer 28b (BK39044)
This layer represents a floor level (structure 166 US 01) to the west of the wattle structure 163.

Layer 32 (BK39039)
This layer is compiled of waterlogged organic remains. A large amount of wood, twigs and other vegetative parts have been observed. Wild plants are rare whereas cereal remains add up for the largest part of the plant macro remains. Primarily rachis fragments of barley (*Hordeum vulgare*) and non-specified cereal are found and secondarily chaff of glume wheats. No other edible plants are recorded.

Interpretation: Very complex depositional processes have taken place in this area. Starting from the youngest layers: The upper layer (4^{th}/beginning 5^{th} Cent. A.D.) is very poor in plant remains; it draws an environment of dry waste grounds; indicators of cultural activity are meagre. In a second phase (layer 39 and layer 27), this corresponds to the 2^{nd}/3^{rd} Cent. A.D., the milieu is still the same hence more plant remains are a sign of human activity. Cereal chaff and the presence of cereal weeds are a strong signal for crop processing activity. Their secondary use could be of many kinds: fodder, drainage, refuse…A third phase (layer 28a) gives a complete different picture (2^{nd} half 1^{st} Cent. A.D.). Wild plants dominate, economic plants are scarce. For the first time, aquatic and riverbank plants are an important part of the assemblage. It is suggested that during this period the palaeochannel was active or more carefully said the area had a very wet and boggy character. The oldest layer (layer 32) has again lots of cereal waste material and various wild plants.
The plant remains show a very complex system of deposition. These results give only a general picture of what could have happened. It is recorded that rachis fragments of barley and rye are clearly more numerous than chaff fragments of glume wheats and millet.

Classification	**Layer, Roman**
Reference	Schucany and Schwarz (in press), p. 35-40

Structure N°	**BK05-10-Son19**
Type of structure	**Basin**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	BK05-10-19 represents a large quadrangular basin lined with oak wood. The basin had been built in the 1st C AD within a palaeochannel. It appeared as a large quadrangular shape of dark organic soil. While the water level prohibited full excavation, a trial trench was dug in the middle of the basin in order to investigate the depositional processes of the basin and to determine the bottom of the basin. The trial trench measured 1.5m to 0.75m. In total 13 samples were taken at regular spits from top to bottom (A = top, M = bottom).
Illustration	Fig. 20
Date	Roman, not specified

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK510001	6000	Rapid screening	PV	01	**19**	A
BK510002	6000	Rapid screening	PV	01	**19**	B
BK510003	8000	Rapid screening	PV	01	**19**	C
BK510004	7200	Rapid screening	PV	01	**19**	D
BK510005	6000	Rapid screening	PV	01	**19**	E
BK510006	7000	Rapid screening	PV	01	**19**	F
BK510007	6000	Rapid screening	PV	01	**19**	G
BK510008	3000	Rapid screening	PV	01	**19**	H
BK510009	2000	Rapid screening	PV	01	**19**	I
BK510044	3000	Rapid screening	PV	01	**19**	J
BK510045	1600	Rapid screening	PV	01	**19**	K
BK510046	6000	Rapid screening	PV	01	**19**	L
BK510047	4000	Rapid screening	PV	01	**19**	M

Archaeobotanical analysis

Thirteen samples were analysed. At first sight, the sample composition between the different layers is similar. They have a very high organic content and are composed of waterlogged material only. In all samples very thin fragmented root like vegetative material is recorded. It reminds of hay, but it is not. In addition silty concretions, insect remains and fly papuaria are common. A closer examination of the layers reveals a large difference in macro plants remains between the layers. The upper layer A is distinct from the others. It has many macro plant remains. They include above all aquatic and riverbank plants as bur-reed (*Sparganium sp*) and club-rush (*Schoenoplectus sp*) and ruderal plants as dwarf elderberry. Few edible plants were found. In the next six spits, from B to G, much less macro plant remains were found than in layer A. Ruderal plants were as good as absent. Single finds of amaranth (*Amaranthus* sp) and walnut (*Juglans regia*) recorded. Aquatic plants again represent the largest group of remains. Cowbane (*Cicuta virosa*), watercress (*Nasturtium officinale*), celery-leaved buttercup (*Ranunculus sceleratus*), bur-reed and duckweed (*Lemna* sp) are the most abundant. As off layer H, more macro plants are again appearing. New are also bone fragments (H-M), fish remains (L), some charcoal (K-L-M) and leather (L). Many ruderal plants are recovered including greater plantain (*Plantago major*), common knotgrass (*Polygonum aviculare*), creeping buttercup (*Ranunculus repens*) and stinging nettle (*Urtica dioica*). Note also the presence of poison hemlock (*Conium maculatum*), a poisonous ruderal plant. Even more aquatic plants as common water-plantain (*Alisma plantago-aquatica*), soft hornwort (*Ceratophyllum cf submersum*), mannagrass (*Glyceria* sp) and tubular water-dropwort (*Oenanthe fistulosa*) are recorded. In addition edible plants are found, single finds of millet (*Panicum miliaceum*), strawberry (*Fragaria vesca*), pear (*Pyrus communis/pyraster*), elderberry (*Sambucus nigra/racemosa*) and grape (*Vitis vinifera*). Only few grassland plants are attested.

The majority of the plant assemblage found in the basin represents the local environment. Ruderal plants have most likely grown around the basin. The presence of a larger spectrum of plants in the upper layer of the basin can be explained as contamination from surrounding structures. The abundance of aquatic plants, mainly plants indicating standing or slowly moving water, is expected for a basin constructed in a palaeochannel. The occurrence of this group of plants throughout the whole sondage means that the basin was always more or less filled with water. The differences in density and diversity of plant remains observed in the sondage could be explained as differences of water level within the basin. This means that the water level could have fluctuated over the course of use of the basin, although it is thought that at all times there was water in the basin (layers H to M). The changes in water level could also explain the presence of economic plants towards the bottom of the basin. Small quantities of waste were possibly thrown in and sunk to the bottom while the water level was low. This remains a hypothesis. Further interpretation of the function, use or sediment-history of the basin needs to be done in close collaboration with more detailed results of the archaeologists and other specialists (pollen, sediment…).

Classification	**Basin, Roman**
Reference	Reddé (in press), p. 313-322

Structure N°	**BK05-10-149**
Type of structure	**Layer**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	Structure BK05-10-149 represents a drain. It was built at the same time as structure BK05-10-19. Samples were taken of its dark organic fill.
Illustration	Fig. 21
Date	Roman, not specified

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK510012	30000	Rapid screening	PV	01	**149**	04
BK510039	10000	Rapid screening	PV	01	**149**	02 C

Archaeobotanical analysis

Two samples were analysed. They were composed of charred and uncharred material, some bone fragments and some insect remains. There is a difference in composition between the two stratigraphical units. US 02 had a rather small organic fraction, only waterlogged plant remains were recorded. The plant assemblage was composed of wild plants mainly. Above all ruderal plants were found as creeping buttercup (*Ranunculus repens*), black nightshade (*Solanum nigrum*) and dwarf elderberry (*Sambucus ebulus*). Economic plants are scarce, only elderberry (*Sambucus nigra/racemosa*) and grape (*Vitis vinifera*) were found. US 04 had a much larger organic fraction, many roots and rhizomes were observed in the sample. The waterlogged plant macro remains, mainly seeds, are plentiful and very diverse. The spectrum of plants includes many wild plants besides various economic plants. The edible and/or useful plants are nuts (hazelnut (*Corylus avellana*), walnut (*Juglans regia*) and stone pine (*Pinus pinea*)), vegetables (amaranth (*Amaranthus* sp), beet (*Beta vulgaris*) and bottle gourd (*Lagenaria siceraria*)), spices (celery (*Apium graveolens*) and summer savory (*Satureja hortensis*)) and fruits (melon/cucumber (*Cucumis melo/sativus*), apple/pear (*Malus/Pyrus*), plum (*Prunus domestica/insititia*), cherry (*Prunus avium/cerasus*), peach (*Prunus persica*) and grape (*Vitis vinifera*)). Waterlogged cereals were not common, only one chaff fragment of millet (*Panicum miliaceum*) was documented. Wild plants are dominated by ruderal plants and plants favouring riverbanks environments. Especially the latter group is well represented with remains of mannagrass (*Glyceria* sp), gypsywort (*Lycopus europaeus*), watercress (*Nasturtium officinale*), pondweed (*Potamogeton* sp) and bur-reed (*Sparganium* sp).

There is a clear difference in plant spectrum between the two studied samples. The upper layer (US 02) contains very few indicators for cultural activity (hardly any edible plants) and there is a complete absence of aquatic plants. The latter suggests that the environment consisted of dry waste grounds at the time of its deposit. From the lower layer (US 04) a more diverse plant assemblage was recovered. Especially the presence of many edible plants and of aquatic and riverbank plants is different from the upper layer. It is likely that the plant macro remains represent a mixture of human waste material and the locally growing vegetation. The latter indicates a very wet and boggy area, which is to be expected as the drain runs through a palaeochannel. It is suggested that during this period of deposition the palaeochannel must have been active. The plant assemblage of US 04 is a very typical one in Roman Oedenburg as many structures were built in the near vicinity of a palaeochannel. Interesting to note is the find of a waterlogged nutlet of stone pine (*Pinus pinea*). Nuts of stone pine were not found in previous excavation seasons in Biesheim-Kunheim. Remains of stone pine were also identified during the 2005 excavation season in the temple area.

Classification	**Layer, Roman**
Reference	Reddé (in press), p. 286

Structure N°	**BK05-10-161**
Type of structure	**Pit**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	Structure BK05-10-161 is a well. One sample from its fill was analysed. It concerns a dark compact organic layer with many vegetative remains.
Illustration	Fig. 22
Date	Roman, not specified

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK510035	30000	Rapid screening	PV	01	**161**	10

Archaeobotanical analysis

One sample was analysed. It contained a very large organic fraction and is composed of waterlogged and charred material. Waterlogged twigs, roots and seeds dominate, charcoal and charred macro plants are present as well as insect remains and bone fragments. The spectrum of waterlogged macro plants includes many wild plants besides various economic plants. Plants growing favouring riverbanks are widespread. The presence of common water-plantain (*Alisma plantago-aquatica*), soft hornwort (*Ceratophyllum cf submersum*) indicates the presence of standing or slowly running water. Plants growing in forests, on forest edges clearings and hedges are represented by common dogwood (*Cornus sanguinea*), way-fairing tree (*Viburnum lantana*) and common hop (*Humulus lupulus*). Vervain (*Verbena officinalis*) is also very common, it is known as a medicinal plant. Plants growing in waste grounds are regularly found. Economic plants are rather scarce, except for hazelnut (Corylus avellana). Others include beet (*Beta vulgaris*), carrot (*Daucus carota*), peach (*Prunus persica*), plum (*Prunus domestica/insititia*) and elderberry (*Sambucus nigra/racemosa*). The charred plant macro remains are dominated by cereal remains: grains and rachis fragments of naked wheat (*Triticum aestivum*), grains of barley (*Hordeum vulgaris*), rye (*Secale cereale*) and millet (*Panicum miliaceum*). In addition some charred pulses were recovered namely lentil (*Lens culinaris*) and broad bean (*Vicia faba*).
A very diverse plant assemblage was recovered. The majority could have grown in the near vicinity of the well, some further afield. Waterlogged edible plants and charred cereal remains indicate cultural activity and must originate from secondary deposits of waste material.

Classification	**Pit, Roman**
Reference	Reddé (in press), p. 323-328

Structure N°	**BK05-10-168**
Type of structure	**Layer**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	Structure BK05-10-168 represents an organic layer at the border of a palaeochannel
Illustration	No
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	**Volume**	**Type of analysis**	**Who**	**Field**	**Structure**	**US**
BK510010	10000	Rapid screening	PV	01	**168**	02 A

Archaeobotanical analysis

One sample was analysed. It is composed of a large organic fraction, dominated by waterlogged material. Silty concretions, wood, rhizomes, roots, insects and bone fragments are present. The waterlogged macro plant remains are not abundant. Economic plants are absent except for single finds of coriander (*Coriandrum sativum*) and elderberry (*Sambucus nigra/racemosa*). Plants favouring waste grounds and riverbank environments cover the wild plants, thus representing the immediate surroundings of the palaeochannel.

Classification	**Layer, 1st Cent. A.D.**
Reference	Excavation report 2005

Structure N°	**BK05-10-308**
Type of structure	**Layer**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	Structure BK05-10-308 represents the filling of a palaeochannel. Structure BK05-10-161 has been dug in this substratum.
Illustration	no
Date	Roman, not specified

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK510041	12000	Rapid screening	PV	01	**308**	01 A

Archaeobotanical analysis	One sample was analysed. It was composed of waterlogged wood and lots of organic silty concretions mainly, in addition roots, insects and few bone fragments were found. Waterlogged plant macro remains are common and dominated by wild plants, namely plants growing in an around riverbanks. Very few economic plants are recovered, they include hazelnut (*Corylus avellana*), coriander (*Coriandrum sativum*) and elderberry (*Sambucus nigra/racemosa*). The plants recorded represent the local environment and refuse.
Classification	**Layer, Roman**
Reference	Excavation report 2005

Structure N°	**BK05-10-310**
Type of structure	**Layer**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	Structure BK05-10-310 represents a layer which possibly dates before the construction of the basin (BK05-10-19).
Illustration	No
Date	1st Cent. A.D.

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK510038	8000	Rapid screening	PV	01	**310**	01

Archaeobotanical analysis

One sample was analysed. Its organic fraction consists mainly of waterlogged material. Small twigs, buds, roots, silty concretions and few charcoals are present. Plant macro remains are plentiful, diverse and dominated by wild plants. Weeds of winter cereals are common (corn cockle (*Agrostemma githago*), corn chamomille (*Anthemis arvensis*), devil-in-a-bush (*Nigella arvensis*), prickly poppy (*Papaver argemone*) among others), cereal remains are absent. Interesting is the presence of a wide range of plants growing in meadows: blue bugleweed (*Ajuga genevensis*), yellow trefoil (*Medicago lupulina*), common self-heal (*Prunella vulgaris*) and rattle (*Rhinanthus* sp) among others, and the presence of aquatic and riverbank plants: common water-plantain (*Alisma plantago-aquatica*), tubular water-dropwort (*Oenanthe fistulosa*) and brown galingale (*Cyperus fuscus*). In addition many ruderal plants are present. Edible plants are scarce. They constitute of hazelnut (*Corylus avellana*), celery (*Apium graveolens*), carrot (*Daucus carota*) and sloe (*Prunus spinosa*).
It is likely that during the deposition of this layer, the area was characterized by a wet and boggy environment. Brown galingale is typical for areas prone to flooding; common water-plantain indicates the presence of standing water. Thus the plant assemblage suggests a mixture of remains from the local environment (ruderal and aquatic plants) and remains from cultural activity (edible plants).

Classification	**Layer, 1st Cent. A.D.**
Reference	Excavation report 2005

Structure N°	**BK05-10-400**
Type of structure	**Urn content**
Area of excavation	**Surroundings of the temple complex**
Archaeological description	Structure BK05-10-400 represents an urn found in between two roads and along the road. It concerns urns found in situ.
Illustration	no
Date	Roman, not specified

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK510040	14000	Rapid screening	PV	01	**400**	Content of jar

Archaeobotanical analysis

The fill of structure 400 (BK510040) is composed of charcoal and bone fragments mainly. Waterlogged macro plant remains are present. A large quantity of greater celandine (*Chelidonium maius*) was found, a ruderal plant growing on rich fertile soils. Other wild plants include single finds of muskweed, annual mercury (*Mercurialis annua*) and common spikerush (*Eleocharis palustris*). In addition some seeds of elderberry (*Sambucus nigra/racemosa*) and fig (*Ficus carica*) were found.

Classification	**Pot content, Roman**
Reference	Excavation report 2005

Structure N°	**BK02-08-Tr1**
Type of structure	**Trench**
Area of excavation	**BK08**
Archaeological description	BK02-08-Tr1 represents a machine trench dug in the near vicinity of the Riedgraben.
Illustration	No
Date	Roman, not specified

N° of samples
Type of analysis

Sample n°	Volume	Type of analysis	Who	Field	Structure	US
BK28001	3000	Full analysis	PV	08	**Tr 1**	
BK28002	10000	Full analysis	PV	08	**Tr 1**	

Archaeobotanical analysis

Two samples were analysed. No stratigraphical and/or chronological information is available for these samples as they were taken after the trench was dug and problems of recording were posed.
The organic fraction was composed mainly of waterlogged remains such as wood chips, twigs and bark. Very few fragments of charcoal and no mineralised remains were retrieved. The waterlogged seeds and fruits contained cereal chaff, weeds of summer cereals, ruderal plants and a few aquatic plants. Edible plants were represented among others by apple and pear (pericarp) (*Malus/Pyrus*), celery (*Apium graveolens*), peach (*Prunus persica*) and grape (*Vitis vinifera*).
From the archaeobotanical analysis we can confirm that we are dealing with Roman deposits (presence of peach, grape …). It is suggested that this plant assemblage represents a mixture of remains from cultural activity (cereal debris and fruits), and remains from the local environment (ruderal and aquatic plants). It is sure that in this area human activity took place.

Classification	**Trench, Roman**
Reference	Excavation report 2002

1.4. Catalogue of structures: Figures

Fig. 1. Drawing and photograph of the section of pit BK99-04-01
(after Reddé in press, Fig. 5.37, p. 428 and Fig. 5. 40, p. 429)

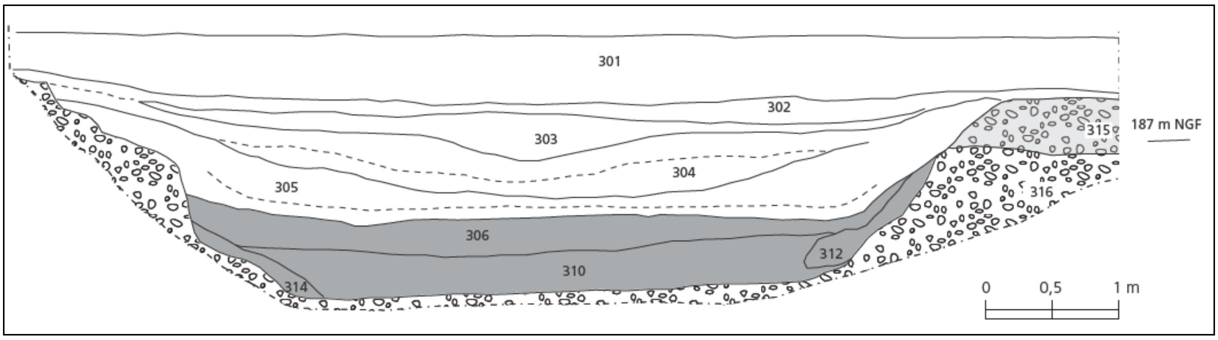


Fig. 2. Section of pit BK99-04-86 (after Reddé in press, Fig. 5.53, p. 450)

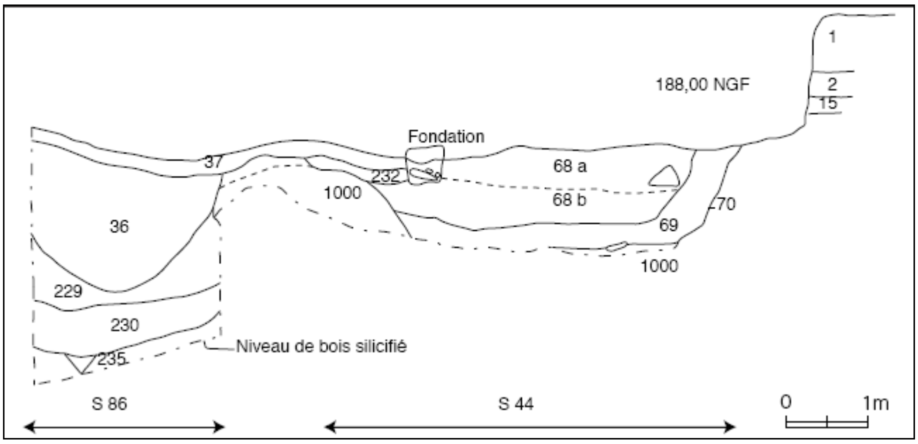


Fig. 3. Section of pit BK00/01-04-24 (after Reddé in press, Fig. 5.28, p. 410)

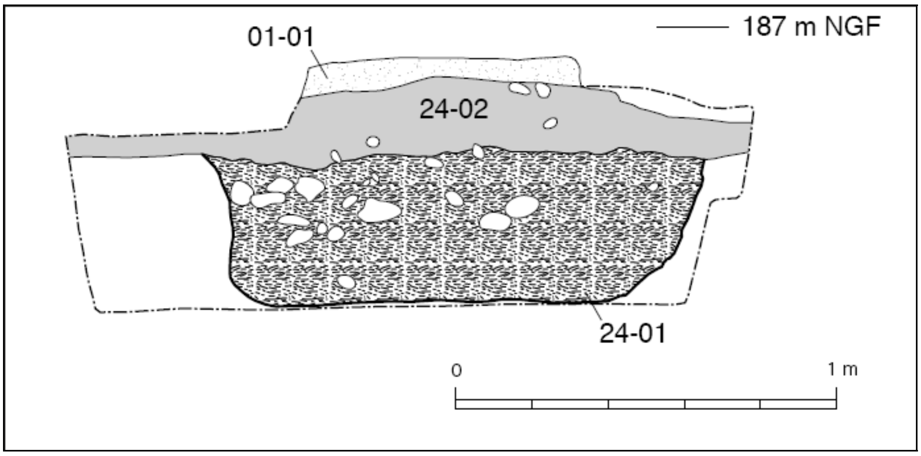


Fig. 4. Photograph of pit BK00-04-53 (after Reddé in press, Fig. 5.71, p. 475)

Fig. 5. Section of pit BK01-04-25 (after Reddé 2001, Fig. 3, p. 28)

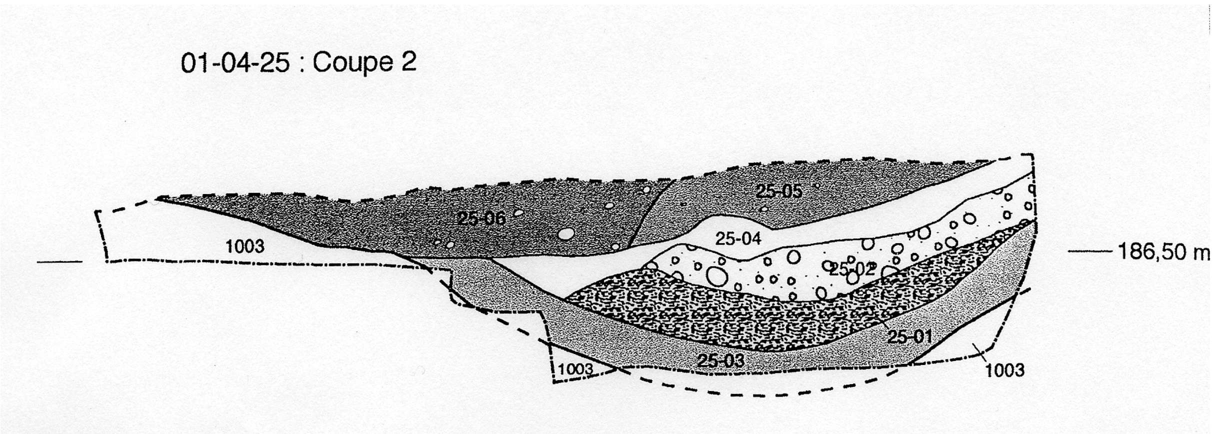


Fig. 6. Photograph of BK01-04-38 (after Reddé in press, Fig. 5.80, p.483)

Fig. 7. Photograph of BK01-04-50 (after Reddé in press, Fig. 5.13, p.392 and Fig. 5.17, p.394)

Fig. 8. Plan of the area Civil East indicating the structures belonging to Horizon 2 (after Reddé in press, Fig. 5.69, p. 474)

Fig. 9. Photograph of layer BK02-04-55 (after Reddé in press, Fig. 5.9, p. 487)

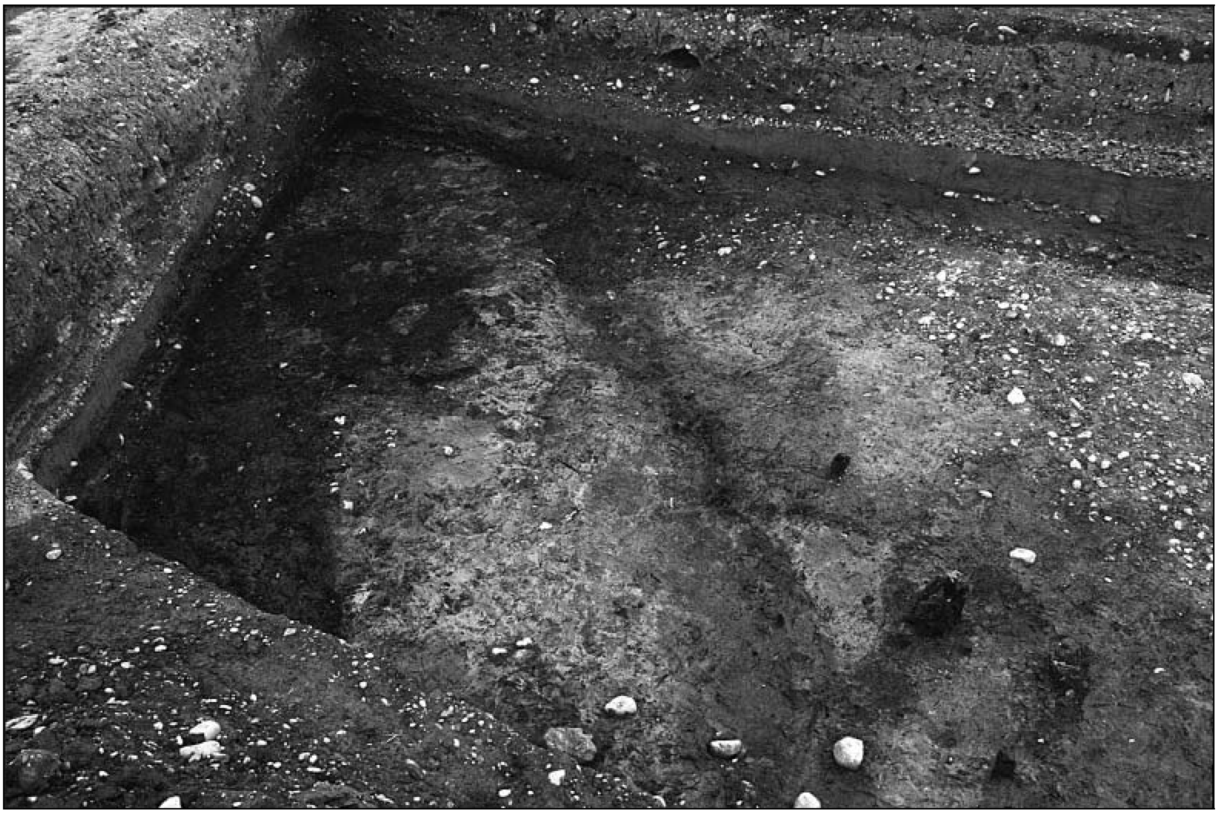


Fig. 10. Photograph of layer BK02-04-64 (after Reddé in press, Fig. 5.75, p. 478)

Fig. 11. Photograph of layer BK02-04-78 (after Reddé in press, Fig. 5.7, p. 386)

Fig. 12. Archaeological map of the temple area

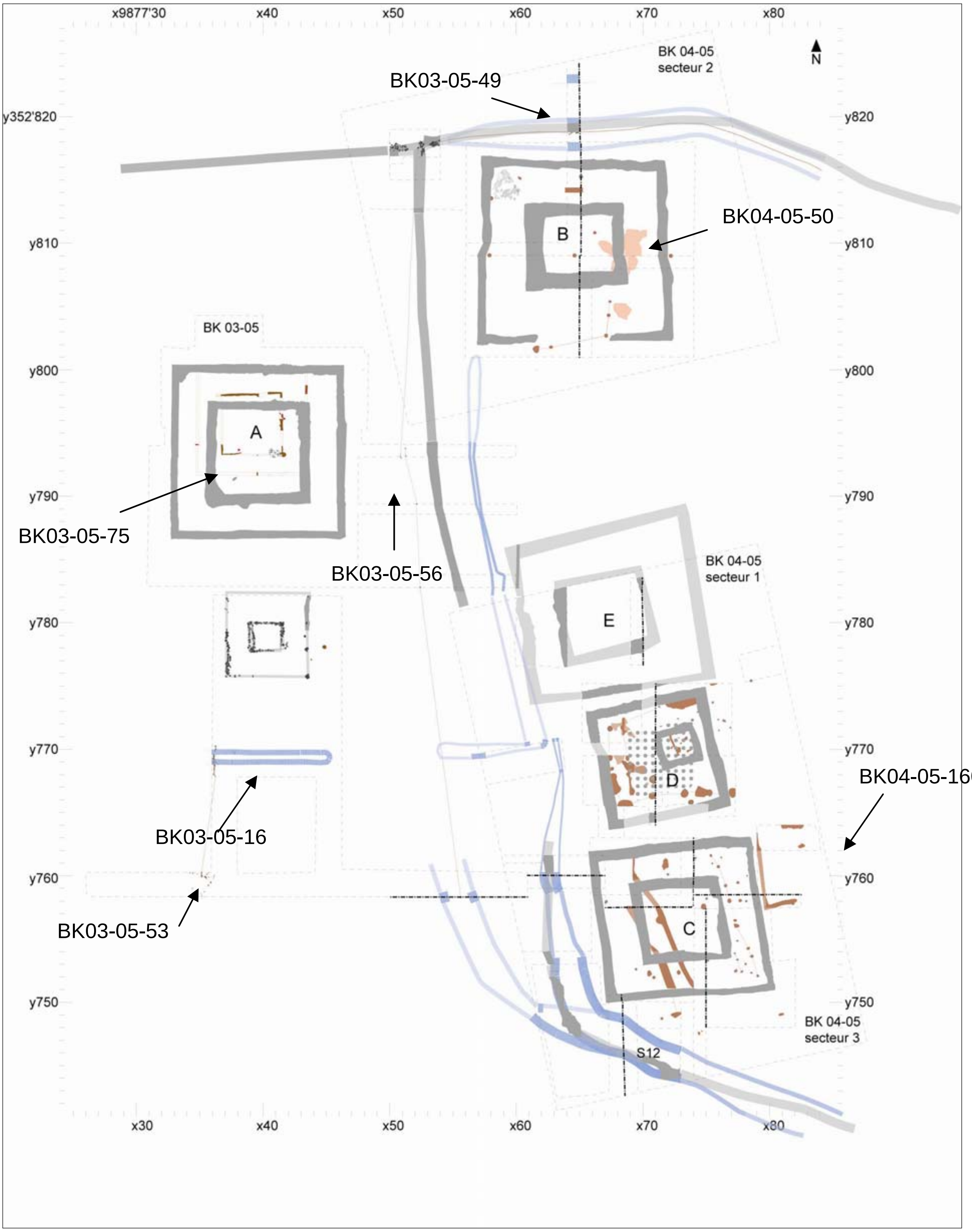


Fig. 13. Photograph of the ditch BK04-05-49 (after Schucany and Schwarz 2005, Fig. 3.12, p.79)

Fig. 14. Photograph of BK04-05-50, hearth structure (Photograph S. Straumann)

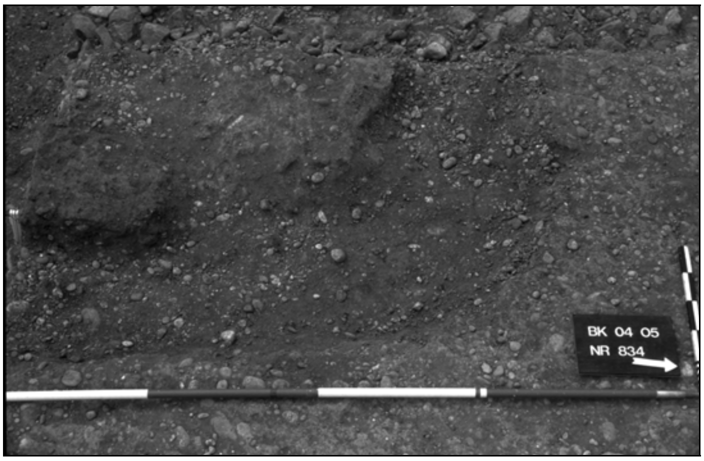


Fig. 15. Photograph of a vessel BK05-05-180 (after Schucany and Schwarz 2005, Fig. 3.25, p. 89)

Fig. 16. Photograph of pit BK05-05-160/219 (Photograph M. Fluck)

Fig. 17. Photograph of BK05-05-160/219, detail of small ceramic vessels (Photograph M. Fluck)

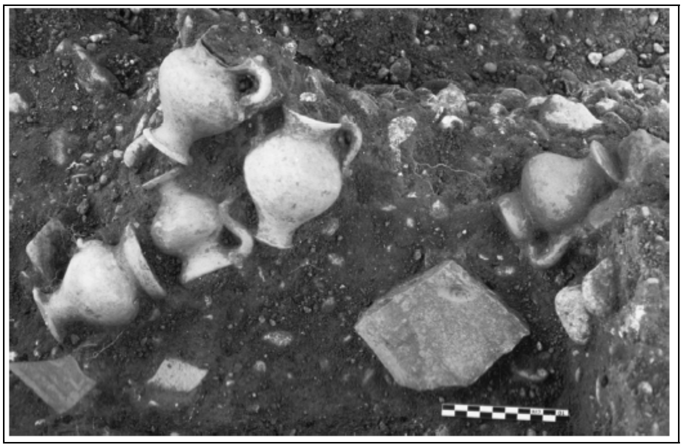


Fig. 18. Plan of living quarters to the East of the Riedgraben (after Reddé in press, Fig 3.13, p. 294)

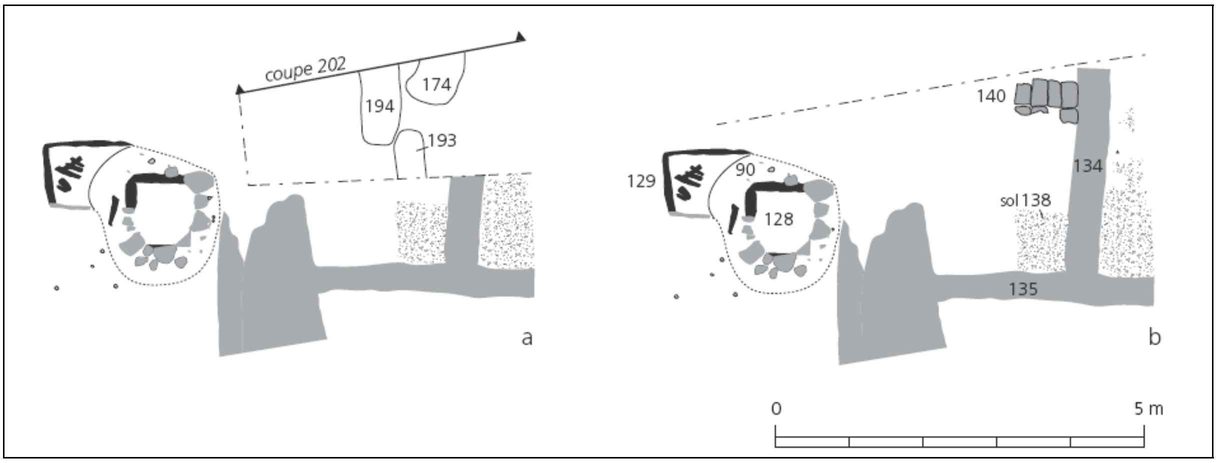


Fig. 19. Archaeological map of northern extension of the Surroundings of the temple area indicating structures (BK03-09-74 and BK03-09-151)(after Reddé *et al*. 2003)

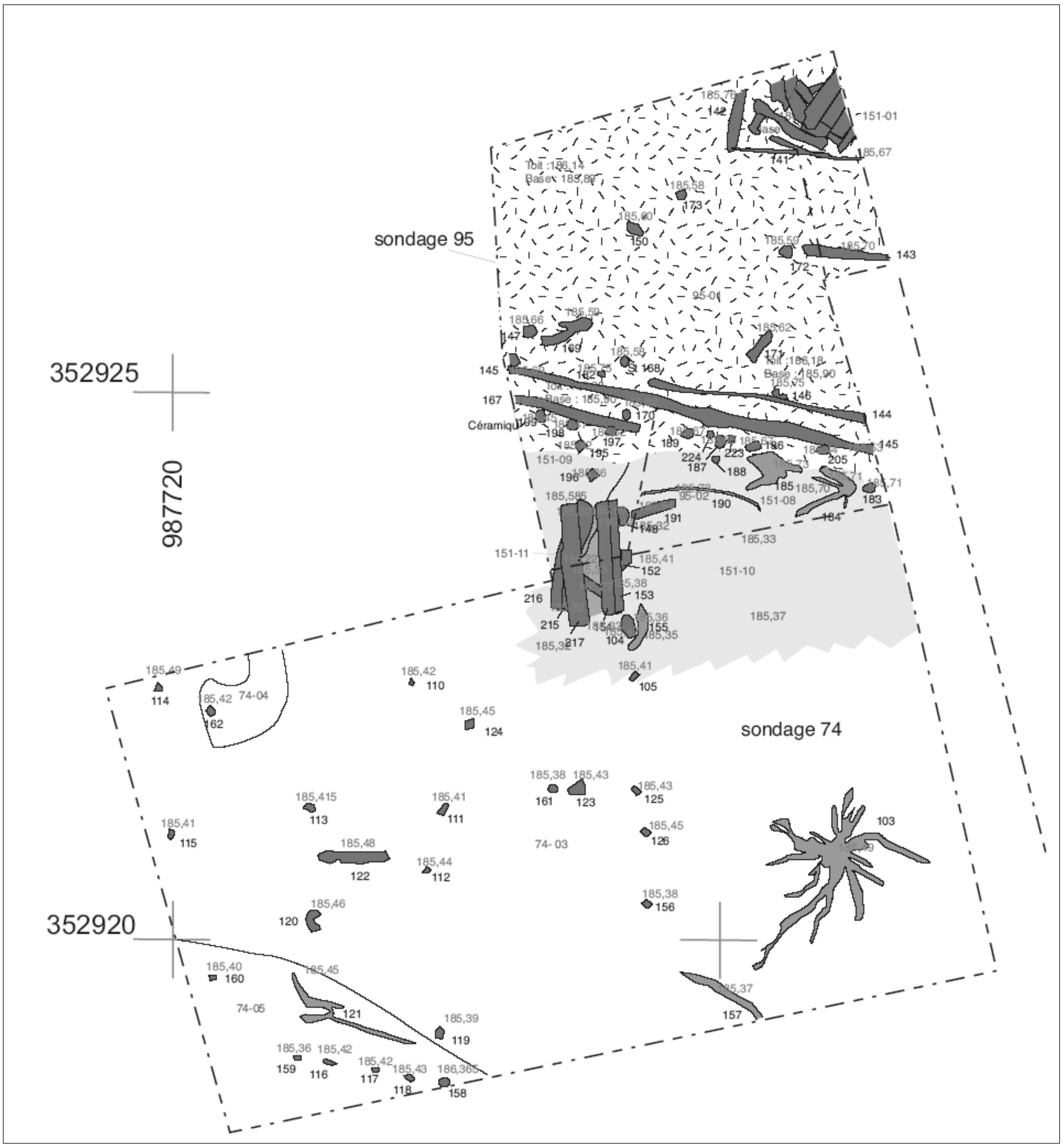


Fig. 20. Photograph of the basin BK05-10-Son19 towards the South
(after Reddé in press, Fig. 3.30, p.315)

Fig. 21. Drawing of the area around layer (caniveau) BK05-10-149
(after Reddé in press, Fig. 3.4, p. 286)

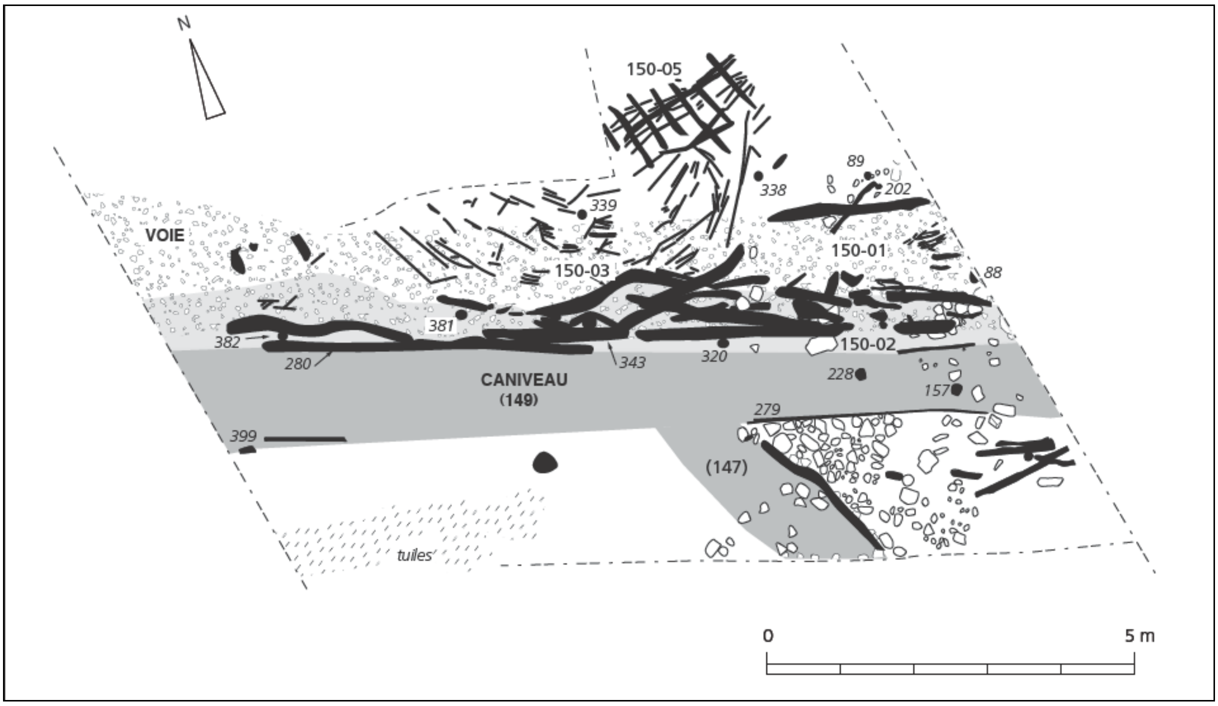


Fig. 22. Photograph of the monumental well BK05-10-161 (after Reddé in press, Fig. 3.40, p. 325)

2. Catalogue of plant remains

The catalogue includes descriptions of some of the plant taxa found in Roman Oedenburg. The plant taxa are listed per family, the order of the families was taken from Oberdorfer (1994). Within the families species are listed alphabetically. The description includes the state of preservation of the described items, measurements of whole seeds/fruits only, reference to a photo, a description and bibliographical references. Photographs of the plant remains were taken by Georges Haldimann. The scale indicated on the photographs is 1mm.

Liliaceae

Allium sp.

Preservation: waterlogged (1 seed and 3 fragments)

Measurements: L: 2.92mm; W: 2.07mm

Photo: Plate 1, a

Description: Black elongated and asymmetrical oval shaped seed including two flat side with very sharp edge. The third side is convex. Cross-section of the seed is triangular shaped. The surface pattern comprises large 'erupting' cells which are more or less structured in rows. Preservation prohibited any classification into cultivated or wild *Allium.*

Bibliography: Stika 1996

Moraceae

Morus nigra L. black mulberry

Preservation: waterlogged (10 seeds)

Measurements: Average L: 3.57mm; W: 2.59mm;T: 2.04mm

Length	Width	Thickness
3.71mm	2.47mm	2.09mm
3.80mm	2.85mm	2.47mm
3.61mm	2.66mm	2.09mm
3.71mm	2.66mm	2.00mm
3.61mm	2.66mm	2.09mm
3.42mm	2.66mm	2.09mm
3.61mm	2.57mm	1.90mm
3.33mm	2.66mm	1.90mm
3.33mm	2.47mm	1.90mm
3.61mm	2.28mm	1.90mm

Photo: Plate 5, c

Description: The yellowish brown, oval to egg-shaped seeds are very distinctive through the presence of a hook-shaped stalk on the thinner edge.

Bibliography: Knörzer 1989

Cannabinaceae

Cannabis sativa L. hemp

Preservation: waterlogged (4 nutlets and 6 fragments)

Measurements: Average: L: 3.17mm; W: 2.54mm; T: 1.93mm

Length	Width	Thickness
3.52mm	2.52mm	1.94mm
2.76mm	2.47mm	1.76mm
3.76mm	2.82mm	2.11mm
2.64mm	2.35mm	1.94

Photo: Plate 5, a
Description: Dark greenish coloured nutlets with very prominent vein-like surface pattern. Nutlets are oval-shaped with a pronounced ridge separating ventral from dorsal side and a very pronounced radicle at the basal end. The radicle is discoid in shape. Both ventral and dorsal side are slightly curved. Hemp nutlets can be distinguished from common hops (*Humulus lupulus*) because of their larger size and the absence of a pronounced radicle end.
Bibliography: Stika 1996, Knörzer 1970

Chenopodiaceae
Beta vulgaris L. beet
Preservation: waterlogged (4 covers and 4 fruit balls)
Measurements: Average cover L: 2.11mm; W: 2.71mm; Average fruit L: 3.37mm; W: 3.99mm

Length fruit ball	Width fruit ball	Length cover	Width cover
3.42mm	4.19mm	2.28mm	3.14mm
2.85mm	3.42mm	2.19mm	2.76mm
4.19mm	5.14mm	1.80mm	2.19mm
3.04mm	3.23mm	2.19mm	2.76mm

Photo: Plate 6, a
Description: The fruit balls are composed of two to four fruits. Each fruit includes a single capsule surrounded by cellular calyx tissue and is mostly closely attached to others fruits forming a fruit ball. Fruit balls are often cylindrical. Seeds are enclosed in these capsules by means of a cover. The slightly domed covers are characterised through the notched outline of the seed which are kidney like with projecting rootlet on the ventral side.
Bibliography: Knörzer 1970, 1981

Portulacaceae
Portulaca oleracea L. little hogweed
Preservation: waterlogged (8 seeds)
Measurements: Average L: 0.83mm; Average L rootlet: 0.94mm

Length	Length rootlet
0.88mm	0.92mm
0.76mm	0.84mm
0.76mm	0.92mm
0.84mm	0.96mm
0.88mm	1.11mm

0.84mm	1.00mm
0.76mm	0.80mm
0.92mm	1.03mm

Photo: Plate 6, c
Description: Black rounded seeds with blunt projecting rootlets bordered by a furrow. The lateral faces are slightly domed. The surface pattern is characterised by concentric rows of stellate tubercles which form regular longitudinal rows at the margins.
Bibliography: Knörzer 1970

Ranunculaceae
Adonis sp. pheasant's eye
Preservation: waterlogged (4 nutlets and 1 fragment)
Measurements: Average L: 3.54mm; W: 3.48mm; T: 2.55mm

Length	Width	Thickness
3.88mm	3.88mm	2.94mm
3.82mm	3.94mm	2.64mm
2.70mm	2.35mm	1.94mm
3.76mm	3.76mm	2.70mm

Photo: Plate 8, a
Description: Nutlets have an obovate however asymmetrical shape in outline, including one straight margin and one convex margin. The surface pattern is very distinct through its pronounced grooves and rips. The rips are characterised by a thin groove marking the middle of the rips. Nutlets are yellowish brown in colour.
Bibliography: Stika 1996, Kujper 1992

Nigella arvensis L. devil-in-a-bush
Preservation: waterlogged (2 seeds)
Measurements: Average L: 2.44mm; W: 1.20mm

Length	Width
2.41mm	1.11mm
2.47mm	1.29mm

Photo: Plate 8, b and c
Description: Black triangular to orange-segmented-formed seeds with sharp angles including two slightly convex faces and one slightly concave face. The surface pattern is characterised by inconspicuous transversal crests, high proportion of papilla-like cells, resulting in a "spiky" look of the seeds; other cells are colliculate, ocellate and flat, with varying proportions
Bibliography: Heiss (pers. comm.), Knörzer 1971

Nigella cf sativa L. black cumin
Preservation: mineralised (2 seeds)
Measurements: Average L: 2.56mm; W: 1.80mm

Length	Width
2.66mm	1.90mm
2.47mm	1.71mm

Photo: Plate 8, d
Description: Black triangular-ovate seed with three pronounced longitudinal ridges. The surface pattern is characterised by distinct transversal ridges, only very few papilla-like cells; all other cells ocellate, rarely flat. Due to their preservation, we identified them as *Nigella* cf *sativa*. *Nigella damascena* can be excluded as the surface pattern is characterised by colliculate cells, with one wart-like elevation each, whereas *Nigella arvensis* does not show these transversal ridges on its surface.
Bibliography: Heiss (pers.comm.)

Papaveraceae

Glaucium corniculatum L. red horned poppy

Preservation: waterlogged (3 seeds)

Measurements: Average L: 1.42mm; W: 1.03mm

Length	Width
1.52mm	0.64mm
1.47mm	1.29mm
1.29mm	1.17mm

Photo: Plate 9, a

Description: Semi-circular to reniform seed with a straight to very faintly convex ventral margin and a convex to rounded dorsal margin. The side faces are convex with tapering ends towards the ventral margin. The surface is characterised by a pronounced reticulate surface pattern including deep cavities arranged in concentric rows.

Papaver dubium L. long-headed poppy

Preservation: waterlogged (1 seed)

Measurements: L: 0.64mm; W: 0.47mm

Photo: Plate 9, c

Description: Reniform seed with a convex dorsal margin and a concave ventral margin. The surface is characterised by a reticulate pattern with mostly areolate to square reticulum.

Brassicaceae

Myagrum perfoliatum L. muskweed

Preservation: waterlogged (10 siliques)

Measurements: Average L: 7.22mm ; W: 4.82mm

Length	Width
6.71mm	4.71mm
7.42mm	5.42mm
10.00mm	4.57mm
6.71mm	5.57mm

6.85mm	4.71mm
6.14mm	4.14mm
7.14mm	4.14mm
7.14mm	5.14mm
7.14mm	4.42mm
7.00mm	5.42mm

Photo: Plate 10, b
Description: Siliques are fan-shaped, slightly compressed towards the basal end. They are composed of three locules. The upper two locules forming the shoulders or 'fan' of the silique. Seeds are found in the lower locule however no seeds were recorded in Roman Oedenburg. The surface is ridged, these longitudinal ridges are approximately 1.42mm wide. The very characteristic and distinct surface pattern enables the identification of very small fragment of a silique. Siliques are light brown to yellow in colour.

Fabaceae
Medicago lupulina L. black medick
Preservation: waterlogged (8 pods with seed)
Measurements: Average L: 1.86mm

Length	Length
2.28mm	1.80mm
1.80mm	1.80mm
1.61mm	1.90mm
2.00mm	1.71mm

Photo: Plate 12, c
Description: Pods are ovate to reniform in outline. The side faces are flat and glabrous. A very distinct vein like surface pattern is visible on these side faces, veins are sometimes arranged in faint concentric rows.
Bibliography: Stika 1996

Medicago minima L. bur medick
Preservation: waterlogged (1 pod and many fragments)
Photo: Plate 12, d
Description: Spirally coiled pod including 5 spirals. Many spines are attached to this spiral. These spines vary in length. The spines are straight or hooked.
Bibliography: Körber-Grohne 1983

Vitaceae
Vitis vinifera L. grape
Preservation: mineralised (10 pips)
Measurements: Average L: 6.65mm; W: 4.28mm

Length	Width

7.00mm	4.00mm
6.71mm	4.14mm
6.28mm	4.28mm
6.14mm	4.57mm
7.00mm	3.85mm
6.57mm	4.71mm
6.14mm	4.28mm
7.57mm	4.57mm
6.57mm	4.14mm
6.57mm	4.28mm

Photo: Plate 13, b
Description: Pips are pear-shaped, slender and elongated with lengthened stalks. The dorsal side is domed including a longitudinal groove running into a circular dent. The ventral side is characterised by a very pronounced longitudinal central ridge marked by two elongated depressions on either side of it. The grape pips are well preserved and elongated. They most likely represent the cultivated vine grape.
Bibliography: Stika 1996

Thymelaeaceae
Thymelaea passerina L. spurge flax
Preservation: waterlogged (1 seed and 1 fragment)
Measurements: L: 2.11mm; W: 1.17mm
Photo: Plate 13, c
Description: The seeds are characterised by their pear-shaped or tear-shaped form. They are black in colour. The apex ends in a sharp point, the basal end is very round. The surface is characterised by reticulate pattern composed of very small reticulum.
Bibliography: Akeret 2004

Cucurbitaceae
Lagenaria siceraria Mol. bottle gourd
Preservation: mineralised (2 seeds)
Measurements:

Length	Width
9.50mm	5.33mm
9.14mm	4.76mm

Photo: Plate 14, c
Description: Seeds are triangular in shape about twice as long as they are broad. The marginal faces are slightly convex. The apical end is truncated. The surface is characterised by two slightly curved and longitudinal lines running on both the ventral and the dorsal side. According to Kobyakowa (1930) the *Lagenaria* seeds found in Oedenburg fit the morphology of the Asian Lagenaria type, in contrast to the African type which is rectangular in shape.
Bibliography: Kobyakowa 1930

Apiaceae

Oenanthe fistulosa L. tubular water-dropwort

Preservation: waterlogged (10 mericarps)

Measurements: Average L: 3.32mm; W: 1.46mm

Length	Width
3.88mm	1.58mm
3.88mm	1.52mm
2.52mm	1.35mm
3.23mm	1.35mm
2.82mm	1.41mm
3.29mm	1.52mm
2.82mm	1.17mm
3.94mm	1.58mm
3.29mm	1.35mm
3.58mm	1.82mm

Photo: Plate 17, c and d

Description: The yellowish mericarps have an obovoid shape; the apical end is truncated; the ventral side is flat and characterised by a longitudinal groove; the dorsal side is characterised by longitudinal ridges including primary ridges and secondary, the primary rides are more pronounced and thickened towards the apical end.

Bibliography: Knörzer 1981

Oleaceae

Olea europaea L. olive

Preservation: waterlogged (7stones)

Measurements: Average L: 12.01mm; W: 7.30mm

Length	Width
11.14mm	7.14mm
12.85mm	6.28mm
10.28mm	7.00mm
15.42mm	8.00mm
10.28mm	8.00mm
10.00mm	6.85mm
14.14mm	7.85mm

Photo: Plate 18, c

Description: Stones are oval to elongated, sometimes pointed towards the top. On the surface fine bifurcated longitudinal furrows are very distinctive. The size and shape of the olive stones is very variable in Roman Oedenburg (long and slender versus short and broad), it is very likely that we are dealing with different races.

Bibliography: Knörzer 1970

Lamiaceae

Ajuga chamaepitys L. yellow bugle

Preservation: waterlogged (2 seeds)

Measurements:

Length seed	Width seed	Thickness seed	Length hilum
2.47mm	1.04mm	0.95mm	1.42mm
2.38mm	1.14mm	0.85mm	1.33mm

Photo: Plate 19, b and c

Description: Elongated oval seeds with curved dorsal side and concave ventral side. The hilum on the ventral side is egg shaped and reaches about two thirds of the seed length or more. The surface pattern is characterised by a coarse network of cells. *Ajuga chamaepitys* can be distinguished from other *Ajuga* species through its size, shape and hilum.

Ajuga genevensis L. blue bugle

Preservation: waterlogged (1 seed)

Measurements: L: 2.28mm; W: 1.42mm; T: 1.28mm

Photo: Plate 19, d

Description: Oval to egg-shaped seed with domed dorsal side and flat ventral side. The hilum on the ventral side is oval in outline. The surface pattern is pronounced and includes long and coarse cells forming a network.

Ajuga reptans L. common bugle

Preservation: waterlogged (1 seed)

Measurements: L: 1.71mm; W: 1.28mm, T: 0.85mm

Photo: Plate 19, e

Description: Elliptic to egg-shaped fruit, dorsal side is slightly curved, ventral side is flat and characterised by a large hilum which reaches about half the seed length or more. Surface pattern includes a coarse network and protruding longitudinal ridges. *Ajuga reptans* is very similar to *Ajuga genevensis*, however the latter has a more pronounced and elongated cell structure on its surface

Bibliography: Stika 1996

Satureja hortensis L. summer savory

Preservation: waterlogged (10 fruits)

Measurements: Average L: 1.24mm; W: 0.91mm

Length	Width
1.17mm	0.88mm
1.05mm	0.70mm
1.41mm	0.88mm
1.29mm	0.94mm
1.11mm	1.00mm
1.41mm	0.94mm
1.35mm	1.00mm

1.23mm	0.88mm
1.29mm	0.94mm
1.17mm	0.94mm

Photo: Plate 20, a
Description: Fruits are ovoid in outline; the ventral and dorsal side are domed. On the ventral side at the apical end, two small concave faces are apparent which are separated through a small ridge. This ridge continues very shortly on the dorsal side. The surface pattern is tubercular. *Satureja hortensis* could be separated from other small Lamiaceae seeds through its size and surface pattern.
Bibliography: Stika 1996

Stachys annua L. annual hedgenettle
Preservation: waterlogged (5 seeds)
Measurements: Average L: 1.76mm; W: 1.36mm; T: 1.06mm

Length	Width	Thickness
1.71mm	1.42mm	1.04mm
1.80mm	1.33mm	1.04mm
1.80mm	1.33mm	1.14mm
1.71mm	1.33mm	1.04mm
1.80mm	1.42mm	1.04mm

Photo: Plate 20, b
Description: Seeds are broad, ovoid to round, slightly truncated towards the basal end. The dorsal side is domed, the ventral side is flattened with a central edge running from the hilum. Its marginal sides are sharp. The surface pattern is characterised by a network structure of large cells. Especially the surface pattern and the sharp marginal sides are very distinct for *Stachys annua*.
Bibliography: Stika 1996

Teucrium botrys L. cutleaf germander
Preservation: waterlogged (1 seed)
Measurements: L: 1.94mm; W: 1.35mm
Photo: Plate 20, c and d
Description: Seeds are rounded in shape and include a large round protruding hilum on the ventral side. Hilum is slightly truncated on the basal end. The surface pattern is characterised by a coarse network of cells, including pronounced ridges and deep furrows. It is above all through the surface pattern that we distinguish this seed from *Teucrium chamaedrys.*

Teucrium cf chamaedrys L. wall germander
Preservation: waterlogged (1 seed)
Measurements: L: 1.64mm; W: 1.58mm; L hilum: 0.76mm
Photo: Plate 20, e and f
Description: Yellowish brown rounded seed with large rounded hilum on the ventral side covering more than half of this side. Edges of hilum are slightly protruding. The surface pattern is characterised by a smooth to faintly network of cells. *Teucrium chamaedrys* can be distinguished from *Teucrium scorodonia* through its size and the size of the hilum. The latter is smaller and not as rounded.

Asteraceae

Carthamus tinctorius L. safflower
Preservation: waterlogged (10 seeds)
Measurements: Average L: 3.68mm; W: 2.58mm

Length	Width
3.71mm	2.57mm
3.80mm	2.19mm
3.80mm	2.57mm
3.80mm	2.95mm
4.00mm	3.14mm
3.42mm	2.66mm
3.80mm	2.28mm
3.52mm	2.66mm
3.61mm	2.09mm
3.42mm	2.76mm

Photo: Plate 22
Description: Light brown obovate achenes with truncated apical end, the achenes are characterised by four rounded and pronounced ridges. The apical end is quadrangular and is bordered by a noticeable collar. The hilum is located at the basal end in an indentation. Although the dimensions of the achenes are noticeably smaller than the modern reference material, they match their morphology. Especially the slightly rounded collar at the apical end is typical for *Carthamus tinctorius*. This is also how it can be differentiated from *Carthamus lanatus*, a Mediterranean ruderal plant which still grows in Wallis (CH). The latter has a very pronounced and angled collar.
Bibliography: Kroll 1990, van Zeist and Bakker-Heeres 1988

Leontodon autumnalis L. autumn hawkbit
Preservation: waterlogged (1 seed and 1 fragment)
Measurements: L: 4.52mm; W: 0.66mm
Photo: Plate 23, d
Description: Black to dark green elongated rod-shaped seeds with blunt apical end, with netlike squamous patterning on its surface.
Bibliography: Knörzer 1970, Jacomet *et al.* 1993

Bibliography

Akeret Ö. (2004) Samen und Früchte. In: Pfäffli B., Sütterlin H., Akeret Ö., Deschler-Erb S., Langenegger, E. and Schlumbaum A. Die Gräber aus dem Areal der Sägerei Ruder - ein Ausschnitt aus dem Nordwestgräberfeld von Augusta Raurica. *Jahresberichte aus Augst und Kaiseraugst* 25, p. 111-178.

Heiss A. and Oeggl K. (2005) The oldest evidence of *Nigella damascena* L. (Ranunculaceae) and its possible introduction to central Europe. *Vegetation History and Archaeobotany* 14, p. 562-570.

Jacomet S., Wagner C., Wacker Feigenwinter K., Felice N. and Albrecht H. (1993) Samen und Früchte aus vorrömischen, römerzeiltlichen und mittelalterlichen Ablagerungen in der Altstadt von Solothurn (Schweiz), Areale Vigier und Klosterplatz, unpublished manuscript.

Knörzer K.-H. (1970) Römerzeitliche Pflanzenfunde aus Neuss. Novaesium IV, Limesforschungen, Gebrüder Mann, Berlin.

Knörzer K.-H. (1970) Römerzeitliche Getreideunkräuter von kalkreichen Böden. Rheinische Ausgrabungen 10, p. 467-481.

Knörzer K.-H. and Baatz D. (1973) Römerzeitliche Pflanzenreste aus einem Brunnen in Butzbach (Hessen). *Saalburg-Jahrbuch* XXX, p. 72-114.

Knörzer K.-H. (1981) Römerzeitliche Pflanzenfunde aus Xanten, *Archäo-physika* 11, 176 pp.

Knörzer, K.-H. (1989) Pflanzenreste und Vegetation. In: Gaitzsch, Wolfgang; Knörzer, Karl-Heinz; Köhler, Frank; Kokabi, Mostefa; Meurers-Balke, Jutta; Neyses, Mechthild; Rademacher, Heinz: Archäologische und naturwissenschaftliche Beiträge zu einem römischen Brunnensediment aus der rheinischen Lössbörde. Bonner Jahrbücher 189, p. 252-269.

Kobyakowa I.A. (1930)The bottle gourd. Bulletin of applied botany, of genetics and plant breeding 23, 1929-1930, p. 475-520.

Körber-Grohne U. (1983) Die Pflanzenreste aus dem Ostkastell von Welzheim mit besonderer Berücksichtigung der Graslandpflanzen. In: Körber-Grohne U., Kokabi M., Piening U., Plank D. (eds) *Flora und Fauna im Ostkastell von Welzheim*. Stuttgart, Konrad Theiss Verlag, p. 17-88.

Kroll H. (1990) Saflor von Feudvar, Vojvodina. Ein Fruchtfund von Carthamus tinctorius belegt diese Färbepflanze für die Bronzezeit Jugoslawiens. *Archäologisches Korrespondenzblatt* 20, p. 41-46.

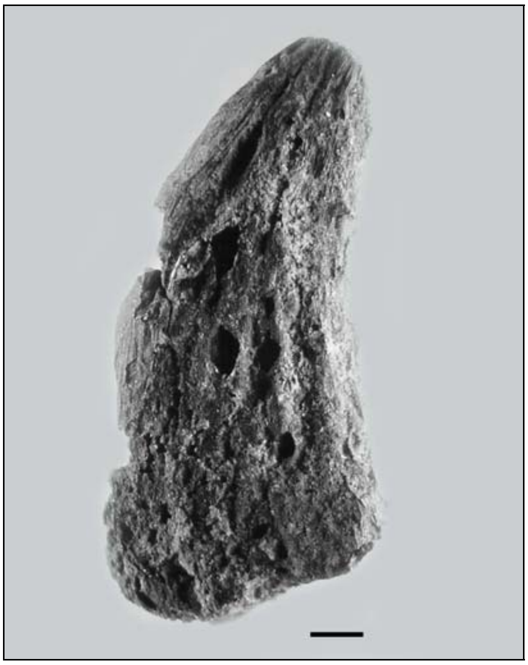
Oberdorfer E. (1994) *Pflanzen-soziologische Exkursionsflora.* Stuttgart, Ulmer.

Stika H.P. (1996) Römerzeitliche Pflanzenreste aus Baden-Württemberg. Materialhefte zur Archäologie in Baden-Württemberg 36. Stuttgart: Konrad Theiss Verlag. 207 p.

van Zeist W. and Bakker-Heeres J.A.H. (1988) Archaeobotanical studies in the Levant, 4. Bronze Age sites on the North Syrian Euphrates. Palaeohistoria 27 (1985), p. 247-316.

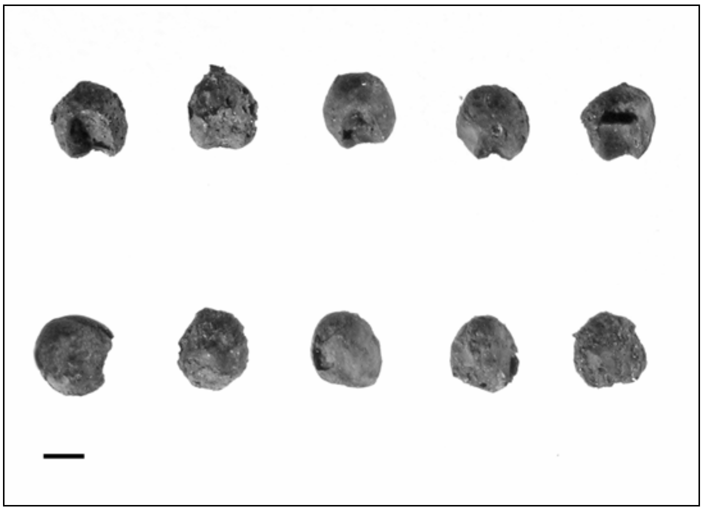
3. Plates

a



b

a. *Allium* sp._waterlogged seed
b. *Allium sativum*_charred clove

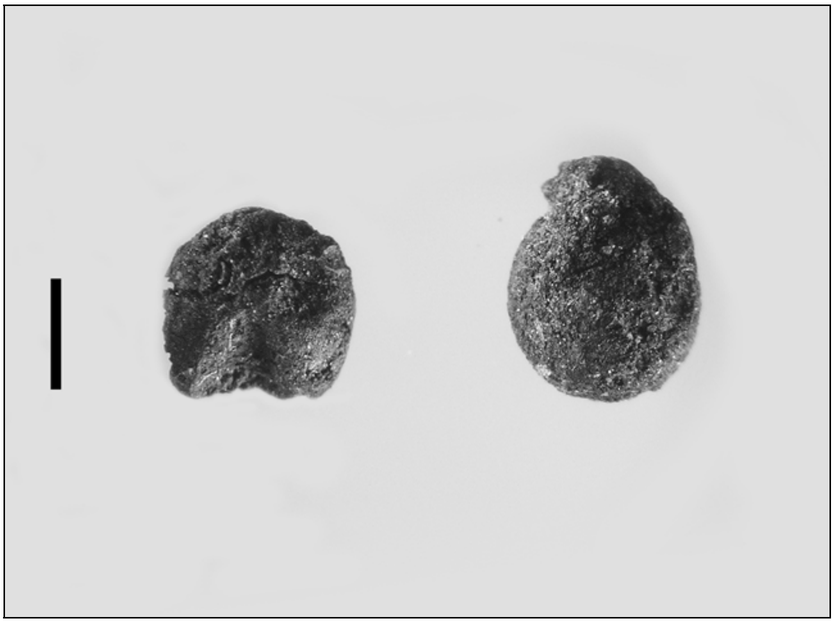

a


b


c

a. *Panicum miliaceum*_charred grains
b. *Panicum miliaceum*_waterlogged grain_ventral side
c. *Panicum miliaceum*_waterlogged grain_dorsal side

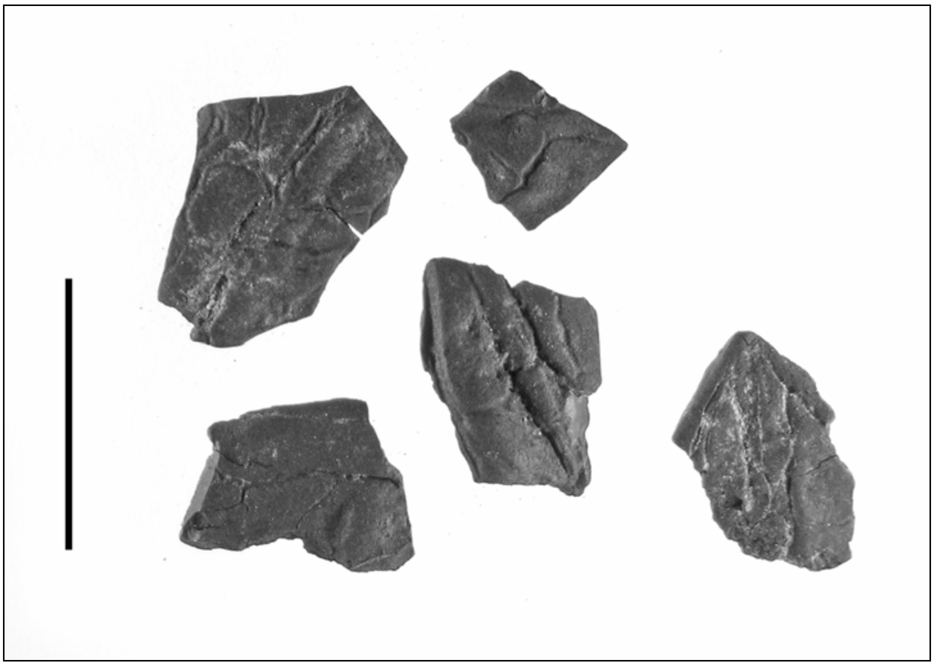
a



b

a. *Secale cereale*_ charred rachis fragment
b. *Setaria italica*_ charred grain

a



b

a. *Triticum aestivum*_charred rachis fragment
b. *Juglans regia*_charred endocarp fragments

a

b

c

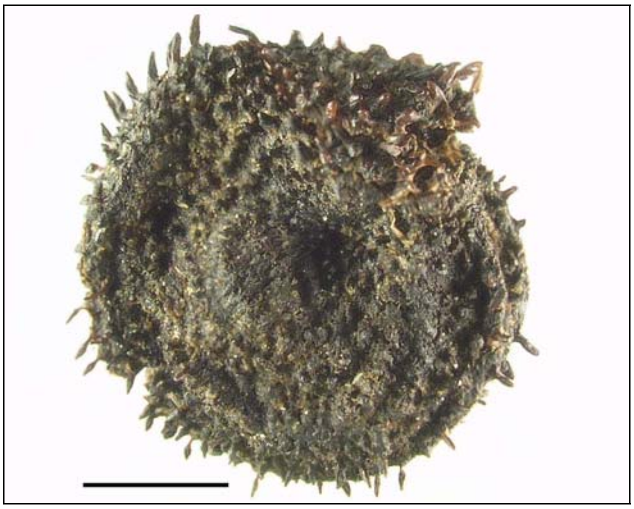
a. *Cannabis sativa*_waterlogged nutlet
b. *Ficus carica*_ waterlogged seed
c. *Morus nigra*_ waterlogged seed

a

b

c

a. *Beta vulgaris*_ waterlogged fruit
b. *Amaranthus* sp._ waterlogged seed
c. *Portulaca oleracea*_ waterlogged seed



a

b

c

d

a. *Agrostemma githago*_ waterlogged seed
b. *Saponaria cf ocymoides*_ waterlogged seed
c. *Saponaria cf officinalis*_ waterlogged seed
d. *Vaccaria hispanica*_ waterlogged seed

a

b

c

d

e

a. *Adonis* sp_waterlogged nutlet
b and c. *Nigella arvensis*_ waterlogged seed
d. *Nigella cf sativa*_mineralised seed
e. *Ranunculus sardous*_ waterlogged seed

a

b

c

a. *Glaucium corniculatum*_ waterlogged seed
b. *Papaver argemone*_ waterlogged seed
c. *Papaver dubium*_ waterlogged seed

a

b

c

a. *Camelina sativa*_ waterlogged seed
b. *Myagrum perfoliatum*_ waterlogged silique
c. *Potentilla anserina*_ waterlogged seed


a


b


c


d

a. *Prunus avium/cerasus*_waterlogged stones
b. *Prunus domestica/insititia*_ waterlogged stone
c. *Prunus persica*_ waterlogged stone
d. *Prunus spinosa*_ waterlogged stone


a


b


c


d

a. and b. *Pyrus communis/pyraster*_waterlogged flower (a) and stone cells (b)
c. *Medicago lupulina*_ waterlogged pod with seed
d. *Medicago minima*_ waterlogged pod fragment

a

b

c

a. *Vicia faba*_mineralised *hilum* fragments
b. *Vitis vinifera*_waterlogged pips
c. *Thymelaea passerina*_ waterlogged seed

a

b

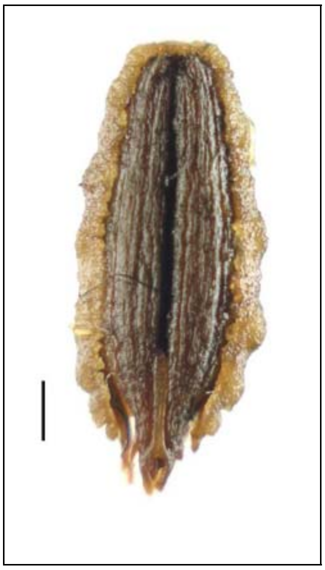
c

a*. Bryonia dioica*_waterlogged seed
b. *Cucumis melo/sativus*_ waterlogged seed
c. *Lagenaria siceraria*_mineralised seeds

a

b

c



d

a. *Anethum graveolens*_ waterlogged mericarp (ventral side)
b. *Apium graveolens*_ waterlogged mericarps (dorsal side)
c. and d. *Caucalis platycarpos*_ waterlogged mericarp (a. dorsal side, b. ventral side)


a


b


c

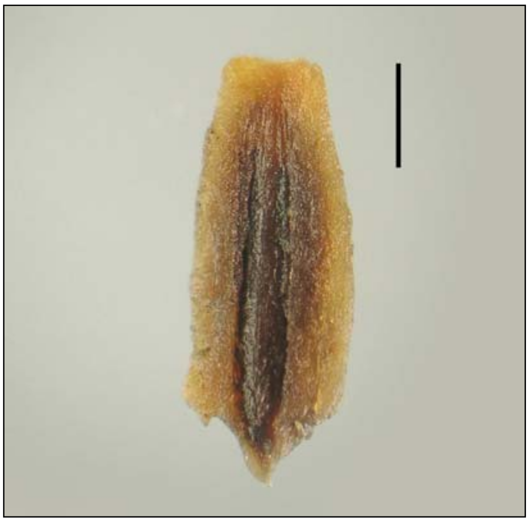

d

a. and b. *Conium maculatum*_waterlogged mericarp (a. dorsal side, b. ventral side)
c. and d. *Coriandrum sativum*_waterlogged mericarp (c. dorsal side, d. ventral side)


a


b


c


d

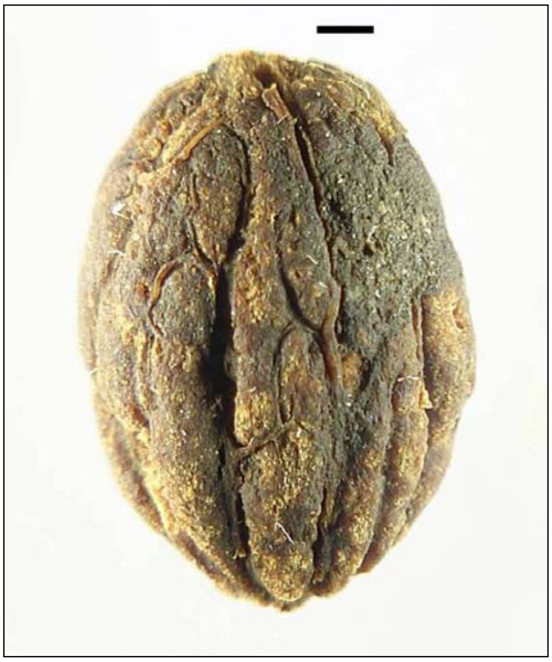

e


f

a. *Daucus carota*_ waterlogged mericarps (dorsal side)
b. *Foeniculum vulgare*_ waterlogged mericarp (dorsal side)
c. and d. Oenanthe fistulosa_ waterlogged mericarp (c. dorsal side, d. ventral side)
e. and f. *Pastinaca sativa*_ waterlogged mericarp (e. dorsal side, f. ventral side)


a


b


c

a. and b. cf *Petroselinum crispum*_waterlogged mericarp (a. dorsal side, b. ventral side)
c. *Olea europaea*_ waterlogged stone

a

b

c

d

e

a. *Convolvulus arvensis*_waterlogged seed
b. and c. *Ajuga chamaepitys*_ waterlogged seed (b. ventral side, c. lateral side)
d. *Ajuga genevensis*_ waterlogged seed (ventral side)
e. *Ajuga reptans*_ waterlogged seed (ventral side)


a


b


c


d


e


f

a. *Satureja hortensis*_waterlogged seed (ventral side)
b. *Stachys annua*_ waterlogged seed (ventral side)
c. and d. *Teucrium botrys*_ waterlogged seed (c. dorsal side, d. ventral side)
e. and f. *Teucrium cf chamaedrys*_ waterlogged seed (e. dorsal side, f. ventral side)

a

b

c

d

a. *Hyoscyamus niger*_mineralised seed
b. *Rhinanthus* sp._waterlogged seed
c. *Valerianella dentata*_ waterlogged seed
d. *Anthemis arvensis*_ waterlogged seeds

a

b

c

a. and b. and c. *Carthamus tinctorius*_waterlogged seeds


a


b


c


d


e

a. *Centaurea cyanus*_waterlogged seed
b. *Cichorium intybus*_ waterlogged seed
c. *Lapsana communis*_ waterlogged seed
d. *Leontodon autumnalis*_ waterlogged seed
e. *Xanthium strumarium*_ waterlogged seed

a

a. *Piper nigrum*_waterlogged corn fragment

4. Appendix

Table 1.a Raw data of the main archaeobotanical analysis of the Roman civil agglomeration Oedenburg/Biesheim-Kunheim. Civil East.

Civil East															
Chronology	**Horizon 1**														
Context	**Pit**														
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**
Volume	5000	5000	5000	4000	7000	7000	5000	5000	5000	4000	4000	8000	7000	8000	8000
Analysis	RS	RS	RS	RS	RS	RS	FU	RS	RS	FU	RS	RS	RS	FU	FU
Field	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04
WATERLOGGED															
CEREALS _ grain															
Avena sativa/fatua						1									
Cerealia - Testa														71	12
Panicum miliaceum										13					
Setaria italica															
Panicum/Setaria															
CEREALS _ chaff															
Hordeum vulgare - rachis							70			7					
Hordeum sp. - rachis	2		1					1							
Secale cereale - rachis															
Triticum aestivum - rachis															
Triticum cf aestivum/durum/turgidum - rachis															
Triticum dicoccon - glume base															
Triticum dicoccon - spikelet fork															
Triticum dicoccon - glume			1												
Triticum cf *dicoccon* - glume															
Triticum dicoccon/spelta - glume															
Triticum monococcum - glume base															
Triticum monococcum - spikelet fork															
Triticum monococcum - glume															
Triticum cf *monococcum* - spikelet fork															
Triticum cf *monococcum* - glume															
Triticum spelta - glume base															
Triticum spelta - spikelet fork							10								
Triticum spelta - glume				1		1	20	2						7	
Triticum sp. - spikelet fork										13					
Triticum sp. - glume	2	2		1	2		120	2		170					
Cerealia - rachis										72					
Cerealia ohne Hirsen - glume						2			1	65					
Panicum miliaceum - glume		1					20	1		65				14	
Setaria italica - glume															
Panicum/Setaria - glume															
NUTS															
Corylus avellana							10					1		2	1
Juglans regia						1			2						
Pinus pinea															
PULSES															
Lens culinaris														13	
Pisum sativum														7	
Pisum cf *sativum*															
Vicia faba															
Fabaceae						1		1	2	7					
SPICES															
Anethum graveolens							10					1		101	
Apium graveolens				1						27			2	44	36
Carum carvi															
Coriandrum sativum		1								20		2	1	80	60
Foeniculum vulgare															
Origanum vulgare															
cf *Petroselinum crispum*															
Pimpinella anisum														7	
cf *Piper nigrum*															
Piper nigrum															12
cf *Ruta graveolens*															
Satureja hortensis										20					
cf *Thymus* sp. - stem															
VEGETABLES AND SALADS															
Amaranthus sp.								1		13		1	1	339	564
Atriplex sp. - perianth															

Chronology	Horizon 1														
Context	Pit														
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**
Volume	5000	5000	5000	4000	7000	7000	5000	5000	5000	4000	4000	8000	7000	8000	8000
Atriplex sp.										7			1		
Beta vulgaris															
Brassica cf *oleracea*															
Brassica rapa/nigra															
Brassica sp.					2	1				39			1	7	
Brassica/Sinapis															
Daucus carota					1		40	2		7					12
Lagenaria siceraria						1									
Pastinaca sativa															
Portulaca oleracea							25								
FRUITS															
Cucumis melo															
Cucumis sativus															
Cucumis melo/sativa															
Ficus carica												2	4	1325	516
Fragaria vesca														95	
Malus domestica															
Malus sylvestris/domestica															
Malus/Pyrus - stem															
Malus/Pyrus - fragment															
Malus/Pyrus - seed base														99	96
Malus/Pyrus - pericarp													1	337	
Malus/Pyrus												2	4	174	85
Pyrus sp.															
Pyrus sp. - stone cells															
Pyrus sp. - flower												2	2		
Morus sp.															
Olea europaea															
Physalis alkekengi												3	2	167	240
Prunus cf *avium*														247	34
Prunus avium/cerasus													1		
Prunus cf *domestica*														4	
Prunus domestica													2		
Prunus domestica/insititia														119	
Prunus insititia														38	48
Prunus persica														2	
Prunus cf *spinosa*															
Prunus spinosa													3	18	2
Prunus sp.												1		86	451
Rubus caesius													1	73	60
Rubus cf *fruticosus*															
Rubus fruticosus														185	120
Rubus idaeus														53	60
Rubus sp.															
Sambucus nigra/racemosa												2		7	
Vitis vinifera - aborted seed															
Vitis vinifera												3	3	1242	494
OIL, DYE AND FIBRE PLANTS															
Cannabis sativa															
Carthamus tinctorius															
cf *Isatis tinctoria*															
Linum usitatissimum															
Papaver cf *somniferum*															
Papaver somniferum										7					
WEEDS OF WINTER CEREALS															
Adonis sp.												1			
Agrostemma githago	3	2	1	2	2	3	20	3	2	326				21	
Anthemis arvensis							80	3		66					
Bromus arvensis Type										85					
Buglossoides arvensis															
Fallopia convolvulus			1				30	2		13		1			
Galium aparine	2	2	2		2		40			26					
Silene gallica															

Chronology	**Horizon 1**														
Context	**Pit**														
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**
Volume	5000	5000	5000	4000	7000	7000	5000	5000	5000	4000	4000	8000	7000	8000	8000
Stachys annua/arvensis															
Valerianella locusta															
Valerianella rimosa				2											
Veronica hederifolia															
Viola tricolor															
Order Aperetalia_weeds of rather acidic/neutral soils															
Aphanes arvensis															
Aphanes sp								1							
cf *Bromus secalinus*															
Camelina sativa - pod															
Camelina sativa															
Camelina cf *sativa*															
Centaurea cf *cyanus*															
Centaurea cyanus															12
Papaver argemone							50			37					
Papaver dubium															
Raphanus raphanistrum															
Scleranthus sp. - capsule															
Order Secalietalia, Caucalion alliance_weeds of calcareous soils															
Ajuga cf *chamaepitys*															
Ajuga chamaepitys														7	
Bupleurum rotundifolium										7					
Caucalis platycarpos	3	3	2	1	2		30	2		7					
Euphorbia exigua															
Galium spurium										20					
Glaucium corniculatum															
Myagrum perfoliatum							20	1		13		2	2		
Myosoton aquaticum			1	1						46					
Nigella arvensis															
Orlaya grandiflora						1			1						
Ranunculus arvensis		1			1										
Scandix pecten-veneris															
Silene cf *dichotoma*															
Stachys annua		1										1	1		
Thymelaea passerina															
Torilis arvensis															
Vaccaria pyramidata															
Valerianella dentata							10	1							
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS															
Aethusa cynapium													1		
Anagallis arvensis/foemina			1				10					2	1		
Arenaria serpyllifolia							205			40					
Atriplex/Chenopodium															
Capsella bursa-pastoris							50								
Chenopodium album	3	3	2	2	3		520	3		215		3	2	389	204
Chenopodium ficifolium															
Chenopodium cf *ficifolium*															
Chenopodium foliosum															
Chenopodium hybridum				1	1					7		2	2	26	72
Chenopodium murale															
Chenopodium polyspermum															
Echinochloa crus-galli														7	
Euphorbia helioscopia															
Euphorbia platyphyllos															
Fumaria officinalis															
Fumaria sp.															
Galeopsis bifida															
Galeopsis ladanum															
Galeopsis sp.							20			20					
Galeopsis cf *speciosa*															

Chronology	Horizon 1														
Context	**Pit**														
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**
Volume	5000	5000	5000	4000	7000	7000	5000	5000	5000	4000	4000	8000	7000	8000	8000
Galeopsis tetrahit															
Galeospis ladanum/segetum															
cf *Heliotropium europaeum*															
Heliotropium sp.		1													
Lamium amplexicaule/purpureum															
Lamium cf *purpureum*															
Malva sylvestris										7					
Mercurialis annua															
Poa annua							95			13					
Polygonum lapathifolium/persicaria	1						20	1							
Polygonum persicaria										13					
Portulaca sp.															
Setaria verticillata/viridis															
Solanum nigrum										7					
Sonchus asper							80								
Sonchus asper/oleraceus	1		1	1	1			2		7					
Sonchus oleraceus															
Stachys cf *arvensis*															
Stellaria media	1	1	1				75	1		290				13	12
Thlaspi arvense				2										20	
Urtica urens							10	1				1		14	
Verbena officinalis															
Xanthium strumarium															
PERENNIAL RUDERALS															
Agropyron repens															
Arctium lappa															
Arctium minus															
Arctium sp.				1											
Bryonia dioica															
Carduus crispus															
Cerastium arvense															
Chelidonium majus															
cf *Chondrilla juncea*															
Cirsium sp.			1		1		30					1			12
Cirsium/Carduus	1	1						1							
Conium maculatum													1		
Convolvulus arvensis															
Cruciata laevipes															
Dipsacus cf *fullonum*															
Fallopia dumetorum										7					
Hyoscyamus niger													1		
Lactuca serriola															
Lamium cf *album*															
Lamium album															
Lapsana communis	2				1		10			7				14	
cf *Marrubium vulgare*															
Onopordum acanthium															
Plantago major							330	2		181					
Poa compressa							150			20					
Polygonum cf *aviculare*															
Polygonum aviculare				1	1		30			13					
Potentilla anserina										7					
Ranunculus repens		2	3	2			340	3		91			1		
Reseda sp.		1						1							
Rumex conglomeratus - perianth					2			1							
Rumex conglomeratus - tubercle							20								
Rumex cf *conglomeratus* - perianth															
Rumex cf *crispus*															
Rumex crispus - perianth					1					46					
Rumex crispus - tubercle							30			20					
Rumex obtusifolius - perianth								1							
Rumex obtusifolius	3	3	2	2	3		365	2		228		2	2		
Sambucus cf *ebulus*															

Chronology	Horizon 1														
Context	Pit														
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**
Volume	5000	5000	5000	4000	7000	7000	5000	5000	5000	4000	4000	8000	7000	8000	8000
Sambucus ebulus															
Saponaria officinalis															
Saponaria cf *officinalis*															
Silene alba															
Urtica dioica							25							13	
MEADOWS AND PASTURES															
Achillea millefolium										63					
Agrostis sp.							85			110					
Ajuga cf *reptans*															
Ajuga reptans													1		
Anthriscus sp.															
Bromus cf *commutatus*							155			52					
Bromus hordeaceus							30			108					
Centaurea cf *jacea*															
Centaurea sp.			1			2	30	1		26					
Cichorium intybus															
Cirsium/Centaurea								1							
cf *Cynosurus* sp.															
Dactylis glomerata										13					
Deschampsia caespitosa							25			7					
Dianthus cf *armeria*															
Festuca rubra/ovina							20								
Festuca/Lolium							10			65					
Holcus lanatus							60			20					
Leontodon autumnalis				1											
Leontodon sp.										7					
Leucanthemum vulgare							160			60					
Lolium perenne							10								
Nardus stricta							10								
Plantago lanceolata					2					33					
Plantago media							70			291					
Poa pratensis							470			60					
Poa pratensis Type															
Poa pratensis/trivialis															
Potentilla cf *erecta*															
Potentilla erecta										7					
Prunella cf *vulgaris*															
Prunella vulgaris	3	3	3	2	3	3	560	3	3	641					
Ranunculus cf *acris*							120								
Ranunculus acris						3				13				8	
Rhinanthus sp.	2		2		3	1	200	2		104					
Rumex acetosa - perianth							50								
Rumex acetosella															
Silene vulgaris										52					
Taraxacum officinale							10	1							
Thalictrum flavum															
Trifolium pratense - pod with seeds										59					
Trifolium pratense - capsule							80			65					
Trifolium sp. - chalice	2	3		2	3	3	180	1	2	580					
Open swards															
Acinos arvensis															
Ajuga genevensis															
Artemisia campestris															
Centaurea scabiosa															
Dianthus sp.							10								
Euphorbia cf *seguieriana*															
Euphrasia/Odontites															
Gentiana cruciata															
Medicago lupulina - pod with seed		2			1			1		65					
Medicago lupulina - pod							40			98					
Medicago minima - pod							20								
Odontites sp.							60	1							
cf *Petrorhagia prolifera*															

Chronology	Horizon 1														
Context	Pit														
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**
Volume	5000	5000	5000	4000	7000	7000	5000	5000	5000	4000	4000	8000	7000	8000	8000
Prunella grandiflora										13					
Scabiosa columbaria										20					
Stachys cf *recta*															
Stachys recta															
Teucrium botrys															
Teucrium cf *chamaedrys*															
Teucrium montanum															
Trifolium cf *campestre* - chalice										52					
Aquatic plants															
Ceratophyllum cf *submersum*															
Lemna sp.															
Polygonum cf *amphibium*															
Potamogeton sp.															
Ranunculus aquatilis															
Sparganium sp.															
Zannichellia palustris															
Reed fields															
Alisma plantago-aquatica							55			17					
Carex sp.														53	24
Carex sp. - utriculus										7					
Carex sp. bicarpellate		3		2	3		190	3		26					
Carex sp. tricarpellate	2	2	2	1	2		90	1		39		2	1		
Cicuta virosa															
Eleocharis palustris	2	3	2	3	3		215	2		39					
Eupatorium cannabinum															
Galium cf *palustre*							20			7					
Galium palustre															
Glyceria sp.															
Hippuris vulgaris															
Iris pseudacorus															
Juncus sp.						1	545			167					
Lycopus europaeus															
Mentha arvensis/aquatica							25			103					
Nasturtium officinale															
Oenanthe fistulosa			1												
Oenanthe sp.															
Poa palustris							20								
Rorippa amphibia															
Rumex cf *aquaticus/hydrolapatum*															
Salix sp. - veg. part															
Schoenoplectus lacustris															
Schoenoplectus sp.															
Riverbank plants (pioneer)															
Alnus glutinosa - veg. part															
Alnus sp. - veg. Part															
Bidens sp.															
Bidens tripartita															
Cyperus flavescens															
Cyperus fuscus															
cf *Myosoton aquaticum*							705								
Polygonum cf *hydropiper*															
Polygonum hydropiper														111	
Polygonum hydropiper/mite										59					
Polygonum lapathifolium										20				2347	1320
Polygonum minus															
Polygonum mite															
Polygonum mite/minus															
Ranunculus cf *flammula*															
Ranunculus flammula							10								
Ranunculus sardous															
Ranunculus sceleratus															
Teucrium cf *scordium*															
Wet meadows															

Chronology	Horizon 1														
Context	Pit														
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**
Volume	5000	5000	5000	4000	7000	7000	5000	5000	5000	4000	4000	8000	7000	8000	8000
cf *Euphorbia palustris*															
Filipendula ulmaria															
Linum catharticum										90					
Lychnis flos-cuculi							25			26					
Scirpus sylvaticus															
Stachys officinalis															
Forests, forest edges and clearings, hedges															
Abies alba - needle															
Acer sp. - veg. part															
Agrimonia eupatoria															
Arctium cf *nemorosum*															
Betula pendula - veg. part															
Cornus sanguinea															
Crataegus sp.															
cf *Humulus lupulus*															
Quercus sp. - veg. part															
Rosa sp.										7					
Solanum dulcamara															
Solanum cf *dulcamara*															
Stellaria cf *nemorum*															
Torilis cf *japonica*															
Valeriana cf *tripteris*															
Viburnum lantana															
Viburnum opulus															
Calamintha sylvatica															
Galium verum										78					
Hypericum perforatum															
Saponaria cf *ocymoides*															
Silene cf *nutans*															
Silene nutans															
Thalictrum minus															
VARIA															
Ajuga sp.														7	
Allium sp.															
Apiaceae - fragments															
Asteraceae			1				50	1		39					
Boraginaceae															
Brassicaceae										17					
Bromus sp.							115			215					
Campanula sp.															
Cannabinaceae															
Carduus sp.															
Caryophyllaceae						3									
Cerastium sp.															
Chenopodiaceae										98					
Chenopodiaceae/Amaranthaceae										80					
Chenopodium sp.						3			1					573	
Cichorium sp.															
Crepis sp.															
Cuscuta sp.				1			25			10					
Cyperaceae						3				56					
Epilobium sp.															
Euphorbia sp.															
Euphorbia sp. - fruit															
Euphorbia sp. - capsule															
Fallopia sp.															
Filipendula sp.		2					30	1		7					
Galium sp.		1			1		130	2		56					
Hypericum sp.															
Inula sp.															

Chronology	Horizon 1														
Context	Pit														
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**
Volume	5000	5000	5000	4000	7000	7000	5000	5000	5000	4000	4000	8000	7000	8000	8000
Lamiaceae				1						141					
Lamium sp.										7		2			
Liliaceae			1												
Malva sp.															
cf *Matricaria* sp.															
Mentha sp.															
Nasturtium sp.															
Papaver sp.										40					
Physalis sp.															
Physalis/Solanum															
Phyteuma sp.	1														
Plantago sp. - chalice+A54										46					
Plantago sp.							50			13					
Poa sp.		2					1375	3		439					
Poaceae															
Poaceae	3	4	1	3	4	5	380	3	6	1166				2	
Polygonaceae						2				27					
Polygonum sp.															
Polygonum sp.			2				160			7				674	36
Potentilla sp.		1					295	2		228					
Primulaceae							70								
Ranunculaceae								1							
Ranunculus sp.															
cf *Raphanus* sp.															
Rosaceae - thorn															
Rosaceae															
Rosaceae - flower															
Rumex sp. - tubercle							120								
Rumex sp.						1								109	84
Rumex sp. - perianth	1	1				3		3		101					
Sambucus sp.												1	2	7	24
Satureja sp.															
Scabiosa sp.							10	2							
cf *Scandix* sp.															
Scrophulariaceae															
Silene alba/dioica															
Silene sp.	3	3	2				115			20					
Sinapis sp.															
Solanaceae						2	10			7	1				
Solanum sp.															
Sonchus sp.															
Stachys sp.			1	1						7					12
Stachys/Lamium															
Stellaria graminea/palustris				1			180	1		33					
Stellaria sp.															
Teucrium sp.															
Tilia sp. - fruit															
Torilis sp.							20								
Veronica sp.					1		25			10					
Vicia sp.															
Viola sp. - capsule			1												
Viola sp.				1								1	1		
Indeterminata - rhizome															
Indeterminata - fruitstem															
Indeterminata - endocarp															
Indeterminata						4			2					214	520
CHARRED															
CEREALS _ grain															
Avena sp.															
Hordeum vulgare											1				

Chronology	Horizon 1														
Context	Pit														
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**
Volume	5000	5000	5000	4000	7000	7000	5000	5000	5000	4000	4000	8000	7000	8000	8000
Hordeum sp.															
Secale cereale															
Triticum aestivum															
Triticum aestivum/durum/turgidum															
Triticum dicoccon															
Triticum cf *dicoccon*															
Triticum spelta															
Triticum sp.															
Cerealia ohne Hirsen											1		1		
Panicum miliaceum															
Setaria italica															
Panicum/Setaria															
CEREALS _ chaff															
Hordeum vulgare - rachis															
Hordeum sp. - rachis															
Secale cereale - rachis															
Triticum aestivum - rachis															
Triticum dicoccon - spikelet fork															
Triticum dicoccon - glume															
Triticum monococcum - spikelet fork															
Triticum monococcum - glume															
Triticum spelta - spikelet fork															
Triticum spelta - glume base															
Triticum spelta - glume															
Triticum sp. - spikelet fork															
Triticum sp. - glume															
Cerealia											1				
NUTS															
Corylus avellana						1					1	1			
Juglans regia															
Pinus pinea															
PULSES															
cf *Lathyrus* sp.															
Lens culinaris															
Pisum sativum															
Vicia faba															
Vicia/Lathyrus															
Fabaceae															
SPICES															
Apium graveolens															
Satureja hortensis															
VEGETABLES AND SALADS															
Allium sativum															
Atriplex sp.															
Brassica sp.															
FRUITS															
Ficus carica - fruitflesh															
Phoenix dactylifera															
Prunus domestica/insititia															
Prunus persica															
Sambucus nigra/racemosa															
Vitis vinifera															
OIL AND FIBRE PLANTS															
WEEDS OF WINTER CEREALS															
Galium aparine															
Veronica hederifolia															
Order Aperetalia_weeds of rather acidic/neutral soils															
Order Secalietalia, Caucalion alliance_weeds of calcareous soils															
Avena fatua															
Caucalis platycarpos															
Galium spurium															

Chronology	**Horizon 1**														
Context	**Pit**														
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**
Volume	5000	5000	5000	4000	7000	7000	5000	5000	5000	4000	4000	8000	7000	8000	8000
Glaucium corniculatum															
Myagrum perfoliatum															
Vicia cf *angustifolia*															
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS															
Chenopodium album															
Chenopodium polyspermum															
Galeospis ladanum/segetum															
cf *Solanum nigrum*															
Thlaspi arvense															
PERENNIAL RUDERALS															
Cruciata laevipes															
Rumex obtusifolius															
Silene alba															
MEADOWS AND PASTURES															
Centaurea sp.															
Festuca/Lolium															
Galium boreale															
Plantago lanceolata															
Plantago media															
Trifolium sp.															
Aquatic plants															
Sparganium sp.															
Reed fields															
cf *Alisma plantago-aquatica*															
Carex sp. tricarpellate															
Galium cf *palustre*															
Riverbank plants (pioneer)															
Teucrium scordium															
Forests, forest edges and clearings, hedges															
Abies alba - needle															
Galium verum															
cf *Humulus lupulus*															
VARIA															
Asperula sp.															
Bromus sp.															
Chenopodiaceae															
Chenopodium sp.															
Galium sp.															
Poaceae							20								
Rumex sp.															
Sambucus sp.															
Vicia sp.												1			
Indeterminata - amorphous object															
Indeterminata - crusts														186	
Indeterminata - seed/fruit											1				1
MINERALISED															
CEREALS _ grain															
Avena sp.															
Hordeum vulgare															
Triticum spelta															
Triticum sp.															
Panicum miliaceum												1	1		
Setaria italica															
Panicum/Setaria															
Cerealia ohne Hirsen															
CEREALS _ chaff															
Hordeum vulgare - rachis															
Triticum spelta - spikelet fork															
Cerealia - ear															

Chronology	Horizon 1														
Context	Pit														
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**
Volume	5000	5000	5000	4000	7000	7000	5000	5000	5000	4000	4000	8000	7000	8000	8000
Cerealia - glume															
Panicum miliaceum - glume															
Setaria italica - glume															
Panicum/Setaria - glume															
PULSES															
Lens culinaris												2	2		
Pisum sativum															
Vicia faba												1	1		
Fabaceae - fruitflesh															
Fabaceae															
FRUITS															
Cucumis melo															
Cucumis melo/sativa															
Ficus carica												2			
Fragaria vesca													1		
Malus domestica															
Malus sylvestris/domestica															
Pyrus sp.											1				
Malus/Pyrus											1	3	3	3	
Morus sp.															
Physalis alkekengi															
Prunus sp. - fragment															
Rubus caesius															
Rubus sp. - inner															
Sambucus nigra/racemosa															
Vitis vinifera - fruitflesh															
Vitis vinifera - aborted seed															
Vitis vinifera											2	3	2		
SPICES															
Anethum graveolens												2	2		
Apium graveolens												1			
Carum carvi															
Coriandrum sativum															
Foeniculum vulgare															
Nigella cf *sativa*															
VEGETABLES AND SALADS															
Atriplex sp.															
Beta vulgaris															
Brassica sp.															
Daucus carota												1			
Lagenaria siceraria															
OIL AND FIBRE PLANTS															
Linum usitatissimum															
Papaver somniferum													1		
WEEDS OF WINTER CEREALS															
Agrostemma githago															
Buglossoides arvensis													1		
Fallopia convolvulus															
Galium aparine												1			
cf *Veronica hederifolia*															
Order Aperetalia_weeds of rather acidic/neutral soils															
Camelina sativa												2	2		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils															
Caucalis platycarpos												1			
Galium spurium															
Vaccaria pyramidata															
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS															
Galeopsis cf *speciosa*															
Polygonum lapathifolium/persicaria															
Solanum nigrum															

Chronology	**Horizon 1**														
Context	**Pit**														
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**
Volume	5000	5000	5000	4000	7000	7000	5000	5000	5000	4000	4000	8000	7000	8000	8000
Sonchus oleraceus															
Stellaria media															
Thlaspi arvense												2	2		
PERENNIAL RUDERALS															
Arctium sp.															
Convolvulus arvensis															
Hyoscyamus niger													1		
Lapsana communis												1			
MEADOWS AND PASTURES															
Centaurea sp.												1			
Rhinanthus sp.															
Scabiosa sp.												1	1		
Reed fields															
Carex sp. tricarpellat													1		
Galium palustre															
Forests, forest edges and clearings, hedges															
Rosa sp.															
cf *Seseli libanotis*															
VARIA															
Apiaceae															
Asteraceae													1		
Brassicaceae												1	1		
Bromus sp.														7	
Cannabinaceae												1			
Chenopodium sp.															
Galium sp.														7	
Lamiaceae												2	1		
Lolium sp.												1			
Papaver sp.															
Poa sp.															
Poaceae							10			7			1		
Potentilla sp.															
Rumex sp.															
Indeterminata - endocarp															
Indeterminata - fruitflesh															
Indeterminata - coprolithes															
Indeterminata - crusts															1
Indeterminata - seed/fruit											1			40	1

Civil East																
Chronology																
Context																
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	P3	P4	P6	P7	P8	P8	P9	P10	P11	01C	01D	01E	01G	02C	02D	02E
Sample N°	**BK004003P**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004008P**	**BK004009**	**BK004010**	**BK004011**	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**
Volume	8000	1000	2500	4000	6000	6000	2000	3500	7000	6000	8000	8000	8000	8000	6000	7000
Analysis	FU	FU	FU	FU	FU	FU	FU	FU	FU	RS	RS	RS	RS	RS	RS	RS
Field	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04
WATERLOGGED																
CEREALS _ grain																
Avena sativa/fatua																
Cerealia - Testa					40	1										
Panicum miliaceum						51										
Setaria italica																
Panicum/Setaria					2											
CEREALS _ chaff																
Hordeum vulgare - rachis																
Hordeum sp. - rachis						10										
Secale cereale - rachis																
Triticum aestivum - rachis	12															
Triticum cf aestivum/durum/turgidum - rachis																
Triticum dicoccon - glume base																
Triticum dicoccon - spikelet fork						110										
Triticum dicoccon - glume																
Triticum cf *dicoccon* - glume																
Triticum dicoccon/spelta - glume																
Triticum monococcum - glume base																
Triticum monococcum - spikelet fork				32	1											
Triticum monococcum - glume																
Triticum cf *monococcum* - spikelet fork																
Triticum cf *monococcum* - glume																
Triticum spelta - glume base																
Triticum spelta - spikelet fork	12					170										
Triticum spelta - glume				33	3											
Triticum sp. - spikelet fork																
Triticum sp. - glume																
Cerealia - rachis																
Cerealia ohne Hirsen - glume																
Panicum miliaceum - glume					9									1		
Setaria italica - glume																
Panicum/Setaria - glume																
NUTS																
Corylus avellana	24				20				56				1		2	
Juglans regia					10									1		
Pinus pinea																
PULSES																
Lens culinaris																
Pisum sativum																
Pisum cf *sativum*	12															
Vicia faba																
Fabaceae					1											
SPICES																
Anethum graveolens					1	20										
Apium graveolens	36				14	150								1	1	1
Carum carvi						20										
Coriandrum sativum	36			127	5	95		13	28					2	2	2
Foeniculum vulgare																
Origanum vulgare					4											
cf *Petroselinum crispum*																
Pimpinella anisum																
cf *Piper nigrum*																
Piper nigrum																
cf *Ruta graveolens*																
Satureja hortensis																
cf *Thymus* sp. - stem																
VEGETABLES AND SALADS																
Amaranthus sp.		1		801	16	28		175	275	1			1	1	3	2
Atriplex sp. - perianth																

Chronology																
Context																
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	P3	P4	P6	P7	P8	P8	P9	P10	P11	01C	01D	01E	01G	02C	02D	02E
Sample N°	**BK004003P**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004008P**	**BK004009**	**BK004010**	**BK004011**	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**
Volume	8000	1000	2500	4000	6000	6000	2000	3500	7000	6000	8000	8000	8000	8000	6000	7000
Atriplex sp.																
Beta vulgaris																
Brassica cf *oleracea*																
Brassica rapa/nigra																
Brassica sp.															1	
Brassica/Sinapis																
Daucus carota	24	1											1		2	
Lagenaria siceraria									1						2	
Pastinaca sativa																
Portulaca oleracea																
FRUITS																
Cucumis melo																
Cucumis sativus																
Cucumis melo/sativa															1	
Ficus carica		9	87	445	28	320	15	214	523		3		3	4	4	2
Fragaria vesca					11	25										
Malus domestica	96					81										
Malus sylvestris/domestica																
Malus/Pyrus - stem																
Malus/Pyrus - fragment																
Malus/Pyrus - seed base						1									1	1
Malus/Pyrus - pericarp	36			617	74	108										
Malus/Pyrus			20	164	44		8	41	139					1		
Pyrus sp.																
Pyrus sp. - stone cells																
Pyrus sp. - flower	24														1	1
Morus sp.																
Olea europaea					5			1								
Physalis alkekengi	192		140	193	1		83	63	275	1	2		3	3	2	2
Prunus cf *avium*				25	220		3	12	36							
Prunus avium/cerasus											1			1	3	2
Prunus cf *domestica*									4							
Prunus domestica														2		1
Prunus domestica/insititia		1		16	65				23							
Prunus insititia							1	9	4							
Prunus persica											1			1	1	
Prunus cf *spinosa*																
Prunus spinosa		1		3	5				1						2	
Prunus sp.	408	2	133	170	15	25	23	135	432					2	2	1
Rubus caesius	108			127		17			55						1	1
Rubus cf *fruticosus*																
Rubus fruticosus	144		27		2				138		2			2	2	
Rubus idaeus	72			32		5			83		3	1		2		
Rubus sp.	12						8	13							1	
Sambucus nigra/racemosa			120				15			2	3	3	3			2
Vitis vinifera - aborted seed																
Vitis vinifera	924		193	211	16	21	8	69	11				1	2	2	2
OIL, DYE AND FIBRE PLANTS																
Cannabis sativa																
Carthamus tinctorius																
cf *Isatis tinctoria*																
Linum usitatissimum						1			55							
Papaver cf *somniferum*																
Papaver somniferum					1				28							
WEEDS OF WINTER CEREALS																
Adonis sp.																
Agrostemma githago				97	30										1	
Anthemis arvensis																
Bromus arvensis Type																
Buglossoides arvensis															1	
Fallopia convolvulus									28					1	1	
Galium aparine																
Silene gallica																

Chronology																
Context																
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	P3	P4	P6	P7	P8	P8	P9	P10	P11	01C	01D	01E	01G	02C	02D	02E
Sample N°	**BK004003P**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004008P**	**BK004009**	**BK004010**	**BK004011**	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**
Volume	8000	1000	2500	4000	6000	6000	2000	3500	7000	6000	8000	8000	8000	8000	6000	7000
Stachys annua/arvensis																
Valerianella locusta																
Valerianella rimosa																
Veronica hederifolia																
Viola tricolor																
Order Aperetalia_weeds of rather acidic/neutral soils																
Aphanes arvensis																
Aphanes sp																
cf *Bromus secalinus*																
Camelina sativa - pod																
Camelina sativa																
Camelina cf *sativa*																
Centaurea cf *cyanus*																
Centaurea cyanus																
Papaver argemone																
Papaver dubium																
Raphanus raphanistrum																
Scleranthus sp. - capsule																
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																
Ajuga cf *chamaepitys*																
Ajuga chamaepitys																
Bupleurum rotundifolium																
Caucalis platycarpos																
Euphorbia exigua																
Galium spurium																
Glaucium corniculatum																
Myagrum perfoliatum	12					15				3	4	3	3	2	3	1
Myosoton aquaticum																
Nigella arvensis																
Orlaya grandiflora																
Ranunculus arvensis					10											
Scandix pecten-veneris																
Silene cf *dichotoma*																
Stachys annua											1		1	2	2	2
Thymelaea passerina																
Torilis arvensis																
Vaccaria pyramidata																
Valerianella dentata																
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																
Aethusa cynapium																
Anagallis arvensis/foemina	12				1			38	28							
Arenaria serpyllifolia																
Atriplex/Chenopodium																
Capsella bursa-pastoris																
Chenopodium album	36			98	1			25	495		1			2	2	1
Chenopodium ficifolium																
Chenopodium cf *ficifolium*																
Chenopodium foliosum																
Chenopodium hybridum	60	1	13		1				55					1	1	2
Chenopodium murale																
Chenopodium polyspermum																
Echinochloa crus-galli																
Euphorbia helioscopia														1		
Euphorbia platyphyllos																
Fumaria officinalis			7													
Fumaria sp.													1			
Galeopsis bifida																
Galeopsis ladanum																
Galeopsis sp.																
Galeopsis cf *speciosa*																

Chronology																
Context																
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	P3	P4	P6	P7	P8	P8	P9	P10	P11	01C	01D	01E	01G	02C	02D	02E
Sample N°	**BK004003P**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004008P**	**BK004009**	**BK004010**	**BK004011**	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**
Volume	8000	1000	2500	4000	6000	6000	2000	3500	7000	6000	8000	8000	8000	8000	6000	7000
Galeopsis tetrahit																
Galeospis ladanum/segetum																
cf *Heliotropium europaeum*																
Heliotropium sp.																
Lamium amplexicaule/purpureum																
Lamium cf *purpureum*																
Malva sylvestris																
Mercurialis annua														1		1
Poa annua																
Polygonum lapathifolium/persicaria											3	1		4	3	3
Polygonum persicaria																
Portulaca sp.																
Setaria verticillata/viridis																
Solanum nigrum																
Sonchus asper																
Sonchus asper/oleraceus																
Sonchus oleraceus																
Stachys cf *arvensis*																
Stellaria media				1	1			13							1	
Thlaspi arvense								13								
Urtica urens															2	1
Verbena officinalis																
Xanthium strumarium																
PERENNIAL RUDERALS																
Agropyron repens																
Arctium lappa																
Arctium minus																
Arctium sp.																
Bryonia dioica																
Carduus crispus																
Cerastium arvense																
Chelidonium majus																
cf *Chondrilla juncea*																
Cirsium sp.				32			8									
Cirsium/Carduus																
Conium maculatum																
Convolvulus arvensis																
Cruciata laevipes																
Dipsacus cf *fullonum*																
Fallopia dumetorum																
Hyoscyamus niger					1				28				1		1	
Lactuca serriola																
Lamium cf *album*																
Lamium album																
Lapsana communis																
cf *Marrubium vulgare*																
Onopordum acanthium																
Plantago major																
Poa compressa																
Polygonum cf *aviculare*																
Polygonum aviculare		1							28					1		1
Potentilla anserina															1	1
Ranunculus repens														1	1	
Reseda sp.																
Rumex conglomeratus - perianth																
Rumex conglomeratus - tubercle																
Rumex cf *conglomeratus* - perianth																
Rumex cf *crispus*																
Rumex crispus - perianth																
Rumex crispus - tubercle																
Rumex obtusifolius - perianth																
Rumex obtusifolius											2				2	
Sambucus cf *ebulus*																

Chronology																
Context																
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	P3	P4	P6	P7	P8	P8	P9	P10	P11	01C	01D	01E	01G	02C	02D	02E
Sample N°	**BK004003P**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004008P**	**BK004009**	**BK004010**	**BK004011**	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**
Volume	8000	1000	2500	4000	6000	6000	2000	3500	7000	6000	8000	8000	8000	8000	6000	7000
Sambucus ebulus										3	3		2		1	
Saponaria officinalis																
Saponaria cf *officinalis*																
Silene alba																
Urtica dioica					1									1	1	2
MEADOWS AND PASTURES																
Achillea millefolium																
Agrostis sp.																
Ajuga cf *reptans*																
Ajuga reptans																
Anthriscus sp.																
Bromus cf *commutatus*																
Bromus hordeaceus																
Centaurea cf *jacea*																
Centaurea sp.																
Cichorium intybus																
Cirsium/Centaurea																
cf *Cynosurus* sp.																
Dactylis glomerata																
Deschampsia caespitosa																
Dianthus cf *armeria*																
Festuca rubra/ovina																
Festuca/Lolium																
Holcus lanatus																
Leontodon autumnalis																
Leontodon sp.																
Leucanthemum vulgare																
Lolium perenne																
Nardus stricta																
Plantago lanceolata																
Plantago media																
Poa pratensis																
Poa pratensis Type																
Poa pratensis/trivialis																
Potentilla cf *erecta*																
Potentilla erecta																
Prunella cf *vulgaris*																
Prunella vulgaris																
Ranunculus cf *acris*																
Ranunculus acris																
Rhinanthus sp.																
Rumex acetosa - perianth																
Rumex acetosella																
Silene vulgaris																
Taraxacum officinale																
Thalictrum flavum																
Trifolium pratense - pod with seeds																
Trifolium pratense - capsule																
Trifolium sp. - chalice																
Open swards																
Acinos arvensis																
Ajuga genevensis																
Artemisia campestris																
Centaurea scabiosa																
Dianthus sp.																
Euphorbia cf *seguieriana*																
Euphrasia/Odontites																
Gentiana cruciata																
Medicago lupulina - pod with seed																
Medicago lupulina - pod																
Medicago minima - pod																1
Odontites sp.																
cf *Petrorhagia prolifera*																

Chronology																
Context																
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	P3	P4	P6	P7	P8	P8	P9	P10	P11	01C	01D	01E	01G	02C	02D	02E
Sample N°	**BK004003P**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004008P**	**BK004009**	**BK004010**	**BK004011**	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**
Volume	8000	1000	2500	4000	6000	6000	2000	3500	7000	6000	8000	8000	8000	8000	6000	7000
Prunella grandiflora																
Scabiosa columbaria																
Stachys cf *recta*																
Stachys recta																
Teucrium botrys																
Teucrium cf *chamaedrys*																
Teucrium montanum																
Trifolium cf *campestre* - chalice																
Aquatic plants																
Ceratophyllum cf *submersum*																
Lemna sp.																
Polygonum cf *amphibium*																
Potamogeton sp.																
Ranunculus aquatilis																
Sparganium sp.																
Zannichellia palustris																
Reed fields																
Alisma plantago-aquatica																
Carex sp.					2			13	28							
Carex sp. - utriculus																
Carex sp. bicarpellate	48														1	
Carex sp. tricarpellate											1		2	2	3	2
Cicuta virosa																
Eleocharis palustris					2									1	1	1
Eupatorium cannabinum																
Galium cf *palustre*																
Galium palustre																
Glyceria sp.																
Hippuris vulgaris																
Iris pseudacorus																
Juncus sp.																
Lycopus europaeus																
Mentha arvensis/aquatica																
Nasturtium officinale																
Oenanthe fistulosa															1	
Oenanthe sp.																
Poa palustris																
Rorippa amphibia																
Rumex cf *aquaticus/hydrolapatum*																
Salix sp. - veg. part																
Schoenoplectus lacustris																
Schoenoplectus sp.																
Riverbank plants (pioneer)																
Alnus glutinosa - veg. part																
Alnus sp. - veg. Part																
Bidens sp.																
Bidens tripartita																
Cyperus flavescens																
Cyperus fuscus																
cf *Myosoton aquaticum*																
Polygonum cf *hydropiper*																
Polygonum hydropiper		9						38								
Polygonum hydropiper/mite																
Polygonum lapathifolium		26	53	1854	46		75	489	1073							
Polygonum minus																
Polygonum mite																
Polygonum mite/minus																
Ranunculus cf *flammula*																
Ranunculus flammula																
Ranunculus sardous																
Ranunculus sceleratus																
Teucrium cf *scordium*																
Wet meadows																

Chronology																
Context																
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	P3	P4	P6	P7	P8	P8	P9	P10	P11	01C	01D	01E	01G	02C	02D	02E
Sample N°	**BK004003P**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004008P**	**BK004009**	**BK004010**	**BK004011**	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**
Volume	8000	1000	2500	4000	6000	6000	2000	3500	7000	6000	8000	8000	8000	8000	6000	7000
cf *Euphorbia palustris*																
Filipendula ulmaria																
Linum catharticum																
Lychnis flos-cuculi																
Scirpus sylvaticus																
Stachys officinalis																
Forests, forest edges and clearings, hedges																
Abies alba - needle																
Acer sp. - veg. part																
Agrimonia eupatoria																
Arctium cf *nemorosum*																
Betula pendula - veg. part																
Cornus sanguinea																
Crataegus sp.																
cf *Humulus lupulus*																
Quercus sp. - veg. part																
Rosa sp.	12					6										
Solanum dulcamara																
Solanum cf *dulcamara*																
Stellaria cf *nemorum*																
Torilis cf *japonica*																
Valeriana cf *tripteris*																
Viburnum lantana																
Viburnum opulus																
Calamintha sylvatica																
Galium verum																
Hypericum perforatum																
Saponaria cf *ocymoides*																
Silene cf *nutans*																
Silene nutans																
Thalictrum minus																
VARIA																
Ajuga sp.																
Allium sp.																
Apiaceae - fragments																
Asteraceae																
Boraginaceae																
Brassicaceae																
Bromus sp.																
Campanula sp.																
Cannabinaceae																
Carduus sp.																
Caryophyllaceae				32												
Cerastium sp.																
Chenopodiaceae																
Chenopodiaceae/Amaranthaceae	636					2										
Chenopodium sp.					38			1					1			
Cichorium sp.									28							
Crepis sp.																
Cuscuta sp.																
Cyperaceae																
Epilobium sp.																
Euphorbia sp.																
Euphorbia sp. - fruit																
Euphorbia sp. - capsule																
Fallopia sp.																
Filipendula sp.																
Galium sp.											2					
Hypericum sp.																
Inula sp.																

Chronology																
Context																
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	P3	P4	P6	P7	P8	P8	P9	P10	P11	01C	01D	01E	01G	02C	02D	02E
Sample N°	**BK004003P**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004008P**	**BK004009**	**BK004010**	**BK004011**	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**
Volume	8000	1000	2500	4000	6000	6000	2000	3500	7000	6000	8000	8000	8000	8000	6000	7000
Lamiaceae					1											
Lamium sp.								13						1	1	
Liliaceae																
Malva sp.																
cf *Matricaria* sp.																
Mentha sp.																
Nasturtium sp.																
Papaver sp.																
Physalis sp.																
Physalis/Solanum																
Phyteuma sp.																
Plantago sp. - chalice+A54																
Plantago sp.																
Poa sp.																
Poaceae																
Poaceae														1		
Polygonaceae																
Polygonum sp.																
Polygonum sp.	984			64		11	8	38								
Potentilla sp.					5											
Primulaceae																
Ranunculaceae																
Ranunculus sp.																
cf *Raphanus* sp.																
Rosaceae - thorn																
Rosaceae																
Rosaceae - flower																
Rumex sp. - tubercle																
Rumex sp.	36	1		32	3			13	110							
Rumex sp. - perianth																1
Sambucus sp.	36	1						38			3			3	2	2
Satureja sp.	12															
Scabiosa sp.																
cf *Scandix* sp.																
Scrophulariaceae																
Silene alba/dioica												1				
Silene sp.																
Sinapis sp.																
Solanaceae																
Solanum sp.																
Sonchus sp.																
Stachys sp.		2														
Stachys/Lamium																
Stellaria graminea/palustris																
Stellaria sp.																
Teucrium sp.																
Tilia sp. - fruit																
Torilis sp.																
Veronica sp.																
Vicia sp.									28							
Viola sp. - capsule																
Viola sp.											1		1	1	3	1
Indeterminata - rhizome																
Indeterminata - fruitstem																
Indeterminata - endocarp																
Indeterminata	216	11	80	961	55	1	68	166	499							
CHARRED																
CEREALS _ grain																
Avena sp.														1		
Hordeum vulgare												1	2			

Chronology																
Context																
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	P3	P4	P6	P7	P8	P8	P9	P10	P11	01C	01D	01E	01G	02C	02D	02E
Sample N°	**BK004003P**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004008P**	**BK004009**	**BK004010**	**BK004011**	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**
Volume	8000	1000	2500	4000	6000	6000	2000	3500	7000	6000	8000	8000	8000	8000	6000	7000
Hordeum sp.											2					1
Secale cereale																
Triticum aestivum																
Triticum aestivum/durum/turgidum																
Triticum dicoccon																
Triticum cf *dicoccon*																
Triticum spelta																
Triticum sp.											1					
Cerealia ohne Hirsen			1	1		5				2		2	1			
Panicum miliaceum																
Setaria italica																
Panicum/Setaria																
CEREALS _ chaff																
Hordeum vulgare - rachis																
Hordeum sp. - rachis																
Secale cereale - rachis																
Triticum aestivum - rachis																
Triticum dicoccon - spikelet fork																
Triticum dicoccon - glume															1	1
Triticum monococcum - spikelet fork						15										
Triticum monococcum - glume																
Triticum spelta - spikelet fork	24					10										
Triticum spelta - glume base			7	1				1								
Triticum spelta - glume																
Triticum sp. - spikelet fork																
Triticum sp. - glume																
Cerealia																
NUTS																
Corylus avellana							1									
Juglans regia																
Pinus pinea																
PULSES																
cf *Lathyrus* sp.																
Lens culinaris													1		1	
Pisum sativum								1								
Vicia faba																
Vicia/Lathyrus																
Fabaceae																
SPICES																
Apium graveolens																
Satureja hortensis																
VEGETABLES AND SALADS																
Allium sativum																
Atriplex sp.																
Brassica sp.																
FRUITS																
Ficus carica - fruitflesh																
Phoenix dactylifera																
Prunus domestica/insititia																
Prunus persica																
Sambucus nigra/racemosa																
Vitis vinifera																
OIL AND FIBRE PLANTS																
WEEDS OF WINTER CEREALS																
Galium aparine																
Veronica hederifolia																
Order Aperetalia_weeds of rather acidic/neutral soils																
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																
Avena fatua																
Caucalis platycarpos																
Galium spurium																2

Chronology																
Context																
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	P3	P4	P6	P7	P8	P8	P9	P10	P11	01C	01D	01E	01G	02C	02D	02E
Sample N°	**BK004003P**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004008P**	**BK004009**	**BK004010**	**BK004011**	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**
Volume	8000	1000	2500	4000	6000	6000	2000	3500	7000	6000	8000	8000	8000	8000	6000	7000
Glaucium corniculatum																
Myagrum perfoliatum																
Vicia cf *angustifolia*																
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																
Chenopodium album																
Chenopodium polyspermum																
Galeospis ladanum/segetum																
cf *Solanum nigrum*																
Thlaspi arvense																
PERENNIAL RUDERALS																
Cruciata laevipes																
Rumex obtusifolius												2				
Silene alba																
MEADOWS AND PASTURES																
Centaurea sp.																
Festuca/Lolium																
Galium boreale																
Plantago lanceolata																
Plantago media																
Trifolium sp.																
Aquatic plants																
Sparganium sp.																
Reed fields																
cf *Alisma plantago-aquatica*																
Carex sp. tricarpellate																
Galium cf *palustre*																
Riverbank plants (pioneer)																
Teucrium scordium																
Forests, forest edges and clearings, hedges																
Abies alba - needle																
Galium verum																
cf *Humulus lupulus*																
VARIA																
Asperula sp.																
Bromus sp.																
Chenopodiaceae																
Chenopodium sp.																
Galium sp.													1			
Poaceae												1				
Rumex sp.																
Sambucus sp.																
Vicia sp.																
Indeterminata - amorphous object																
Indeterminata - crusts																
Indeterminata - seed/fruit		1	1	1			8	1								
MINERALISED																
CEREALS _ grain																
Avena sp.																
Hordeum vulgare																
Triticum spelta																
Triticum sp.																
Panicum miliaceum						1	8									1
Setaria italica																
Panicum/Setaria																
Cerealia ohne Hirsen	12					5										
CEREALS _ chaff																
Hordeum vulgare - rachis																
Triticum spelta - spikelet fork																
Cerealia - ear																

Chronology																
Context																
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	P3	P4	P6	P7	P8	P8	P9	P10	P11	01C	01D	01E	01G	02C	02D	02E
Sample N°	**BK004003P**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004008P**	**BK004009**	**BK004010**	**BK004011**	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**
Volume	8000	1000	2500	4000	6000	6000	2000	3500	7000	6000	8000	8000	8000	8000	6000	7000
Cerealia - glume																
Panicum miliaceum - glume																
Setaria italica - glume																
Panicum/Setaria - glume																
PULSES																
Lens culinaris																
Pisum sativum																
Vicia faba																
Fabaceae - fruitflesh																
Fabaceae																
FRUITS																
Cucumis melo																
Cucumis melo/sativa																
Ficus carica	984		1		1											
Fragaria vesca																
Malus domestica																
Malus sylvestris/domestica																
Pyrus sp.																
Malus/Pyrus			1				23		2							
Morus sp.																
Physalis alkekengi																
Prunus sp. - fragment																
Rubus caesius																
Rubus sp. - inner																
Sambucus nigra/racemosa			1						55							
Vitis vinifera - fruitflesh																
Vitis vinifera - aborted seed																
Vitis vinifera				1												
SPICES																
Anethum graveolens																
Apium graveolens														1		1
Carum carvi																
Coriandrum sativum																
Foeniculum vulgare																
Nigella cf *sativa*																
VEGETABLES AND SALADS																
Atriplex sp.																
Beta vulgaris																
Brassica sp.																
Daucus carota																
Lagenaria siceraria																
OIL AND FIBRE PLANTS																
Linum usitatissimum																
Papaver somniferum																
WEEDS OF WINTER CEREALS																
Agrostemma githago																
Buglossoides arvensis																
Fallopia convolvulus																
Galium aparine																1
cf *Veronica hederifolia*																
Order Aperetalia_weeds of rather acidic/neutral soils																
Camelina sativa																
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																
Caucalis platycarpos																
Galium spurium																
Vaccaria pyramidata																
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																
Galeopsis cf *speciosa*																
Polygonum lapathifolium/persicaria																
Solanum nigrum																

Chronology																
Context																
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	P3	P4	P6	P7	P8	P8	P9	P10	P11	01C	01D	01E	01G	02C	02D	02E
Sample N°	**BK004003P**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004008P**	**BK004009**	**BK004010**	**BK004011**	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**
Volume	8000	1000	2500	4000	6000	6000	2000	3500	7000	6000	8000	8000	8000	8000	6000	7000
Sonchus oleraceus																
Stellaria media															1	
Thlaspi arvense																
PERENNIAL RUDERALS																
Arctium sp.																
Convolvulus arvensis																
Hyoscyamus niger																
Lapsana communis																
MEADOWS AND PASTURES																
Centaurea sp.																
Rhinanthus sp.																
Scabiosa sp.																
Reed fields																
Carex sp. tricarpellat																
Galium palustre																
Forests, forest edges and clearings, hedges																
Rosa sp.																
cf *Seseli libanotis*																
VARIA																
Apiaceae			1													
Asteraceae																
Brassicaceae																
Bromus sp.																
Cannabinaceae																
Chenopodium sp.							23									1
Galium sp.			1			1										
Lamiaceae																
Lolium sp.																
Papaver sp.																
Poa sp.																
Poaceae																
Potentilla sp.																
Rumex sp.																
Indeterminata - endocarp																
Indeterminata - fruitflesh																
Indeterminata - coprolithes																
Indeterminata - crusts			1	1												
Indeterminata - seed/fruit	2604		1			4175	45		55							

Civil East																	
Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	02G	03A	03C	03D	03E	03G	04A	4B	4B	04C	04D	04E	05B	5C	5C	05D	05E
Sample N°	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14051R**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14065R**	**BK14066**	**BK14069**
Volume	4000	7000	10000	9000	7000	5000	8000	5000	5000	7000	8000	8000	17000	12000	12000	14000	10000
Analysis	RS	RS	RS	RS	RS	RS	RS	FU	FU	RS	RS	RS	RS	FU	FU	RS	RS
Field	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04
WATERLOGGED																	
CEREALS _ grain																	
Avena sativa/fatua																	
Cerealia - Testa			1					1	1	1	2	1	2	1		1	2
Panicum miliaceum																	
Setaria italica																	
Panicum/Setaria																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
Hordeum sp. - rachis														15			
Secale cereale - rachis																	
Triticum aestivum - rachis																	
Triticum cf aestivum/durum/turgidum - rachis																	
Triticum dicoccon - glume base													2				
Triticum dicoccon - spikelet fork																	
Triticum dicoccon - glume								8	8	1				276	15		
Triticum cf *dicoccon* - glume																	
Triticum dicoccon/spelta - glume																	
Triticum monococcum - glume base													2				
Triticum monococcum - spikelet fork																	
Triticum monococcum - glume																	
Triticum cf *monococcum* - spikelet fork																	
Triticum cf *monococcum* - glume																	
Triticum spelta - glume base							2						1				
Triticum spelta - spikelet fork																	
Triticum spelta - glume								23				1		798		2	3
Triticum sp. - spikelet fork																	
Triticum sp. - glume					2			98	23		3	1		1885	15	3	3
Cerealia - rachis								8						15			
Cerealia ohne Hirsen - glume																	
Panicum miliaceum - glume								8		1			1	493	8		1
Setaria italica - glume											1	1				1	1
Panicum/Setaria - glume									8						8		
NUTS																	
Corylus avellana		1	2		1			1		2	1	2		2		1	2
Juglans regia								1			2	2		1			
Pinus pinea																	
PULSES																	
Lens culinaris																	
Pisum sativum																	
Pisum cf *sativum*																	
Vicia faba																	
Fabaceae																	
SPICES																	
Anethum graveolens								68		1			2	29			
Apium graveolens	2		2		1			294	1058	2	1		3	421	113	3	3
Carum carvi																	
Coriandrum sativum		2	2	1	2			548	180	3	3	1	2	406	8	2	2
Foeniculum vulgare														15			
Origanum vulgare																	
cf *Petroselinum crispum*																	
Pimpinella anisum																	
cf *Piper nigrum*																	
Piper nigrum														15			
cf *Ruta graveolens*																	
Satureja hortensis								8	45					58			
cf *Thymus* sp. - stem																	
VEGETABLES AND SALADS																	
Amaranthus sp.			4	4	4	2		1315	240	4	4	4	3	6092	420	3	4
Atriplex sp. - perianth																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	02G	03A	03C	03D	03E	03G	04A	4B	4B	04C	04D	04E	05B	5C	5C	05D	05E
Sample N°	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14051R**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14065R**	**BK14066**	**BK14069**
Volume	4000	7000	10000	9000	7000	5000	8000	5000	5000	7000	8000	8000	17000	12000	12000	14000	10000
Atriplex sp.																	
Beta vulgaris						1					2	1		102		1	1
Brassica cf *oleracea*																	
Brassica rapa/nigra																	
Brassica sp.								8				2		15			
Brassica/Sinapis								8									
Daucus carota	1			1	2		2	23	8	2		1		29		2	2
Lagenaria siceraria								8		1	1			1			
Pastinaca sativa																	
Portulaca oleracea	1								8			1	2		30		
FRUITS																	
Cucumis melo																	
Cucumis sativus																	
Cucumis melo/sativa			1		1									15			
Ficus carica	3	4	3	3	4	2	4	548	15	3	2	1	3	305	23	3	3
Fragaria vesca			1			2		45	278	2	2	1	3	102	23	1	2
Malus domestica																	
Malus sylvestris/domestica		2											3				
Malus/Pyrus - stem																	
Malus/Pyrus - fragment																	
Malus/Pyrus - seed base	1							90						58			
Malus/Pyrus - pericarp		2					3	1		1			1	1			
Malus/Pyrus	1		2	1	1			75		2		1		119		1	2
Pyrus sp.																	
Pyrus sp. - stone cells		3			2		2	1		3			1				
Pyrus sp. - flower			3				2	48		1		2		32		1	1
Morus sp.																	
Olea europaea							2										1
Physalis alkekengi	2	2	3	2	2			218		3	3	1	2	15		2	2
Prunus cf *avium*																	
Prunus avium/cerasus			3	2	2		3	6		2	2	2	4	3		2	3
Prunus cf *domestica*																	
Prunus domestica			2		2					2	1					1	3
Prunus domestica/insititia								1						11			
Prunus insititia		3					3						4				
Prunus persica											1						
Prunus cf *spinosa*																	
Prunus spinosa		3	2				2	1		1			2	10			3
Prunus sp.				1	2			361						15			
Rubus caesius		5	2	1	1		2	255		2	1	1	4	247		1	1
Rubus cf *fruticosus*																	
Rubus fruticosus	1	2			1	1		263			1			15			1
Rubus idaeus			2		2		2	45		2		1		44			1
Rubus sp.				1				8				1				1	
Sambucus nigra/racemosa							2										
Vitis vinifera - aborted seed								8									
Vitis vinifera	1		2	2	2			160			3	2		179		2	2
OIL, DYE AND FIBRE PLANTS																	
Cannabis sativa			1	1										15			1
Carthamus tinctorius																	
cf *Isatis tinctoria*														15			
Linum usitatissimum																	
Papaver cf *somniferum*			1														2
Papaver somniferum									135				1	58			
WEEDS OF WINTER CEREALS																	
Adonis sp.																	2
Agrostemma githago			2	2	2	1		1665	1193	2	2	2	1	15	1103	2	3
Anthemis arvensis					1									29	8		
Bromus arvensis Type																	
Buglossoides arvensis			1							1							
Fallopia convolvulus	1				2	1		8						15		1	
Galium aparine								16						15			
Silene gallica																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	02G	03A	03C	03D	03E	03G	04A	4B	4B	04C	04D	04E	05B	5C	5C	05D	05E
Sample N°	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14051R**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14065R**	**BK14066**	**BK14069**
Volume	4000	7000	10000	9000	7000	5000	8000	5000	5000	7000	8000	8000	17000	12000	12000	14000	10000
Stachys annua/arvensis																	
Valerianella locusta																	
Valerianella rimosa																	
Veronica hederifolia																	
Viola tricolor													2				
Order Aperetalia_weeds of rather acidic/neutral soils																	
Aphanes arvensis																	
Aphanes sp																	
cf *Bromus secalinus*																	
Camelina sativa - pod																	
Camelina sativa																	
Camelina cf *sativa*																	
Centaurea cf *cyanus*																	
Centaurea cyanus													2	58			
Papaver argemone									30						8		
Papaver dubium									8								
Raphanus raphanistrum																	
Scleranthus sp. - capsule																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Ajuga cf *chamaepitys*																	
Ajuga chamaepitys											1						
Bupleurum rotundifolium																	
Caucalis platycarpos														15			
Euphorbia exigua																	
Galium spurium								8									
Glaucium corniculatum																	
Myagrum perfoliatum	2	2	3	3	3	3	2	98		2	3	2	2	58		1	1
Myosoton aquaticum																	
Nigella arvensis																	
Orlaya grandiflora						1								29			
Ranunculus arvensis														15			1
Scandix pecten-veneris																	
Silene cf *dichotoma*																	
Stachys annua	1		2		1			8		1	1						2
Thymelaea passerina																	
Torilis arvensis														15			
Vaccaria pyramidata								8									
Valerianella dentata																1	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Aethusa cynapium																	
Anagallis arvensis/foemina				2				8				1				1	1
Arenaria serpyllifolia									23						38		
Atriplex/Chenopodium		4					4						3				
Capsella bursa-pastoris									8						15		
Chenopodium album	3		2	2	2	2		300	15	3	2	1		319	83	1	2
Chenopodium ficifolium																	
Chenopodium cf *ficifolium*																	
Chenopodium foliosum																	
Chenopodium hybridum	1		1	2	2	1		23		1	1	1		15			1
Chenopodium murale																	
Chenopodium polyspermum															15		
Echinochloa crus-galli																	
Euphorbia helioscopia																	
Euphorbia platyphyllos																	
Fumaria officinalis																	
Fumaria sp.												1					1
Galeopsis bifida																	
Galeopsis ladanum																	
Galeopsis sp.																	
Galeopsis cf *speciosa*																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	02G	03A	03C	03D	03E	03G	04A	4B	4B	04C	04D	04E	05B	5C	5C	05D	05E
Sample N°	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14051R**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14065R**	**BK14066**	**BK14069**
Volume	4000	7000	10000	9000	7000	5000	8000	5000	5000	7000	8000	8000	17000	12000	12000	14000	10000
Galeopsis tetrahit																	
Galeospis ladanum/segetum																	
cf *Heliotropium europaeum*																	
Heliotropium sp.																	
Lamium amplexicaule/purpureum																	
Lamium cf *purpureum*																	
Malva sylvestris																	
Mercurialis annua																	
Poa annua															15		
Polygonum lapathifolium/persicaria	1	4	3	3	3	1	4	1110	15	3	3	2	1	638		1	2
Polygonum persicaria								165						247			
Portulaca sp.																	
Setaria verticillata/viridis																	
Solanum nigrum			1					8	8					58		1	
Sonchus asper								8				1		15			
Sonchus asper/oleraceus												1					
Sonchus oleraceus																	
Stachys cf *arvensis*																	
Stellaria media	1		1	1	2	1	2	45	15	1	2	1	2	203	83	2	3
Thlaspi arvense			1	2	2		2	23		1	2	1		16		1	1
Urtica urens				3	2	1	2	129	60	2	3	2		116		1	2
Verbena officinalis									8					15	8		
Xanthium strumarium																	
PERENNIAL RUDERALS																	
Agropyron repens																	
Arctium lappa																	
Arctium minus																	
Arctium sp.				1		1											
Bryonia dioica																1	
Carduus crispus																	
Cerastium arvense																	
Chelidonium majus																	
cf *Chondrilla juncea*																	
Cirsium sp.								8						15			
Cirsium/Carduus				1													
Conium maculatum																	
Convolvulus arvensis																	
Cruciata laevipes																	
Dipsacus cf *fullonum*																	
Fallopia dumetorum																	
Hyoscyamus niger								8								1	
Lactuca serriola																	
Lamium cf *album*																	
Lamium album																	
Lapsana communis								8						15	8		
cf *Marrubium vulgare*																	
Onopordum acanthium								8									
Plantago major								15	23			1		29	23		
Poa compressa																	
Polygonum cf *aviculare*																	
Polygonum aviculare			2	2	2			120		2		1		15			2
Potentilla anserina														15			
Ranunculus repens				2	1			8			2	1		15		1	
Reseda sp.																	
Rumex conglomeratus - perianth														15			
Rumex conglomeratus - tubercle																	
Rumex cf *conglomeratus* - perianth																	
Rumex cf *crispus*																	
Rumex crispus - perianth																	
Rumex crispus - tubercle																	
Rumex obtusifolius - perianth												1					
Rumex obtusifolius	1	1	2	2	2	2	3	120	8	2	2	1	2	348	8	2	2
Sambucus cf *ebulus*																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	02G	03A	03C	03D	03E	03G	04A	4B	4B	04C	04D	04E	05B	5C	5C	05D	05E
Sample N°	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14051R**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14065R**	**BK14066**	**BK14069**
Volume	4000	7000	10000	9000	7000	5000	8000	5000	5000	7000	8000	8000	17000	12000	12000	14000	10000
Sambucus ebulus			1													1	
Saponaria officinalis																	
Saponaria cf *officinalis*																	
Silene alba																	
Urtica dioica	2		3	1	1	2		83	1215	1	1			15	68		2
MEADOWS AND PASTURES																	
Achillea millefolium														15			
Agrostis sp.								8							15		
Ajuga cf *reptans*																	
Ajuga reptans					2	1						1					
Anthriscus sp.																	
Bromus cf *commutatus*																	
Bromus hordeaceus																	
Centaurea cf *jacea*																	
Centaurea sp.				1	1							1				1	1
Cichorium intybus					1							1				1	
Cirsium/Centaurea														73			
cf *Cynosurus* sp.									8								
Dactylis glomerata																	
Deschampsia caespitosa																	
Dianthus cf *armeria*													2				
Festuca rubra/ovina																	
Festuca/Lolium																	
Holcus lanatus																	
Leontodon autumnalis																	
Leontodon sp.																	
Leucanthemum vulgare																	
Lolium perenne																	
Nardus stricta																	
Plantago lanceolata																	
Plantago media												1					
Poa pratensis																	
Poa pratensis Type																	
Poa pratensis/trivialis																	
Potentilla cf *erecta*																	
Potentilla erecta														15			
Prunella cf *vulgaris*													2				
Prunella vulgaris					1			8	8		1	2		160	8	1	2
Ranunculus cf *acris*																	
Ranunculus acris																	
Rhinanthus sp.																	
Rumex acetosa - perianth																	
Rumex acetosella														15			
Silene vulgaris																	
Taraxacum officinale																	
Thalictrum flavum																	
Trifolium pratense - pod with seeds																	
Trifolium pratense - capsule									8								
Trifolium sp. - chalice														29			
Open swards																	
Acinos arvensis																	
Ajuga genevensis												1					
Artemisia campestris																	
Centaurea scabiosa														15			
Dianthus sp.																	
Euphorbia cf *seguieriana*																	
Euphrasia/Odontites									8								
Gentiana cruciata									8								
Medicago lupulina - pod with seed																	
Medicago lupulina - pod																	
Medicago minima - pod			1					158	23	1	1			15			
Odontites sp.																	
cf *Petrorhagia prolifera*																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	02G	03A	03C	03D	03E	03G	04A	4B	4B	04C	04D	04E	05B	5C	5C	05D	05E
Sample N°	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14051R**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14065R**	**BK14066**	**BK14069**
Volume	4000	7000	10000	9000	7000	5000	8000	5000	5000	7000	8000	8000	17000	12000	12000	14000	10000
Prunella grandiflora																	
Scabiosa columbaria																	
Stachys cf *recta*																	
Stachys recta																	
Teucrium botrys																	
Teucrium cf *chamaedrys*																	
Teucrium montanum																	
Trifolium cf *campestre* - chalice																	
Aquatic plants																	
Ceratophyllum cf *submersum*																	
Lemna sp.																	
Polygonum cf *amphibium*																	
Potamogeton sp.																	
Ranunculus aquatilis																	
Sparganium sp.																	
Zannichellia palustris																	
Reed fields																	
Alisma plantago-aquatica							2		8					44	8		
Carex sp.																	
Carex sp. - utriculus					1												
Carex sp. bicarpellate				2		1		8		1				29			
Carex sp. tricarpellate	2	3	2		3	2	4	38		2	2	1	2	203	8	2	1
Cicuta virosa																	
Eleocharis palustris			1	3	2	1	2	38		2	3	1	3	131	8	3	3
Eupatorium cannabinum															8		
Galium cf *palustre*																	
Galium palustre																	
Glyceria sp.																	
Hippuris vulgaris																	
Iris pseudacorus																	
Juncus sp.				1	1									160	8		
Lycopus europaeus														29	8		
Mentha arvensis/aquatica										1			2				
Nasturtium officinale									8								
Oenanthe fistulosa					1	1				1	2			15			
Oenanthe sp.																	
Poa palustris																	
Rorippa amphibia																	
Rumex cf *aquaticus/hydrolapatum*																	
Salix sp. - veg. part								8			1						
Schoenoplectus lacustris																	
Schoenoplectus sp.					1												
Riverbank plants (pioneer)																	
Alnus glutinosa - veg. part																	
Alnus sp. - veg. Part								8									
Bidens sp.																	
Bidens tripartita																	
Cyperus flavescens															8		
Cyperus fuscus															8		
cf *Myosoton aquaticum*																	
Polygonum cf *hydropiper*																	
Polygonum hydropiper							2						2	15			
Polygonum hydropiper/mite						1		105						44			
Polygonum lapathifolium								638						116			
Polygonum minus														15			
Polygonum mite																	
Polygonum mite/minus																	
Ranunculus cf *flammula*																	
Ranunculus flammula																	
Ranunculus sardous																	
Ranunculus sceleratus															8		
Teucrium cf *scordium*																	
Wet meadows																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	02G	03A	03C	03D	03E	03G	04A	4B	4B	04C	04D	04E	05B	5C	5C	05D	05E
Sample N°	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14051R**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14065R**	**BK14066**	**BK14069**
Volume	4000	7000	10000	9000	7000	5000	8000	5000	5000	7000	8000	8000	17000	12000	12000	14000	10000
cf *Euphorbia palustris*																	
Filipendula ulmaria														15	8		
Linum catharticum														15			
Lychnis flos-cuculi														15			
Scirpus sylvaticus									8					15			
Stachys officinalis														15			
Forests, forest edges and clearings, hedges																	
Abies alba - needle	1							23						15			
Acer sp. - veg. part																	
Agrimonia eupatoria																	
Arctium cf *nemorosum*																	
Betula pendula - veg. part																	
Cornus sanguinea																	
Crataegus sp.																	
cf *Humulus lupulus*																	
Quercus sp. - veg. part							1										
Rosa sp.																	
Solanum dulcamara																	
Solanum cf *dulcamara*																	
Stellaria cf *nemorum*																	
Torilis cf *japonica*																	
Valeriana cf *tripteris*																	
Viburnum lantana																	
Viburnum opulus																	
Calamintha sylvatica														15			
Galium verum																	
Hypericum perforatum															8		
Saponaria cf *ocymoides*																	
Silene cf *nutans*								8									
Silene nutans														29			
Thalictrum minus																	
VARIA																	
Ajuga sp.																	
Allium sp.										1		1		29			1
Apiaceae - fragments								495						58			
Asteraceae								15	8						8		
Boraginaceae																	
Brassicaceae														15			
Bromus sp.																	
Campanula sp.									8								
Cannabinaceae																	
Carduus sp.												1					
Caryophyllaceae									8								
Cerastium sp.																	
Chenopodiaceae									15						15		
Chenopodiaceae/Amaranthaceae								15									
Chenopodium sp.														15			
Cichorium sp.																	
Crepis sp.																	
Cuscuta sp.																	
Cyperaceae									15						15		
Epilobium sp.																	
Euphorbia sp.					1												
Euphorbia sp. - fruit																	
Euphorbia sp. - capsule																	
Fallopia sp.																	
Filipendula sp.																	
Galium sp.						1		15	8					15			
Hypericum sp.														15	8		
Inula sp.															8		

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	02G	03A	03C	03D	03E	03G	04A	4B	4B	04C	04D	04E	05B	5C	5C	05D	05E
Sample N°	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14051R**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14065R**	**BK14066**	**BK14069**
Volume	4000	7000	10000	9000	7000	5000	8000	5000	5000	7000	8000	8000	17000	12000	12000	14000	10000
Lamiaceae				1					15					15			
Lamium sp.			1														
Liliaceae																	
Malva sp.								8									
cf *Matricaria* sp.																	
Mentha sp.																	
Nasturtium sp.																	
Papaver sp.								15	30					15	23		
Physalis sp.																	
Physalis/Solanum								8									
Phyteuma sp.																	
Plantago sp. - chalice+A54																	
Plantago sp.																	
Poa sp.									15					15	23		
Poaceae																	
Poaceae														29	23		
Polygonaceae														29			
Polygonum sp.								188						29			
Polygonum sp.								30	15						23		
Potentilla sp.			1	1	1									59	30		
Primulaceae																	
Ranunculaceae																	
Ranunculus sp.		2					2										
cf *Raphanus* sp.																	
Rosaceae - thorn								8									
Rosaceae																	
Rosaceae - flower																	
Rumex sp. - tubercle																	
Rumex sp.																	
Rumex sp. - perianth						1			8					73			
Sambucus sp.	3		1	1	2	3		8		1	2	1		15		1	1
Satureja sp.																	
Scabiosa sp.					2					1	1	1		44		1	1
cf *Scandix* sp.																	
Scrophulariaceae																	
Silene alba/dioica													2				
Silene sp.					1						1						
Sinapis sp.																	
Solanaceae															8		
Solanum sp.						1				1							1
Sonchus sp.																	
Stachys sp.														29			
Stachys/Lamium							2						3				
Stellaria graminea/palustris															23		1
Stellaria sp.																	
Teucrium sp.												1					
Tilia sp. - fruit																	
Torilis sp.																	
Veronica sp.															8		
Vicia sp.																	
Viola sp. - capsule														15			
Viola sp.	1	2	1	3	3	2				1	2	1		15		1	2
Indeterminata - rhizome																	
Indeterminata - fruitstem																	
Indeterminata - endocarp																	
Indeterminata								608	53				3		360		
CHARRED																	
CEREALS _ grain																	
Avena sp.	1																
Hordeum vulgare				1													

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	02G	03A	03C	03D	03E	03G	04A	4B	4B	04C	04D	04E	05B	5C	5C	05D	05E
Sample N°	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14051R**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14065R**	**BK14066**	**BK14069**
Volume	4000	7000	10000	9000	7000	5000	8000	5000	5000	7000	8000	8000	17000	12000	12000	14000	10000
Hordeum sp.	2				1												1
Secale cereale																	
Triticum aestivum																	
Triticum aestivum/durum/turgidum																	
Triticum dicoccon																	
Triticum cf *dicoccon*																	
Triticum spelta																	
Triticum sp.																	
Cerealia ohne Hirsen										1		1					
Panicum miliaceum																	
Setaria italica																	
Panicum/Setaria																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
Hordeum sp. - rachis	1																
Secale cereale - rachis																	
Triticum aestivum - rachis																	
Triticum dicoccon - spikelet fork		2															
Triticum dicoccon - glume	1																1
Triticum monococcum - spikelet fork																	
Triticum monococcum - glume																	
Triticum spelta - spikelet fork																	
Triticum spelta - glume base																	
Triticum spelta - glume																	1
Triticum sp. - spikelet fork																	
Triticum sp. - glume	1					1											
Cerealia																	
NUTS																	
Corylus avellana																	
Juglans regia																	
Pinus pinea																	
PULSES																	
cf *Lathyrus* sp.																	
Lens culinaris	2																
Pisum sativum																	
Vicia faba																	
Vicia/Lathyrus																	
Fabaceae																	
SPICES																	
Apium graveolens																	
Satureja hortensis																	
VEGETABLES AND SALADS																	
Allium sativum																	
Atriplex sp.																	
Brassica sp.																	
FRUITS																	
Ficus carica - fruitflesh																	
Phoenix dactylifera																	
Prunus domestica/insititia																	
Prunus persica																	
Sambucus nigra/racemosa																	
Vitis vinifera						1											
OIL AND FIBRE PLANTS																	
WEEDS OF WINTER CEREALS																	
Galium aparine																	
Veronica hederifolia																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Avena fatua																	
Caucalis platycarpos																	
Galium spurium																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	02G	03A	03C	03D	03E	03G	04A	4B	4B	04C	04D	04E	05B	5C	5C	05D	05E
Sample N°	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14051R**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14065R**	**BK14066**	**BK14069**
Volume	4000	7000	10000	9000	7000	5000	8000	5000	5000	7000	8000	8000	17000	12000	12000	14000	10000
Glaucium corniculatum																	
Myagrum perfoliatum																	
Vicia cf *angustifolia*																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Chenopodium album																	
Chenopodium polyspermum																	
Galeospis ladanum/segetum																	
cf *Solanum nigrum*																	
Thlaspi arvense																	
PERENNIAL RUDERALS																	
Cruciata laevipes																	
Rumex obtusifolius																	
Silene alba																	
MEADOWS AND PASTURES																	
Centaurea sp.																	
Festuca/Lolium																	
Galium boreale																	
Plantago lanceolata																	
Plantago media																	
Trifolium sp.																	
Aquatic plants																	
Sparganium sp.																	
Reed fields																	
cf *Alisma plantago-aquatica*																	
Carex sp. tricarpellate																	
Galium cf *palustre*																	
Riverbank plants (pioneer)																	
Teucrium scordium																	
Forests, forest edges and clearings, hedges																	
Abies alba - needle																	
Galium verum																	
cf *Humulus lupulus*																	
VARIA																	
Asperula sp.																	
Bromus sp.																	
Chenopodiaceae																	
Chenopodium sp.																	
Galium sp.						1											
Poaceae																	
Rumex sp.																	
Sambucus sp.																	
Vicia sp.																	
Indeterminata - amorphous object																	
Indeterminata - crusts																	
Indeterminata - seed/fruit																	
MINERALISED																	
CEREALS _ grain																	
Avena sp.																	
Hordeum vulgare				1													
Triticum spelta																	
Triticum sp.																	
Panicum miliaceum	2						2	16		1							
Setaria italica																	
Panicum/Setaria					1												
Cerealia ohne Hirsen												1					
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
Triticum spelta - spikelet fork																	
Cerealia - ear																	

Chronology																	
Context																	
Structure	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
US	02G	03A	03C	03D	03E	03G	04A	4B	4B	04C	04D	04E	05B	5C	5C	05D	05E
Sample N°	BK14038	BK14041	BK14043	BK14044	BK14045	BK14047	BK14050	BK14051	BK14051R	BK14052	BK14053	BK14054	BK14064	BK14065	BK14065R	BK14066	BK14069
Volume	4000	7000	10000	9000	7000	5000	8000	5000	5000	7000	8000	8000	17000	12000	12000	14000	10000
Cerealia - glume																	
Panicum miliaceum - glume																	
Setaria italica - glume																	
Panicum/Setaria - glume																	
PULSES																	
Lens culinaris								8									
Pisum sativum																	
Vicia faba																	
Fabaceae - fruitflesh																	
Fabaceae																	
FRUITS																	
Cucumis melo																	
Cucumis melo/sativa																	
Ficus carica		4					4						3				
Fragaria vesca									8								
Malus domestica																	
Malus sylvestris/domestica		2											3				
Pyrus sp.																	
Malus/Pyrus	1							8									
Morus sp.																	
Physalis alkekengi																	
Prunus sp. - fragment																	
Rubus caesius	1																
Rubus sp. - inner								30									
Sambucus nigra/racemosa																	
Vitis vinifera - fruitflesh													1				
Vitis vinifera - aborted seed																	
Vitis vinifera	1	2	1	1		2	2			2			3			1	2
SPICES																	
Anethum graveolens			1														
Apium graveolens	2		2						60								
Carum carvi																	
Coriandrum sativum																	
Foeniculum vulgare																	
Nigella cf *sativa*																	
VEGETABLES AND SALADS																	
Atriplex sp.																	
Beta vulgaris												1					
Brassica sp.																	
Daucus carota											2	1					
Lagenaria siceraria																	
OIL AND FIBRE PLANTS																	
Linum usitatissimum																	
Papaver somniferum								8	23								
WEEDS OF WINTER CEREALS																	
Agrostemma githago																	
Buglossoides arvensis																	
Fallopia convolvulus																	
Galium aparine						1											
cf *Veronica hederifolia*																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Camelina sativa																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Caucalis platycarpos			1					8									
Galium spurium																	
Vaccaria pyramidata																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Galeopsis cf *speciosa*																	
Polygonum lapathifolium/persicaria																	
Solanum nigrum																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	02G	03A	03C	03D	03E	03G	04A	4B	4B	04C	04D	04E	05B	5C	5C	05D	05E
Sample N°	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14051R**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14065R**	**BK14066**	**BK14069**
Volume	4000	7000	10000	9000	7000	5000	8000	5000	5000	7000	8000	8000	17000	12000	12000	14000	10000
Sonchus oleraceus																	
Stellaria media																	
Thlaspi arvense																	
PERENNIAL RUDERALS																	
Arctium sp.	1																
Convolvulus arvensis																	
Hyoscyamus niger																	
Lapsana communis																	
MEADOWS AND PASTURES																	
Centaurea sp.																	
Rhinanthus sp.																	
Scabiosa sp.																	
Reed fields																	
Carex sp. tricarpellat																	
Galium palustre																	
Forests, forest edges and clearings, hedges																	
Rosa sp.												1					
cf *Seseli libanotis*																	
VARIA																	
Apiaceae		1	1				2						2				
Asteraceae																	
Brassicaceae																	
Bromus sp.																	
Cannabinaceae																	
Chenopodium sp.	1																
Galium sp.																	
Lamiaceae																	
Lolium sp.																	
Papaver sp.														8			
Poa sp.																	
Poaceae								8									
Potentilla sp.	1																
Rumex sp.																	
Indeterminata - endocarp																	
Indeterminata - fruitflesh																	
Indeterminata - coprolithes																	
Indeterminata - crusts																	
Indeterminata - seed/fruit																	

Civil East																	
Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**25**	**27**	**27**
US	06B	06B	06B	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	01	Fonds de fosse	01 1A	01
Sample N°	**BK14071**	**BK14071**	**BK14071**	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14059**	**BK14078**	**BK14184**
Volume	6000	6000	6000	1000	1000	6000	2000	7000	5500	13000	14000	12000	12000	20000	20000	6000	8000
Analysis	RS	FU	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	FU
Field	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04
WATERLOGGED																	
CEREALS _ grain																	
Avena sativa/fatua																	
Cerealia - Testa	4		3		3												
Panicum miliaceum		36															
Setaria italica																	
Panicum/Setaria																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
Hordeum sp. - rachis																	
Secale cereale - rachis																	
Triticum aestivum - rachis																	
Triticum cf aestivum/durum/turgidum - rachis																	
Triticum dicoccon - glume base	3						2										
Triticum dicoccon - spikelet fork																	
Triticum dicoccon - glume		18	2														
Triticum cf *dicoccon* - glume																	
Triticum dicoccon/spelta - glume																	
Triticum monococcum - glume base																	
Triticum monococcum - spikelet fork																	
Triticum monococcum - glume																	
Triticum cf *monococcum* - spikelet fork																	
Triticum cf *monococcum* - glume																	
Triticum spelta - glume base	1				2							2		1			
Triticum spelta - spikelet fork		6															105
Triticum spelta - glume		324	3														21
Triticum sp. - spikelet fork		30															
Triticum sp. - glume		859	3								1		1		2		930
Cerealia - rachis																	
Cerealia ohne Hirsen - glume																	
Panicum miliaceum - glume		191	2	1			2		2		2	2	1	1	2	3	346
Setaria italica - glume																	
Panicum/Setaria - glume																	14
NUTS																	
Corylus avellana	2	1		1			3		2		1						
Juglans regia											1						
Pinus pinea																	
PULSES																	
Lens culinaris																	
Pisum sativum																	
Pisum cf *sativum*																	
Vicia faba																	
Fabaceae																	7
SPICES																	
Anethum graveolens													1				7
Apium graveolens	3	1062	4		2						3	2	1	1	1	3	1374
Carum carvi																	
Coriandrum sativum	1	102	3		2						3		3		3	4	364
Foeniculum vulgare																	7
Origanum vulgare																	
cf *Petroselinum crispum*																	14
Pimpinella anisum																	
cf *Piper nigrum*																	
Piper nigrum																	
cf *Ruta graveolens*																	
Satureja hortensis		105	1														49
cf *Thymus* sp. - stem																	
VEGETABLES AND SALADS																	
Amaranthus sp.		313	3	3	2		1				1				2	4	70
Atriplex sp. - perianth																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**25**	**27**	**27**
US	06B	06B	06B	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	01	Fonds de fosse	01 1A	01
Sample N°	**BK14071**	**BK14071**	**BK14071**	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14059**	**BK14078**	**BK14184**
Volume	6000	6000	6000	1000	1000	6000	2000	7000	5500	13000	14000	12000	12000	20000	20000	6000	8000
Atriplex sp.																	
Beta vulgaris		19	2								2		2		1		
Brassica cf *oleracea*																	
Brassica rapa/nigra																	
Brassica sp.		6	1	1													21
Brassica/Sinapis																	
Daucus carota		30									2		2	2	1	3	
Lagenaria siceraria																	
Pastinaca sativa																	
Portulaca oleracea		25															
FRUITS																	
Cucumis melo																	
Cucumis sativus																	
Cucumis melo/sativa														1			
Ficus carica	4	288	3	3	3		2									2	112
Fragaria vesca	2	210	1								2						3946
Malus domestica																	
Malus sylvestris/domestica					2	1										3	
Malus/Pyrus - stem	2																
Malus/Pyrus - fragment																	
Malus/Pyrus - seed base				1													21
Malus/Pyrus - pericarp	1	3			2		3									1	
Malus/Pyrus		19	1														53
Pyrus sp.																	
Pyrus sp. - stone cells	3	3			3		3										
Pyrus sp. - flower		22	2	1												2	9
Morus sp.																	
Olea europaea																	
Physalis alkekengi	2	12		2													28
Prunus cf *avium*																	
Prunus avium/cerasus	2	5	3	3												2	
Prunus cf *domestica*																	
Prunus domestica			2														
Prunus domestica/insititia		2															
Prunus insititia	2						3										
Prunus persica			1											2			
Prunus cf *spinosa*																	
Prunus spinosa		3	1				3									2	10
Prunus sp.				3													36
Rubus caesius	2	85	2	2	2		2										14
Rubus cf *fruticosus*																	
Rubus fruticosus		6	1													3	21
Rubus idaeus				1													7
Rubus sp.				2													
Sambucus nigra/racemosa						4	3	2					1				
Vitis vinifera - aborted seed																	
Vitis vinifera		18	2	2													
OIL, DYE AND FIBRE PLANTS																	
Cannabis sativa																	
Carthamus tinctorius																	
cf *Isatis tinctoria*																	
Linum usitatissimum																	
Papaver cf *somniferum*			2														
Papaver somniferum		36															374
WEEDS OF WINTER CEREALS																	
Adonis sp.											1						
Agrostemma githago	1	1896	3		2								2	3	2	4	1967
Anthemis arvensis		12															
Bromus arvensis Type																	7
Buglossoides arvensis																	
Fallopia convolvulus	2	6	1										1				21
Galium aparine	3	6											1			1	21
Silene gallica																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**25**	**27**	**27**
US	06B	06B	06B	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	01	Fonds de fosse	01 1A	01
Sample N°	**BK14071**	**BK14071**	**BK14071**	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14059**	**BK14078**	**BK14184**
Volume	6000	6000	6000	1000	1000	6000	2000	7000	5500	13000	14000	12000	12000	20000	20000	6000	8000
Stachys annua/arvensis																	
Valerianella locusta																	
Valerianella rimosa																	
Veronica hederifolia																	
Viola tricolor																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Aphanes arvensis																	
Aphanes sp																	
cf *Bromus secalinus*																	
Camelina sativa - pod																	
Camelina sativa																	
Camelina cf *sativa*		6															
Centaurea cf *cyanus*																	
Centaurea cyanus																	
Papaver argemone													1				
Papaver dubium																	
Raphanus raphanistrum																	
Scleranthus sp. - capsule																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Ajuga cf *chamaepitys*																	
Ajuga chamaepitys												2					
Bupleurum rotundifolium																	
Caucalis platycarpos																	7
Euphorbia exigua																	
Galium spurium				2													21
Glaucium corniculatum																	
Myagrum perfoliatum		30	1	2		2		3		2	2	2	2		2		
Myosoton aquaticum												2					
Nigella arvensis																	
Orlaya grandiflora		6	1														77
Ranunculus arvensis																	
Scandix pecten-veneris																	
Silene cf *dichotoma*																	
Stachys annua		6									1		1				14
Thymelaea passerina																	
Torilis arvensis																	
Vaccaria pyramidata																	
Valerianella dentata			1		2												
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Aethusa cynapium																	
Anagallis arvensis/foemina			1											1			7
Arenaria serpyllifolia		75													1		57
Atriplex/Chenopodium	1				3							1		1		4	
Capsella bursa-pastoris																	100
Chenopodium album		151	3	2							2		3		2		253
Chenopodium ficifolium																	
Chenopodium cf *ficifolium*																	
Chenopodium foliosum																	
Chenopodium hybridum				1							2		1			1	7
Chenopodium murale																	
Chenopodium polyspermum																	
Echinochloa crus-galli													1				
Euphorbia helioscopia																	
Euphorbia platyphyllos																	
Fumaria officinalis																	
Fumaria sp.																	
Galeopsis bifida																	
Galeopsis ladanum																	
Galeopsis sp.													1				
Galeopsis cf *speciosa*																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**25**	**27**	**27**
US	06B	06B	06B	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	01	Fonds de fosse	01 1A	01
Sample N°	**BK14071**	**BK14071**	**BK14071**	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14059**	**BK14078**	**BK14184**
Volume	6000	6000	6000	1000	1000	6000	2000	7000	5500	13000	14000	12000	12000	20000	20000	6000	8000
Galeopsis tetrahit																	
Galeospis ladanum/segetum																	
cf *Heliotropium europaeum*																	
Heliotropium sp.																	
Lamium amplexicaule/purpureum																	
Lamium cf *purpureum*																	
Malva sylvestris																	50
Mercurialis annua																	
Poa annua		25															
Polygonum lapathifolium/persicaria	1	163		3	3		1						1			1	266
Polygonum persicaria																	
Portulaca sp.		6															
Setaria verticillata/viridis											2				1		
Solanum nigrum			1								1	2	1		2		21
Sonchus asper		12	1														7
Sonchus asper/oleraceus											3		3	1	2		50
Sonchus oleraceus																	7
Stachys cf *arvensis*																	
Stellaria media	3	116	1	1							2	2	2	1	2	1	1154
Thlaspi arvense		12	1		2				2						1		35
Urtica urens	2	61	2								2	2	3	1	1		
Verbena officinalis		31									1						
Xanthium strumarium																	
PERENNIAL RUDERALS																	
Agropyron repens																	
Arctium lappa																	
Arctium minus																	
Arctium sp.																	
Bryonia dioica																	
Carduus crispus																	
Cerastium arvense																	
Chelidonium majus																	
cf *Chondrilla juncea*																	
Cirsium sp.																	
Cirsium/Carduus											1						28
Conium maculatum																	
Convolvulus arvensis																	7
Cruciata laevipes																	
Dipsacus cf *fullonum*																	
Fallopia dumetorum																	
Hyoscyamus niger																	
Lactuca serriola																	
Lamium cf *album*		6															
Lamium album																	
Lapsana communis																	
cf *Marrubium vulgare*																	7
Onopordum acanthium		6															
Plantago major		131											1	1	1		214
Poa compressa		25															
Polygonum cf *aviculare*																	
Polygonum aviculare	2	6											1		1		
Potentilla anserina		6	1														
Ranunculus repens		6	1	1							2		1		1		7
Reseda sp.																	
Rumex conglomeratus - perianth																	
Rumex conglomeratus - tubercle																	
Rumex cf *conglomeratus* - perianth																	154
Rumex cf *crispus*																	
Rumex crispus - perianth																	
Rumex crispus - tubercle																	
Rumex obtusifolius - perianth			1														
Rumex obtusifolius		85	2	2	2						1	2	1	1	1	4	168
Sambucus cf *ebulus*																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**25**	**27**	**27**
US	06B	06B	06B	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	01	Fonds de fosse	01 1A	01
Sample N°	**BK14071**	**BK14071**	**BK14071**	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14059**	**BK14078**	**BK14184**
Volume	6000	6000	6000	1000	1000	6000	2000	7000	5500	13000	14000	12000	12000	20000	20000	6000	8000
Sambucus ebulus						4		3					1		1	1	
Saponaria officinalis																	
Saponaria cf *officinalis*																	7
Silene alba																	
Urtica dioica		31											1				50
MEADOWS AND PASTURES																	
Achillea millefolium															1		
Agrostis sp.																	
Ajuga cf *reptans*																	
Ajuga reptans																	
Anthriscus sp.																	
Bromus cf *commutatus*																	
Bromus hordeaceus																	
Centaurea cf *jacea*			1														
Centaurea sp.		18											1				7
Cichorium intybus																	
Cirsium/Centaurea																	
cf *Cynosurus* sp.																	
Dactylis glomerata																	
Deschampsia caespitosa		25															
Dianthus cf *armeria*																	
Festuca rubra/ovina																	
Festuca/Lolium																	
Holcus lanatus																	
Leontodon autumnalis																	
Leontodon sp.																	
Leucanthemum vulgare		6															
Lolium perenne																	
Nardus stricta																	
Plantago lanceolata																	
Plantago media		6													1		
Poa pratensis																	
Poa pratensis Type																	
Poa pratensis/trivialis																	
Potentilla cf *erecta*																	
Potentilla erecta																	
Prunella cf *vulgaris*												2		1			
Prunella vulgaris		116	1								2		1		3		14
Ranunculus cf *acris*																	
Ranunculus acris																	
Rhinanthus sp.																	
Rumex acetosa - perianth																	
Rumex acetosella																	
Silene vulgaris																	
Taraxacum officinale											1						
Thalictrum flavum																	
Trifolium pratense - pod with seeds																	
Trifolium pratense - capsule																	
Trifolium sp. - chalice																	
Open swards																	
Acinos arvensis																	
Ajuga genevensis																	
Artemisia campestris																	
Centaurea scabiosa																	
Dianthus sp.																	
Euphorbia cf *seguieriana*																	
Euphrasia/Odontites																	
Gentiana cruciata																	
Medicago lupulina - pod with seed																	
Medicago lupulina - pod																	7
Medicago minima - pod				2											1		
Odontites sp.																	
cf *Petrorhagia prolifera*																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**25**	**27**	**27**
US	06B	06B	06B	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	01	Fonds de fosse	01 1A	01
Sample N°	**BK14071**	**BK14071**	**BK14071**	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14059**	**BK14078**	**BK14184**
Volume	6000	6000	6000	1000	1000	6000	2000	7000	5500	13000	14000	12000	12000	20000	20000	6000	8000
Prunella grandiflora																	
Scabiosa columbaria																	
Stachys cf *recta*																	
Stachys recta																	
Teucrium botrys																	
Teucrium cf *chamaedrys*																	
Teucrium montanum																	
Trifolium cf *campestre* - chalice																	
Aquatic plants																	
Ceratophyllum cf *submersum*																	
Lemna sp.																	50
Polygonum cf *amphibium*																	
Potamogeton sp.																	
Ranunculus aquatilis																	
Sparganium sp.																	
Zannichellia palustris																	
Reed fields																	
Alisma plantago-aquatica																	100
Carex sp.																	
Carex sp. - utriculus		12			2												
Carex sp. bicarpellate	2	6										3	1	1	1		7
Carex sp. tricarpellate	2	91	2		2						3	3	2	1	2		21
Cicuta virosa																	
Eleocharis palustris	3	140	2	2							2		1		1		14
Eupatorium cannabinum																	
Galium cf *palustre*																	
Galium palustre																	
Glyceria sp.																	
Hippuris vulgaris																	
Iris pseudacorus																	
Juncus sp.		25															50
Lycopus europaeus													1				
Mentha arvensis/aquatica		31	1										1				50
Nasturtium officinale		25															7
Oenanthe fistulosa																	
Oenanthe sp.																	
Poa palustris																	
Rorippa amphibia																	
Rumex cf *aquaticus/hydrolapatum*																	
Salix sp. - veg. part																	
Schoenoplectus lacustris																	
Schoenoplectus sp.						1						2					
Riverbank plants (pioneer)																	
Alnus glutinosa - veg. part																	
Alnus sp. - veg. Part																	
Bidens sp.																	
Bidens tripartita																	
Cyperus flavescens																	
Cyperus fuscus		25															
cf *Myosoton aquaticum*																	14
Polygonum cf *hydropiper*		6															
Polygonum hydropiper																	
Polygonum hydropiper/mite			1														
Polygonum lapathifolium																	
Polygonum minus																	
Polygonum mite																	
Polygonum mite/minus																	
Ranunculus cf *flammula*																	
Ranunculus flammula																	
Ranunculus sardous		6	1														7
Ranunculus sceleratus																	57
Teucrium cf *scordium*																	
Wet meadows																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**25**	**27**	**27**
US	06B	06B	06B	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	01	Fonds de fosse	01 1A	01
Sample N°	**BK14071**	**BK14071**	**BK14071**	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14059**	**BK14078**	**BK14184**
Volume	6000	6000	6000	1000	1000	6000	2000	7000	5500	13000	14000	12000	12000	20000	20000	6000	8000
cf *Euphorbia palustris*																	
Filipendula ulmaria																	
Linum catharticum																	
Lychnis flos-cuculi																	
Scirpus sylvaticus																	
Stachys officinalis																	
Forests, forest edges and clearings, hedges																	
Abies alba - needle																	
Acer sp. - veg. part																	
Agrimonia eupatoria																	
Arctium cf *nemorosum*																	
Betula pendula - veg. part																	
Cornus sanguinea	1	7	1														
Crataegus sp.																	
cf *Humulus lupulus*																	
Quercus sp. - veg. part																1	
Rosa sp.																	7
Solanum dulcamara																	
Solanum cf *dulcamara*													1				
Stellaria cf *nemorum*															1		
Torilis cf *japonica*																	
Valeriana cf *tripteris*																	
Viburnum lantana		3															
Viburnum opulus																	
Calamintha sylvatica																	
Galium verum																	
Hypericum perforatum																	7
Saponaria cf *ocymoides*		6	1														
Silene cf *nutans*																	
Silene nutans																	
Thalictrum minus																	
VARIA																	
Ajuga sp.																	
Allium sp.		6	1										1				
Apiaceae - fragments																	
Asteraceae			1								1						
Boraginaceae																	
Brassicaceae																	
Bromus sp.																	
Campanula sp.																	
Cannabinaceae																	
Carduus sp.																	
Caryophyllaceae																	100
Cerastium sp.														1	1		
Chenopodiaceae																	50
Chenopodiaceae/Amaranthaceae																	
Chenopodium sp.		125															
Cichorium sp.		6															
Crepis sp.																	
Cuscuta sp.		18															
Cyperaceae													1				
Epilobium sp.																	
Euphorbia sp.																	7
Euphorbia sp. - fruit																	
Euphorbia sp. - capsule																	
Fallopia sp.																	
Filipendula sp.																	
Galium sp.		6															
Hypericum sp.																	
Inula sp.																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**25**	**27**	**27**
US	06B	06B	06B	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	01	Fonds de fosse	01 1A	01
Sample N°	**BK14071**	**BK14071**	**BK14071**	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14059**	**BK14078**	**BK14184**
Volume	6000	6000	6000	1000	1000	6000	2000	7000	5500	13000	14000	12000	12000	20000	20000	6000	8000
Lamiaceae		62															21
Lamium sp.													1		1		
Liliaceae																	
Malva sp.																	
cf *Matricaria* sp.																	
Mentha sp.																	
Nasturtium sp.																	
Papaver sp.		387															270
Physalis sp.																	
Physalis/Solanum																	
Phyteuma sp.																	
Plantago sp. - chalice+A54																	
Plantago sp.																	
Poa sp.		50									1				2		
Poaceae																	
Poaceae		56													2		50
Polygonaceae		50															
Polygonum sp.																	
Polygonum sp.		6															99
Potentilla sp.		75	1								1				1		
Primulaceae																	
Ranunculaceae																	
Ranunculus sp.	2						2					2				2	
cf *Raphanus* sp.																	
Rosaceae - thorn																	
Rosaceae																	
Rosaceae - flower																	
Rumex sp. - tubercle		24															
Rumex sp.																	
Rumex sp. - perianth		6															112
Sambucus sp.													1				
Satureja sp.																	
Scabiosa sp.				1							1				1		
cf *Scandix* sp.																	
Scrophulariaceae																	
Silene alba/dioica				1													
Silene sp.													2		1		7
Sinapis sp.																	
Solanaceae																	14
Solanum sp.													1				
Sonchus sp.																	
Stachys sp.																	7
Stachys/Lamium																	
Stellaria graminea/palustris											1		1				7
Stellaria sp.																	50
Teucrium sp.																	
Tilia sp. - fruit																	
Torilis sp.																	
Veronica sp.																	
Vicia sp.																	
Viola sp. - capsule																	
Viola sp.		12	2								1		1				
Indeterminata - rhizome																	
Indeterminata - fruitstem																	
Indeterminata - endocarp																	
Indeterminata							1										
CHARRED																	
CEREALS _ grain																	
Avena sp.		6	1			2											
Hordeum vulgare		6															

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**25**	**27**	**27**
US	06B	06B	06B	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	01	Fonds de fosse	01 1A	01
Sample N°	**BK14071**	**BK14071**	**BK14071**	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14059**	**BK14078**	**BK14184**
Volume	6000	6000	6000	1000	1000	6000	2000	7000	5500	13000	14000	12000	12000	20000	20000	6000	8000
Hordeum sp.						1		2									
Secale cereale																	
Triticum aestivum																	
Triticum aestivum/durum/turgidum																	
Triticum dicoccon																	
Triticum cf *dicoccon*						1											
Triticum spelta																	
Triticum sp.			1			2											
Cerealia ohne Hirsen		6		2						2			1	1			
Panicum miliaceum											1						
Setaria italica																	
Panicum/Setaria																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	7
Hordeum sp. - rachis																	
Secale cereale - rachis																	
Triticum aestivum - rachis																	
Triticum dicoccon - spikelet fork																	
Triticum dicoccon - glume		6															
Triticum monococcum - spikelet fork																	
Triticum monococcum - glume																	
Triticum spelta - spikelet fork																	
Triticum spelta - glume base						1											
Triticum spelta - glume																	
Triticum sp. - spikelet fork																	
Triticum sp. - glume			1														
Cerealia																	
NUTS																	
Corylus avellana								2									
Juglans regia																	
Pinus pinea																	
PULSES																	
cf *Lathyrus* sp.																	
Lens culinaris																	
Pisum sativum																	
Vicia faba						1											
Vicia/Lathyrus																	
Fabaceae																	
SPICES																	
Apium graveolens																	
Satureja hortensis																	
VEGETABLES AND SALADS																	
Allium sativum																	
Atriplex sp.																	
Brassica sp.																	
FRUITS																	
Ficus carica - fruitflesh																	
Phoenix dactylifera																	
Prunus domestica/insititia																	
Prunus persica																	
Sambucus nigra/racemosa																	
Vitis vinifera																	
OIL AND FIBRE PLANTS																	
WEEDS OF WINTER CEREALS																	
Galium aparine						1											
Veronica hederifolia																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Avena fatua																	
Caucalis platycarpos																	
Galium spurium																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**25**	**27**	**27**
US	06B	06B	06B	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	01	Fonds de fosse	01 1A	01
Sample N°	**BK14071**	**BK14071**	**BK14071**	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14059**	**BK14078**	**BK14184**
Volume	6000	6000	6000	1000	1000	6000	2000	7000	5500	13000	14000	12000	12000	20000	20000	6000	8000
Glaucium corniculatum																	
Myagrum perfoliatum																	
Vicia cf *angustifolia*																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Chenopodium album																	
Chenopodium polyspermum																	
Galeospis ladanum/segetum																	
cf *Solanum nigrum*																	
Thlaspi arvense																	
PERENNIAL RUDERALS																	
Cruciata laevipes																	
Rumex obtusifolius																	
Silene alba																	
MEADOWS AND PASTURES																	
Centaurea sp.																	
Festuca/Lolium						1											
Galium boreale																	
Plantago lanceolata																	
Plantago media																	
Trifolium sp.																	
Aquatic plants																	
Sparganium sp.																	
Reed fields																	
cf *Alisma plantago-aquatica*																	
Carex sp. tricarpellate																	
Galium cf *palustre*																	
Riverbank plants (pioneer)																	
Teucrium scordium																	
Forests, forest edges and clearings, hedges																	
Abies alba - needle																	
Galium verum																	
cf *Humulus lupulus*																	
VARIA																	
Asperula sp.																	
Bromus sp.																	
Chenopodiaceae																	
Chenopodium sp.																	
Galium sp.																	
Poaceae																	
Rumex sp.																	
Sambucus sp.																	
Vicia sp.																	
Indeterminata - amorphous object						1						2					
Indeterminata - crusts																	
Indeterminata - seed/fruit						1											
MINERALISED																	
CEREALS _ grain																	
Avena sp.																	
Hordeum vulgare																	
Triticum spelta																	
Triticum sp.																	
Panicum miliaceum		6				2											28
Setaria italica																	
Panicum/Setaria																	
Cerealia ohne Hirsen																	7
CEREALS _ chaff																	
Hordeum vulgare - rachis																	14
Triticum spelta - spikelet fork																2	
Cerealia - ear																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**25**	**27**	**27**
US	06B	06B	06B	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	01	Fonds de fosse	01 1A	01
Sample N°	**BK14071**	**BK14071**	**BK14071**	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14059**	**BK14078**	**BK14184**
Volume	6000	6000	6000	1000	1000	6000	2000	7000	5500	13000	14000	12000	12000	20000	20000	6000	8000
Cerealia - glume																	
Panicum miliaceum - glume																	
Setaria italica - glume																	
Panicum/Setaria - glume																	
PULSES																	
Lens culinaris																3	1
Pisum sativum																	63
Vicia faba		6															
Fabaceae - fruitflesh																	
Fabaceae																	
FRUITS																	
Cucumis melo																	
Cucumis melo/sativa														1			
Ficus carica	4				3		2									2	
Fragaria vesca																	
Malus domestica																	
Malus sylvestris/domestica					2	1										3	
Pyrus sp.																	
Malus/Pyrus																	21
Morus sp.																	
Physalis alkekengi																	
Prunus sp. - fragment																	
Rubus caesius																	
Rubus sp. - inner																	
Sambucus nigra/racemosa																	
Vitis vinifera - fruitflesh							1									2	
Vitis vinifera - aborted seed																	
Vitis vinifera	3	2			2												
SPICES																	
Anethum graveolens																	7
Apium graveolens																	
Carum carvi																	
Coriandrum sativum																	14
Foeniculum vulgare																	
Nigella cf *sativa*																	
VEGETABLES AND SALADS																	
Atriplex sp.																	
Beta vulgaris																	
Brassica sp.																	
Daucus carota																	
Lagenaria siceraria																	
OIL AND FIBRE PLANTS																	
Linum usitatissimum																	
Papaver somniferum																	
WEEDS OF WINTER CEREALS																	
Agrostemma githago																	
Buglossoides arvensis																	
Fallopia convolvulus																	
Galium aparine						3											
cf *Veronica hederifolia*																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Camelina sativa																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Caucalis platycarpos																	
Galium spurium																	7
Vaccaria pyramidata																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Galeopsis cf *speciosa*																	
Polygonum lapathifolium/persicaria																	
Solanum nigrum																	

Chronology																	
Context																	
Structure	**24**	**24**	**24**	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**25**	**27**	**27**
US	06B	06B	06B	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	01	Fonds de fosse	01 1A	01
Sample N°	**BK14071**	**BK14071**	**BK14071**	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14059**	**BK14078**	**BK14184**
Volume	6000	6000	6000	1000	1000	6000	2000	7000	5500	13000	14000	12000	12000	20000	20000	6000	8000
Sonchus oleraceus																	
Stellaria media																	
Thlaspi arvense																	
PERENNIAL RUDERALS																	
Arctium sp.																	
Convolvulus arvensis																	
Hyoscyamus niger																	
Lapsana communis																	
MEADOWS AND PASTURES																	
Centaurea sp.																	
Rhinanthus sp.																	
Scabiosa sp.																	
Reed fields																	
Carex sp. tricarpellat																	
Galium palustre																	
Forests, forest edges and clearings, hedges																	
Rosa sp.																	
cf *Seseli libanotis*																	
VARIA																	
Apiaceae	2											3				4	
Asteraceae																	
Brassicaceae																	
Bromus sp.																	
Cannabinaceae																	
Chenopodium sp.																	
Galium sp.																	
Lamiaceae						1											
Lolium sp.																	
Papaver sp.																	
Poa sp.																	
Poaceae																	
Potentilla sp.																	
Rumex sp.																	
Indeterminata - endocarp																	
Indeterminata - fruitflesh																	
Indeterminata - coprolithes																	
Indeterminata - crusts																	
Indeterminata - seed/fruit						1											

Civil East																	
Chronology														**Horizon 1**			
Context														**Layer**			
Structure	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**	**73**	**140**	**140**	**50**	**50**	**50**	**50**
US	01	02	02C	02D	03C	04	01	02 2	02 01	01	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B
Sample N°	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**
Volume	8000	4000	7000	5000	4000	7000	16000	8000	6000	10000	9000	16000	500	6000	6000	7000	9000
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	FU	FU	RS	RS	RS	RS
Field	04	04	04	04	04	04	04	04	04	04	04	05	05	04	04	04	04
WATERLOGGED																	
CEREALS _ grain																	
Avena sativa/fatua																	
Cerealia - Testa	4							3		1	3	1					
Panicum miliaceum																	
Setaria italica																	
Panicum/Setaria																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
Hordeum sp. - rachis																	
Secale cereale - rachis																	
Triticum aestivum - rachis																	
Triticum cf aestivum/durum/turgidum - rachis																	
Triticum dicoccon - glume base														2			
Triticum dicoccon - spikelet fork																	
Triticum dicoccon - glume																	
Triticum cf *dicoccon* - glume																	
Triticum dicoccon/spelta - glume																	
Triticum monococcum - glume base																	
Triticum monococcum - spikelet fork																	
Triticum monococcum - glume																	
Triticum cf *monococcum* - spikelet fork																	
Triticum cf *monococcum* - glume																	
Triticum spelta - glume base																	
Triticum spelta - spikelet fork																	
Triticum spelta - glume	3										1						
Triticum sp. - spikelet fork																	
Triticum sp. - glume	2	1								2	1						
Cerealia - rachis																	
Cerealia ohne Hirsen - glume																	
Panicum miliaceum - glume	2			1				2	2	2	3				2		
Setaria italica - glume																	
Panicum/Setaria - glume																	
NUTS																	
Corylus avellana					2		2	2	1	1	2						
Juglans regia			1								1						
Pinus pinea																	
PULSES																	
Lens culinaris																	
Pisum sativum																	
Pisum cf *sativum*																	
Vicia faba																	
Fabaceae										1							
SPICES																	
Anethum graveolens	1							2			2	135					
Apium graveolens	3	2	2	2				1	3	3	4	90					
Carum carvi																	
Coriandrum sativum	4	3	3	3	2			2	3	2	3	15					
Foeniculum vulgare	1																
Origanum vulgare																	
cf *Petroselinum crispum*	2																
Pimpinella anisum																	
cf *Piper nigrum*																	
Piper nigrum																	
cf *Ruta graveolens*			1														
Satureja hortensis		1		1						2							
cf *Thymus* sp. - stem																	
VEGETABLES AND SALADS																	
Amaranthus sp.	2	2	3	1	3				4	3	3	15					
Atriplex sp. - perianth																	

Chronology														Horizon 1			
Context														Layer			
Structure	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**	**73**	**140**	**140**	**50**	**50**	**50**	**50**
US	01	02	02C	02D	03C	04	01	02 2	02 01	01	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B
Sample N°	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**
Volume	8000	4000	7000	5000	4000	7000	16000	8000	6000	10000	9000	16000	500	6000	6000	7000	9000
Atriplex sp.						1			2			15					
Beta vulgaris					2				1	2	1	15					
Brassica cf *oleracea*								2									
Brassica rapa/nigra																	
Brassica sp.		1	1						1								
Brassica/Sinapis																	
Daucus carota									2								
Lagenaria siceraria											1						
Pastinaca sativa																	
Portulaca oleracea																	
FRUITS																	
Cucumis melo																	
Cucumis sativus																	
Cucumis melo/sativa								2									1
Ficus carica	3	3	3	3	2	1		2	3	3	3	255	2				2
Fragaria vesca	4	1	2	2													
Malus domestica																	
Malus sylvestris/domestica								2									
Malus/Pyrus - stem																	
Malus/Pyrus - fragment																	
Malus/Pyrus - seed base				2													
Malus/Pyrus - pericarp		2						2			1	1		2			
Malus/Pyrus	2		2	2							2	195					
Pyrus sp.												4					
Pyrus sp. - stone cells		2	1					3		3	2	1					
Pyrus sp. - flower	2	3	1	2							2	105					
Morus sp.																	
Olea europaea																	
Physalis alkekengi	1	2	2	1	2	2		2		1	1	825					
Prunus cf *avium*																	
Prunus avium/cerasus	2	2	2	4				1			1	36	3				
Prunus cf *domestica*																	
Prunus domestica		2	1	2						1							
Prunus domestica/insititia																	
Prunus insititia												32	13				
Prunus persica									1	1		20	4				
Prunus cf *spinosa*												1					
Prunus spinosa	3	4	2	3	1			3		2	2	20					
Prunus sp.			2	3	1							16	1				
Rubus caesius		2	2	2						1	1	90					
Rubus cf *fruticosus*																	
Rubus fruticosus	2	2	1		2												
Rubus idaeus				1						1		15					
Rubus sp.			1						2			1	1				
Sambucus nigra/racemosa					1		2		2	2	1	15					
Vitis vinifera - aborted seed																	
Vitis vinifera		2	2	2	2				3	3	3	421	1				
OIL, DYE AND FIBRE PLANTS																	
Cannabis sativa																	
Carthamus tinctorius																	
cf *Isatis tinctoria*																	
Linum usitatissimum																	
Papaver cf *somniferum*	1																
Papaver somniferum																	
WEEDS OF WINTER CEREALS																	
Adonis sp.									1		1						
Agrostemma githago	3	2	2	2				2	2	2	2						
Anthemis arvensis										1							
Bromus arvensis Type																	
Buglossoides arvensis				1													
Fallopia convolvulus	1	1	1	1				2		1	1						1
Galium aparine			1					2									
Silene gallica																	

Chronology													Horizon 1			
Context													Layer			
Structure	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**	**73**	**140**	**140**	**50**	**50**	**50**	**50**
US	01	02	02C	02D	03C	04	01	02 2	02 01	01	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B
Sample N°	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**
Volume	8000	4000	7000	5000	4000	7000	16000	8000	6000	10000	9000	16000	500	6000	6000	7000	9000
Stachys annua/arvensis																	
Valerianella locusta																	
Valerianella rimosa																	
Veronica hederifolia																	
Viola tricolor																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Aphanes arvensis																	
Aphanes sp																	
cf *Bromus secalinus*																	
Camelina sativa - pod																	
Camelina sativa																	
Camelina cf *sativa*																	
Centaurea cf *cyanus*																	
Centaurea cyanus																	
Papaver argemone																	
Papaver dubium																	
Raphanus raphanistrum																	
Scleranthus sp. - capsule																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Ajuga cf *chamaepitys*																	
Ajuga chamaepitys								2								2	2
Bupleurum rotundifolium																	
Caucalis platycarpos	2										2						
Euphorbia exigua																	
Galium spurium											1						
Glaucium corniculatum																	
Myagrum perfoliatum				2	1	2	2	3	2	2	2	47			2		
Myosoton aquaticum																	
Nigella arvensis																	
Orlaya grandiflora	1																
Ranunculus arvensis																	
Scandix pecten-veneris																	
Silene cf *dichotoma*																	
Stachys annua	1		1		2				2	1		120	1				2
Thymelaea passerina																	
Torilis arvensis																	
Vaccaria pyramidata								2									
Valerianella dentata												15					
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Aethusa cynapium												15					
Anagallis arvensis/foemina	1								1								
Arenaria serpyllifolia																	
Atriplex/Chenopodium							2	1						2		2	
Capsella bursa-pastoris	1																
Chenopodium album	2	3	1	2	1				3	3	4	45					1
Chenopodium ficifolium																	
Chenopodium cf *ficifolium*																	
Chenopodium foliosum																	
Chenopodium hybridum	1		2				2	2	2	2	1	60					
Chenopodium murale																	
Chenopodium polyspermum																	
Echinochloa crus-galli																	
Euphorbia helioscopia									1								
Euphorbia platyphyllos																	
Fumaria officinalis							2										
Fumaria sp.																	
Galeopsis bifida									1								
Galeopsis ladanum																	
Galeopsis sp.			1														
Galeopsis cf *speciosa*																	

Chronology													Horizon 1			
Context													Layer			
Structure	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**	**73**	**140**	**140**	**50**	**50**	**50**	**50**
US	01	02	02C	02D	03C	04	01	02 2	02 01	01	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B
Sample N°	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**
Volume	8000	4000	7000	5000	4000	7000	16000	8000	6000	10000	9000	16000	500	6000	6000	7000	9000
Galeopsis tetrahit																	
Galeospis ladanum/segetum																	
cf *Heliotropium europaeum*																	
Heliotropium sp.																	
Lamium amplexicaule/purpureum																	
Lamium cf *purpureum*																	
Malva sylvestris																	
Mercurialis annua																	
Poa annua																	
Polygonum lapathifolium/persicaria	1	2	2	2	2	1			2	2	1	15		3	2		
Polygonum persicaria																	
Portulaca sp.																	
Setaria verticillata/viridis																	
Solanum nigrum	1	1		2				2	3	2	1	60				1	1
Sonchus asper											1						
Sonchus asper/oleraceus	2																
Sonchus oleraceus																	
Stachys cf *arvensis*																	
Stellaria media	3	1	2	2	1			2	3	3	3			3	2		
Thlaspi arvense	1	1	1						1	1	1						
Urtica urens				1				2	3	3	3				2		
Verbena officinalis										1					2		
Xanthium strumarium																	
PERENNIAL RUDERALS																	
Agropyron repens																	
Arctium lappa																	
Arctium minus																	
Arctium sp.																	
Bryonia dioica										1	1						
Carduus crispus																	
Cerastium arvense																	
Chelidonium majus						1						15					
cf *Chondrilla juncea*																	
Cirsium sp.																	
Cirsium/Carduus	1								1	1	1						1
Conium maculatum																	
Convolvulus arvensis	1																
Cruciata laevipes												30					
Dipsacus cf *fullonum*																	
Fallopia dumetorum																	
Hyoscyamus niger										1							
Lactuca serriola																	
Lamium cf *album*																	
Lamium album																	
Lapsana communis																	
cf *Marrubium vulgare*																	
Onopordum acanthium								1									
Plantago major																	
Poa compressa																	
Polygonum cf *aviculare*																	
Polygonum aviculare	1	1													2	2	
Potentilla anserina										1							
Ranunculus repens			1						1	1	1						
Reseda sp.																	
Rumex conglomeratus - perianth	1		1														
Rumex conglomeratus - tubercle																	
Rumex cf *conglomeratus* - perianth																	
Rumex cf *crispus*																	
Rumex crispus - perianth																	
Rumex crispus - tubercle																	
Rumex obtusifolius - perianth																	
Rumex obtusifolius	2	2	2	1	2	2		2	3	2	2	15				2	1
Sambucus cf *ebulus*																	

Chronology															Horizon 1			
Context															Layer			
Structure	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**	**73**	**140**	**140**		**50**	**50**	**50**	**50**
US	01	02	02C	02D	03C	04	01	02 2	02 01	01	01 coupe n-s	02	02		01 4III	01 4IV	02 A	02B
Sample N°	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**	**BK14159**	**BK25018**	**BK25031**		**BK14130**	**BK14131**	**BK14112**	**BK14113**
Volume	8000	4000	7000	5000	4000	7000	16000	8000	6000	10000	9000	16000	500		6000	6000	7000	9000
Sambucus ebulus					1		2	2										
Saponaria officinalis	1																	
Saponaria cf *officinalis*																		
Silene alba												15						
Urtica dioica	1									1	1							
MEADOWS AND PASTURES																		
Achillea millefolium																		
Agrostis sp.																		
Ajuga cf *reptans*																		
Ajuga reptans										1								1
Anthriscus sp.																		
Bromus cf *commutatus*																		
Bromus hordeaceus																		
Centaurea cf *jacea*																		
Centaurea sp.	1							2										
Cichorium intybus																		
Cirsium/Centaurea																		
cf *Cynosurus* sp.																		
Dactylis glomerata																		
Deschampsia caespitosa																		
Dianthus cf *armeria*																		
Festuca rubra/ovina																		
Festuca/Lolium																		
Holcus lanatus																		
Leontodon autumnalis																		
Leontodon sp.																		
Leucanthemum vulgare																		
Lolium perenne																		
Nardus stricta																		
Plantago lanceolata																		
Plantago media																		
Poa pratensis																		
Poa pratensis Type																		
Poa pratensis/trivialis																		
Potentilla cf *erecta*																2		
Potentilla erecta																		
Prunella cf *vulgaris*																		
Prunella vulgaris																		
Ranunculus cf *acris*																		
Ranunculus acris																		
Rhinanthus sp.																		
Rumex acetosa - perianth																		
Rumex acetosella																		
Silene vulgaris																		
Taraxacum officinale																		
Thalictrum flavum																		
Trifolium pratense - pod with seeds																		
Trifolium pratense - capsule																		
Trifolium sp. - chalice																2		1
Open swards																		
Acinos arvensis																		
Ajuga genevensis																		
Artemisia campestris																		
Centaurea scabiosa																		
Dianthus sp.																		
Euphorbia cf *seguieriana*																		1
Euphrasia/Odontites																		
Gentiana cruciata																		
Medicago lupulina - pod with seed																		
Medicago lupulina - pod																		
Medicago minima - pod									1									
Odontites sp.																		
cf *Petrorhagia prolifera*																		

Chronology														Horizon 1			
Context														Layer			
Structure	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**	**73**	**140**	**140**	**50**	**50**	**50**	**50**
US	01	02	02C	02D	03C	04	01	02 2	02 01	01	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B
Sample N°	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**
Volume	8000	4000	7000	5000	4000	7000	16000	8000	6000	10000	9000	16000	500	6000	6000	7000	9000
Prunella grandiflora																	
Scabiosa columbaria																	
Stachys cf *recta*																	
Stachys recta																	
Teucrium botrys																	
Teucrium cf *chamaedrys*																	
Teucrium montanum																	
Trifolium cf *campestre* - chalice																	
Aquatic plants																	
Ceratophyllum cf *submersum*																	
Lemna sp.																	
Polygonum cf *amphibium*															2		
Potamogeton sp.																	
Ranunculus aquatilis																	
Sparganium sp.																	
Zannichellia palustris																	
Reed fields																	
Alisma plantago-aquatica																	
Carex sp.																	
Carex sp. - utriculus																	
Carex sp. bicarpellate		1		1	1			2	2	2	1			2	2		
Carex sp. tricarpellate		1	1	1	2		2	3	4	3	2	30		2			3
Cicuta virosa																	
Eleocharis palustris		1		1	1						1						
Eupatorium cannabinum																	
Galium cf *palustre*																	
Galium palustre																	
Glyceria sp.																	
Hippuris vulgaris																1	
Iris pseudacorus																	
Juncus sp.																	
Lycopus europaeus							2										
Mentha arvensis/aquatica																	
Nasturtium officinale																	
Oenanthe fistulosa				1													
Oenanthe sp.														2			
Poa palustris																	
Rorippa amphibia																	
Rumex cf *aquaticus/hydrolapatum*																	
Salix sp. - veg. part												15					
Schoenoplectus lacustris																	
Schoenoplectus sp.									1								
Riverbank plants (pioneer)																	
Alnus glutinosa - veg. part																	
Alnus sp. - veg. Part																	
Bidens sp.																	
Bidens tripartita																	
Cyperus flavescens																	
Cyperus fuscus																	
cf *Myosoton aquaticum*																	
Polygonum cf *hydropiper*																	
Polygonum hydropiper														1	1		
Polygonum hydropiper/mite	1																
Polygonum lapathifolium																	
Polygonum minus																	
Polygonum mite																	
Polygonum mite/minus														2			
Ranunculus cf *flammula*																	
Ranunculus flammula																	
Ranunculus sardous	1								1								
Ranunculus sceleratus																	
Teucrium cf *scordium*																2	
Wet meadows																	

Chronology															Horizon 1			
Context															**Layer**			
Structure	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**	**73**	**140**	**140**		**50**	**50**	**50**	**50**
US	01	02	02C	02D	03C	04	01	02 2	02 01	01	01 coupe n-s	02	02		01 4III	01 4IV	02 A	02B
Sample N°	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**	**BK14159**	**BK25018**	**BK25031**		**BK14130**	**BK14131**	**BK14112**	**BK14113**
Volume	8000	4000	7000	5000	4000	7000	16000	8000	6000	10000	9000	16000	500		6000	6000	7000	9000
cf *Euphorbia palustris*								2										
Filipendula ulmaria																		
Linum catharticum																		
Lychnis flos-cuculi																		
Scirpus sylvaticus																		
Stachys officinalis																		
Forests, forest edges and clearings, hedges																		
Abies alba - needle																		
Acer sp. - veg. part																		
Agrimonia eupatoria																		
Arctium cf *nemorosum*																		
Betula pendula - veg. part																		
Cornus sanguinea																		
Crataegus sp.												67						
cf *Humulus lupulus*																		
Quercus sp. - veg. part																		
Rosa sp.		1	1	1						1								
Solanum dulcamara																		
Solanum cf *dulcamara*																		
Stellaria cf *nemorum*																		
Torilis cf *japonica*																		
Valeriana cf *tripteris*		1																
Viburnum lantana																		
Viburnum opulus												18						
Calamintha sylvatica																		
Galium verum																		
Hypericum perforatum																		
Saponaria cf *ocymoides*																		
Silene cf *nutans*																		
Silene nutans																		
Thalictrum minus																		
VARIA																		
Ajuga sp.																		
Allium sp.																		2
Apiaceae - fragments																		
Asteraceae																2		1
Boraginaceae												30						
Brassicaceae																		
Bromus sp.																		
Campanula sp.																		
Cannabinaceae																		
Carduus sp.									1	1								
Caryophyllaceae																		
Cerastium sp.																		
Chenopodiaceae																		
Chenopodiaceae/Amaranthaceae																		
Chenopodium sp.																		
Cichorium sp.																		
Crepis sp.																		
Cuscuta sp.																		
Cyperaceae										1								
Epilobium sp.																		
Euphorbia sp.									1									1
Euphorbia sp. - fruit																		
Euphorbia sp. - capsule																		
Fallopia sp.																		
Filipendula sp.																		
Galium sp.	1								2	1	1							
Hypericum sp.																		
Inula sp.																		

Chronology														Horizon 1			
Context														**Layer**			
Structure	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**	**73**	**140**	**140**	**50**	**50**	**50**	**50**
US	01	02	02C	02D	03C	04	01	02 2	02 01	01	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B
Sample N°	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**
Volume	8000	4000	7000	5000	4000	7000	16000	8000	6000	10000	9000	16000	500	6000	6000	7000	9000
Lamiaceae																	
Lamium sp.					1	1			1	2							
Liliaceae																	
Malva sp.																	
cf *Matricaria* sp.																	
Mentha sp.																	
Nasturtium sp.																	
Papaver sp.	2		1														
Physalis sp.																	
Physalis/Solanum			1														
Phyteuma sp.																	
Plantago sp. - chalice+A54																	
Plantago sp.																	
Poa sp.																	
Poaceae																	
Poaceae	1																
Polygonaceae																	
Polygonum sp.																	
Polygonum sp.																	
Potentilla sp.			1	1										2			2
Primulaceae																	
Ranunculaceae																	
Ranunculus sp.								2								2	
cf *Raphanus* sp.																	
Rosaceae - thorn																	
Rosaceae																	
Rosaceae - flower												1					
Rumex sp. - tubercle																	
Rumex sp.																	
Rumex sp. - perianth																	
Sambucus sp.		2	1			2						15					
Satureja sp.																	
Scabiosa sp.											1						
cf *Scandix* sp.																	
Scrophulariaceae																	
Silene alba/dioica																	
Silene sp.									1	1	1						
Sinapis sp.																	
Solanaceae																	
Solanum sp.																	
Sonchus sp.																	
Stachys sp.											1						
Stachys/Lamium							2	2								1	
Stellaria graminea/palustris										1							
Stellaria sp.																	
Teucrium sp.																	
Tilia sp. - fruit																	
Torilis sp.																	
Veronica sp.																	
Vicia sp.																	
Viola sp. - capsule																	
Viola sp.											1					2	1
Indeterminata - rhizome																3	
Indeterminata - fruitstem								2									
Indeterminata - endocarp																	
Indeterminata																3	
CHARRED																	
CEREALS _ grain																	
Avena sp.																	
Hordeum vulgare									1			15					

Chronology														Horizon 1			
Context														Layer			
Structure	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**	**73**	**140**	**140**	**50**	**50**	**50**	**50**
US	01	02	02C	02D	03C	04	01	02 2	02 01	01	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B
Sample N°	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**
Volume	8000	4000	7000	5000	4000	7000	16000	8000	6000	10000	9000	16000	500	6000	6000	7000	9000
Hordeum sp.																	
Secale cereale																	
Triticum aestivum								3									
Triticum aestivum/durum/turgidum																	
Triticum dicoccon																	
Triticum cf *dicoccon*																	
Triticum spelta																	
Triticum sp.							2										
Cerealia ohne Hirsen								2									
Panicum miliaceum								1									
Setaria italica												15					
Panicum/Setaria																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
Hordeum sp. - rachis	1																
Secale cereale - rachis																	
Triticum aestivum - rachis																	
Triticum dicoccon - spikelet fork																	
Triticum dicoccon - glume		1															
Triticum monococcum - spikelet fork																	
Triticum monococcum - glume																	
Triticum spelta - spikelet fork																	
Triticum spelta - glume base																	
Triticum spelta - glume									1								
Triticum sp. - spikelet fork																	
Triticum sp. - glume																	
Cerealia																	
NUTS																	
Corylus avellana												1					
Juglans regia																	
Pinus pinea																	
PULSES																	
cf *Lathyrus* sp.																	
Lens culinaris																	
Pisum sativum																	
Vicia faba																	
Vicia/Lathyrus																	
Fabaceae					1												
SPICES																	
Apium graveolens																	
Satureja hortensis																	
VEGETABLES AND SALADS																	
Allium sativum																	
Atriplex sp.																	
Brassica sp.																	
FRUITS																	
Ficus carica - fruitflesh																	
Phoenix dactylifera																	
Prunus domestica/insititia																	
Prunus persica																	
Sambucus nigra/racemosa																	
Vitis vinifera																	
OIL AND FIBRE PLANTS																	
WEEDS OF WINTER CEREALS																	
Galium aparine												15					
Veronica hederifolia																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Avena fatua																	
Caucalis platycarpos																	
Galium spurium																	

Chronology															Horizon 1			
Context															Layer			
Structure	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**	**73**	**140**	**140**		**50**	**50**	**50**	**50**
US	01	02	02C	02D	03C	04	01	02 2	02 01	01	01 coupe n-s	02	02		01 4III	01 4IV	02 A	02B
Sample N°	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**	**BK14159**	**BK25018**	**BK25031**		**BK14130**	**BK14131**	**BK14112**	**BK14113**
Volume	8000	4000	7000	5000	4000	7000	16000	8000	6000	10000	9000	16000	500		6000	6000	7000	9000
Glaucium corniculatum																		
Myagrum perfoliatum																		
Vicia cf *angustifolia*																		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Chenopodium album																		
Chenopodium polyspermum																		
Galeospis ladanum/segetum																		
cf *Solanum nigrum*																		
Thlaspi arvense																		
PERENNIAL RUDERALS																		
Cruciata laevipes																		
Rumex obtusifolius																		
Silene alba																		
MEADOWS AND PASTURES																		
Centaurea sp.																		
Festuca/Lolium																		
Galium boreale																		
Plantago lanceolata																		
Plantago media																		
Trifolium sp.																		
Aquatic plants																		
Sparganium sp.																		
Reed fields																		
cf *Alisma plantago-aquatica*																		
Carex sp. tricarpellate																		
Galium cf *palustre*																		
Riverbank plants (pioneer)																		
Teucrium scordium																		
Forests, forest edges and clearings, hedges																		
Abies alba - needle																		
Galium verum																		
cf *Humulus lupulus*																		
VARIA																		
Asperula sp.																		
Bromus sp.																		
Chenopodiaceae																		
Chenopodium sp.																		
Galium sp.					3													
Poaceae				1						1								
Rumex sp.																		
Sambucus sp.																		
Vicia sp.																		
Indeterminata - amorphous object												617						
Indeterminata - crusts																		
Indeterminata - seed/fruit																		
MINERALISED																		
CEREALS _ grain																		
Avena sp.																		
Hordeum vulgare																		
Triticum spelta																		
Triticum sp.																		
Panicum miliaceum	2	2	1		1	1												
Setaria italica																		
Panicum/Setaria																		
Cerealia ohne Hirsen	1																	
CEREALS _ chaff																		
Hordeum vulgare - rachis																		
Triticum spelta - spikelet fork																		
Cerealia - ear																		

Chronology															Horizon 1			
Context															**Layer**			
Structure	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**	**73**	**140**	**140**		**50**	**50**	**50**	**50**
US	01	02	02C	02D	03C	04	01	02 2	02 01	01	01 coupe n-s	02	02		01 4III	01 4IV	02 A	02B
Sample N°	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**	**BK14159**	**BK25018**	**BK25031**		**BK14130**	**BK14131**	**BK14112**	**BK14113**
Volume	8000	4000	7000	5000	4000	7000	16000	8000	6000	10000	9000	16000	500		6000	6000	7000	9000
Cerealia - glume																		
Panicum miliaceum - glume																		
Setaria italica - glume																		
Panicum/Setaria - glume																		
PULSES																		
Lens culinaris	1		2			2						4						
Pisum sativum																		
Vicia faba												1						
Fabaceae - fruitflesh			1	1														
Fabaceae												2						
FRUITS																		
Cucumis melo																		
Cucumis melo/sativa								2										
Ficus carica								2				195						
Fragaria vesca																		
Malus domestica																		
Malus sylvestris/domestica								2										
Pyrus sp.																		
Malus/Pyrus	2	2			1													
Morus sp.																		
Physalis alkekengi												30						
Prunus sp. - fragment												4						
Rubus caesius																		
Rubus sp. - inner																		
Sambucus nigra/racemosa																		
Vitis vinifera - fruitflesh								3										
Vitis vinifera - aborted seed																		
Vitis vinifera				2								1230						
SPICES																		
Anethum graveolens																		
Apium graveolens																		
Carum carvi																		
Coriandrum sativum		1			1													
Foeniculum vulgare																		
Nigella cf *sativa*																		
VEGETABLES AND SALADS																		
Atriplex sp.																		
Beta vulgaris	1																	
Brassica sp.																		
Daucus carota																		
Lagenaria siceraria																		
OIL AND FIBRE PLANTS																		
Linum usitatissimum																		
Papaver somniferum																		
WEEDS OF WINTER CEREALS																		
Agrostemma githago		1	1															
Buglossoides arvensis																		
Fallopia convolvulus																		
Galium aparine																		
cf *Veronica hederifolia*																		
Order Aperetalia_weeds of rather acidic/neutral soils																		
Camelina sativa																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Caucalis platycarpos																		
Galium spurium																		
Vaccaria pyramidata																		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Galeopsis cf *speciosa*																		
Polygonum lapathifolium/persicaria																		
Solanum nigrum																		

Chronology														Horizon 1			
Context														Layer			
Structure	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**	**73**	**140**	**140**	**50**	**50**	**50**	**50**
US	01	02	02C	02D	03C	04	01	02 2	02 01	01	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B
Sample N°	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**
Volume	8000	4000	7000	5000	4000	7000	16000	8000	6000	10000	9000	16000	500	6000	6000	7000	9000
Sonchus oleraceus																	
Stellaria media																	
Thlaspi arvense																	
PERENNIAL RUDERALS																	
Arctium sp.																	
Convolvulus arvensis																	
Hyoscyamus niger							2										
Lapsana communis																	
MEADOWS AND PASTURES																	
Centaurea sp.																	
Rhinanthus sp.																	
Scabiosa sp.																	
Reed fields																	
Carex sp. tricarpellat																	
Galium palustre																	
Forests, forest edges and clearings, hedges																	
Rosa sp.	1																
cf *Seseli libanotis*																	
VARIA																	
Apiaceae												15					
Asteraceae																	
Brassicaceae																	
Bromus sp.																	
Cannabinaceae																	
Chenopodium sp.																	
Galium sp.																	
Lamiaceae																	
Lolium sp.																	
Papaver sp.																	
Poa sp.																	
Poaceae			1														
Potentilla sp.																	
Rumex sp.																	
Indeterminata - endocarp																	
Indeterminata - fruitflesh																	
Indeterminata - coprolithes																	
Indeterminata - crusts																	
Indeterminata - seed/fruit							2										

Civil East																		
Chronology																		
Context																		
Structure	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**Tranchée4**	**71**	**71**	**72**	**72**	**72**	**72**	**55**
US	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	02 V	A	B	P26	35	37	07	08	08	08	02 A
Sample N°	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**	**BK14180**	**BK24016**
Volume	5000	5000	5000	7000	6000	5500	8000	8000	5000	3000	6000	2000	5000	9000	8000	8000	8000	10000
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS		RS	RS	RS	RS	RS	RS	FU
Field	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04
WATERLOGGED																		
CEREALS _ grain																		
Avena sativa/fatua																		
Cerealia - Testa																		
Panicum miliaceum																		
Setaria italica																		
Panicum/Setaria																		
CEREALS _ chaff																		
Hordeum vulgare - rachis																		
Hordeum sp. - rachis													2					
Secale cereale - rachis																		
Triticum aestivum - rachis																		
Triticum cf aestivum/durum/turgidum - rachis																		
Triticum dicoccon - glume base									2				3					
Triticum dicoccon - spikelet fork																		
Triticum dicoccon - glume														1				
Triticum cf *dicoccon* - glume																		100
Triticum dicoccon/spelta - glume																		
Triticum monococcum - glume base																		
Triticum monococcum - spikelet fork																		
Triticum monococcum - glume																		
Triticum cf *monococcum* - spikelet fork																		
Triticum cf *monococcum* - glume																		
Triticum spelta - glume base										2		2	3					
Triticum spelta - spikelet fork											1							
Triticum spelta - glume														1			1	100
Triticum sp. - spikelet fork																		
Triticum sp. - glume														3				
Cerealia - rachis																		
Cerealia ohne Hirsen - glume																		
Panicum miliaceum - glume													2					50
Setaria italica - glume																		
Panicum/Setaria - glume																		
NUTS																		
Corylus avellana														2				1
Juglans regia																		1
Pinus pinea																		
PULSES																		
Lens culinaris																		
Pisum sativum																		
Pisum cf *sativum*																		
Vicia faba																		
Fabaceae																		50
SPICES																		
Anethum graveolens										2						2		50
Apium graveolens										2								
Carum carvi																		
Coriandrum sativum	1					1								1	2	2		51
Foeniculum vulgare																		
Origanum vulgare																		
cf *Petroselinum crispum*																		
Pimpinella anisum																		
cf *Piper nigrum*																		
Piper nigrum																		
cf *Ruta graveolens*																		
Satureja hortensis																		
cf *Thymus* sp. - stem																		
VEGETABLES AND SALADS																		
Amaranthus sp.									2								2	50
Atriplex sp. - perianth																		

Chronology																		
Context																		
Structure	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**Tranchée4**	**71**	**71**	**72**	**72**	**72**	**72**	**55**
US	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	02 V	A	B	P26	35	37	07	08	08	08	02 A
Sample N°	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**	**BK14180**	**BK24016**
Volume	5000	5000	5000	7000	6000	5500	8000	8000	5000	3000	6000	2000	5000	9000	8000	8000	8000	10000
Atriplex sp.																		100
Beta vulgaris		2															1	
Brassica cf *oleracea*									2				2			2		
Brassica rapa/nigra																		
Brassica sp.																		
Brassica/Sinapis																		
Daucus carota	1																	
Lagenaria siceraria																		
Pastinaca sativa																		
Portulaca oleracea																		
FRUITS																		
Cucumis melo																		
Cucumis sativus																		
Cucumis melo/sativa																		
Ficus carica		1						1										50
Fragaria vesca																		50
Malus domestica																		
Malus sylvestris/domestica																		
Malus/Pyrus - stem																		
Malus/Pyrus - fragment																		
Malus/Pyrus - seed base																		
Malus/Pyrus - pericarp																		1
Malus/Pyrus																		2650
Pyrus sp.																		
Pyrus sp. - stone cells																		1
Pyrus sp. - flower																		
Morus sp.																		
Olea europaea																		1
Physalis alkekengi														1				
Prunus cf *avium*																		
Prunus avium/cerasus																		
Prunus cf *domestica*																		
Prunus domestica																		
Prunus domestica/insititia																		
Prunus insititia																		
Prunus persica		1																
Prunus cf *spinosa*																		
Prunus spinosa																		
Prunus sp.																		
Rubus caesius																		
Rubus cf *fruticosus*																		
Rubus fruticosus																		
Rubus idaeus																		
Rubus sp.																		
Sambucus nigra/racemosa		2							2									
Vitis vinifera - aborted seed																		
Vitis vinifera		1																8
OIL, DYE AND FIBRE PLANTS																		
Cannabis sativa																		
Carthamus tinctorius																		
cf *Isatis tinctoria*																		
Linum usitatissimum																		
Papaver cf *somniferum*																		
Papaver somniferum																		
WEEDS OF WINTER CEREALS																		
Adonis sp.	1																	
Agrostemma githago	1								2	2			3	1	2			600
Anthemis arvensis	1												2					
Bromus arvensis Type																		
Buglossoides arvensis																		
Fallopia convolvulus									2				2					50
Galium aparine													2					
Silene gallica																		

Chronology																		
Context																		
Structure	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**Tranchée4**	**71**	**71**	**72**	**72**	**72**	**72**	**55**
US	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	02 V	A	B	P26	35	37	07	08	08	08	02 A
Sample N°	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**	**BK14180**	**BK24016**
Volume	5000	5000	5000	7000	6000	5500	8000	8000	5000	3000	6000	2000	5000	9000	8000	8000	8000	10000
Stachys annua/arvensis																		
Valerianella locusta																		
Valerianella rimosa																		
Veronica hederifolia																		
Viola tricolor																		
Order Aperetalia_weeds of rather acidic/neutral soils																		
Aphanes arvensis																		
Aphanes sp																		
cf *Bromus secalinus*													2					
Camelina sativa - pod																		
Camelina sativa																		
Camelina cf *sativa*																		
Centaurea cf *cyanus*																		
Centaurea cyanus										2			2					
Papaver argemone																		
Papaver dubium																		
Raphanus raphanistrum																		50
Scleranthus sp. - capsule																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Ajuga cf *chamaepitys*																		
Ajuga chamaepitys			1	2				2										
Bupleurum rotundifolium																		
Caucalis platycarpos																		50
Euphorbia exigua																		
Galium spurium																		
Glaucium corniculatum																		
Myagrum perfoliatum		2											2					
Myosoton aquaticum																		
Nigella arvensis																		
Orlaya grandiflora												2	2					
Ranunculus arvensis																		
Scandix pecten-veneris																		
Silene cf *dichotoma*																		
Stachys annua		1		1	1			3						2				
Thymelaea passerina																		
Torilis arvensis																		
Vaccaria pyramidata																		
Valerianella dentata	1			1									2					
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Aethusa cynapium																		
Anagallis arvensis/foemina		1																
Arenaria serpyllifolia																		
Atriplex/Chenopodium									2	2	1		2					
Capsella bursa-pastoris																		
Chenopodium album	2	3	2	1	1									1			2	100
Chenopodium ficifolium																		
Chenopodium cf *ficifolium*																		
Chenopodium foliosum																		
Chenopodium hybridum	2	1		3									2					
Chenopodium murale																		
Chenopodium polyspermum																		
Echinochloa crus-galli																		
Euphorbia helioscopia																		
Euphorbia platyphyllos																		
Fumaria officinalis																		
Fumaria sp.														1				
Galeopsis bifida																		
Galeopsis ladanum																		
Galeopsis sp.														1				
Galeopsis cf *speciosa*																		

Chronology																		
Context																		
Structure	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**Tranchée4**	**71**	**71**	**72**	**72**	**72**	**72**	**55**
US	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	02 V	A	B	P26	35	37	07	08	08	08	02 A
Sample N°	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**	**BK14180**	**BK24016**
Volume	5000	5000	5000	7000	6000	5500	8000	8000	5000	3000	6000	2000	5000	9000	8000	8000	8000	10000
Galeopsis tetrahit																		
Galeospis ladanum/segetum																		
cf *Heliotropium europaeum*																		
Heliotropium sp.																		
Lamium amplexicaule/purpureum																		
Lamium cf *purpureum*																		
Malva sylvestris																		
Mercurialis annua																		
Poa annua																		
Polygonum lapathifolium/persicaria	1	1				2				2				2		2	2	50
Polygonum persicaria																		
Portulaca sp.																		
Setaria verticillata/viridis																		
Solanum nigrum	2	2				2											1	
Sonchus asper																		
Sonchus asper/oleraceus									2	2			2					
Sonchus oleraceus																		
Stachys cf *arvensis*																		
Stellaria media	3	3							1	1	2			3		2	3	200
Thlaspi arvense									2				2	2				50
Urtica urens																		
Verbena officinalis	1																	
Xanthium strumarium																		
PERENNIAL RUDERALS																		
Agropyron repens																		
Arctium lappa																		
Arctium minus																		
Arctium sp.								1										
Bryonia dioica																		
Carduus crispus																		
Cerastium arvense																		
Chelidonium majus												2						
cf *Chondrilla juncea*																		
Cirsium sp.									2							2		
Cirsium/Carduus								1										
Conium maculatum																		
Convolvulus arvensis																		
Cruciata laevipes																		
Dipsacus cf *fullonum*																		
Fallopia dumetorum																		
Hyoscyamus niger	1	1																
Lactuca serriola																		
Lamium cf *album*																		
Lamium album																		
Lapsana communis																		
cf *Marrubium vulgare*																		
Onopordum acanthium		1																
Plantago major													2					
Poa compressa																		
Polygonum cf *aviculare*																		
Polygonum aviculare	2	1			1									1			1	
Potentilla anserina																		
Ranunculus repens	3	1						3						2			2	
Reseda sp.																		
Rumex conglomeratus - perianth																		
Rumex conglomeratus - tubercle																		
Rumex cf *conglomeratus* - perianth																		
Rumex cf *crispus*																		
Rumex crispus - perianth																		
Rumex crispus - tubercle																		
Rumex obtusifolius - perianth																		
Rumex obtusifolius	2	2										3		1				100
Sambucus cf *ebulus*																		

Chronology																		
Context																		
Structure	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**Tranchée4**	**71**	**71**	**72**	**72**	**72**	**72**	**55**
US	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	02 V	A	B	P26	35	37	07	08	08	08	02 A
Sample N°	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**	**BK14180**	**BK24016**
Volume	5000	5000	5000	7000	6000	5500	8000	8000	5000	3000	6000	2000	5000	9000	8000	8000	8000	10000
Sambucus ebulus	2	1		1														
Saponaria officinalis																		
Saponaria cf *officinalis*																		
Silene alba																		
Urtica dioica																		
MEADOWS AND PASTURES																		
Achillea millefolium																		
Agrostis sp.																		
Ajuga cf *reptans*																		
Ajuga reptans	1		2	2				1						2				
Anthriscus sp.																		
Bromus cf *commutatus*																		
Bromus hordeaceus																		
Centaurea cf *jacea*																		
Centaurea sp.	1																1	
Cichorium intybus																		
Cirsium/Centaurea																		
cf *Cynosurus* sp.																		
Dactylis glomerata																		
Deschampsia caespitosa																		
Dianthus cf *armeria*																		
Festuca rubra/ovina																		
Festuca/Lolium																		
Holcus lanatus																		
Leontodon autumnalis																		
Leontodon sp.																		
Leucanthemum vulgare																		
Lolium perenne																		
Nardus stricta																		
Plantago lanceolata		1																
Plantago media																		
Poa pratensis																		
Poa pratensis Type																		
Poa pratensis/trivialis													2					
Potentilla cf *erecta*																		
Potentilla erecta																		
Prunella cf *vulgaris*										2		2	2					
Prunella vulgaris	1																	50
Ranunculus cf *acris*																		
Ranunculus acris																		
Rhinanthus sp.																		
Rumex acetosa - perianth																		
Rumex acetosella																		
Silene vulgaris																		
Taraxacum officinale																		
Thalictrum flavum																		
Trifolium pratense - pod with seeds																		
Trifolium pratense - capsule																		
Trifolium sp. - chalice													2					
Open swards																		
Acinos arvensis																		
Ajuga genevensis																		
Artemisia campestris																		
Centaurea scabiosa																		
Dianthus sp.																		
Euphorbia cf *seguieriana*			1	1	1			2										
Euphrasia/Odontites																		
Gentiana cruciata																		
Medicago lupulina - pod with seed																		
Medicago lupulina - pod																		
Medicago minima - pod				1														
Odontites sp.																		
cf *Petrorhagia prolifera*																		

Chronology																		
Context																		
Structure	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**Tranchée4**	**71**	**71**	**72**	**72**	**72**	**72**	**55**
US	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	02 V	A	B	P26	35	37	07	08	08	08	02 A
Sample N°	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**	**BK14180**	**BK24016**
Volume	5000	5000	5000	7000	6000	5500	8000	8000	5000	3000	6000	2000	5000	9000	8000	8000	8000	10000
Prunella grandiflora																		
Scabiosa columbaria																		
Stachys cf *recta*																		
Stachys recta																		
Teucrium botrys																		
Teucrium cf *chamaedrys*																		
Teucrium montanum																		
Trifolium cf *campestre* - chalice																		
Aquatic plants																		
Ceratophyllum cf *submersum*																		
Lemna sp.																		
Polygonum cf *amphibium*																		
Potamogeton sp.	1																	
Ranunculus aquatilis																		
Sparganium sp.																		
Zannichellia palustris																		
Reed fields																		
Alisma plantago-aquatica																		50
Carex sp.																		
Carex sp. - utriculus	1																	
Carex sp. bicarpellate	1									2		3	3					
Carex sp. tricarpellate	3	3	3	3	1			1				2	3	3			2	50
Cicuta virosa																		
Eleocharis palustris	2								2	2		3	3	1				
Eupatorium cannabinum																		
Galium cf *palustre*																		
Galium palustre																		50
Glyceria sp.																		
Hippuris vulgaris						3	1											
Iris pseudacorus																		
Juncus sp.																		
Lycopus europaeus	1																	
Mentha arvensis/aquatica																		
Nasturtium officinale																		
Oenanthe fistulosa	2	1																50
Oenanthe sp.									2									
Poa palustris																		
Rorippa amphibia																		
Rumex cf *aquaticus/hydrolapatum*																		50
Salix sp. - veg. part																		
Schoenoplectus lacustris																		
Schoenoplectus sp.														1				
Riverbank plants (pioneer)																		
Alnus glutinosa - veg. part																		
Alnus sp. - veg. Part	1																	
Bidens sp.																		
Bidens tripartita																		
Cyperus flavescens																		
Cyperus fuscus																		
cf *Myosoton aquaticum*																		
Polygonum cf *hydropiper*																		
Polygonum hydropiper	2					3				3	1			2			1	
Polygonum hydropiper/mite			1		2													656
Polygonum lapathifolium			1															
Polygonum minus																		50
Polygonum mite																		
Polygonum mite/minus						2												
Ranunculus cf *flammula*																		
Ranunculus flammula																		
Ranunculus sardous		1																
Ranunculus sceleratus																		
Teucrium cf *scordium*						3	2											
Wet meadows																		

Chronology																		
Context																		
Structure	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**Tranchée4**	**71**	**71**	**72**	**72**	**72**	**72**	**55**
US	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	02 V	A	B	P26	35	37	07	08	08	08	02 A
Sample N°	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**	**BK14180**	**BK24016**
Volume	5000	5000	5000	7000	6000	5500	8000	8000	5000	3000	6000	2000	5000	9000	8000	8000	8000	10000
cf *Euphorbia palustris*						2												
Filipendula ulmaria																		
Linum catharticum																		
Lychnis flos-cuculi																		
Scirpus sylvaticus																		
Stachys officinalis																		
Forests, forest edges and clearings, hedges																		
Abies alba - needle								1										
Acer sp. - veg. part																		
Agrimonia eupatoria																		
Arctium cf *nemorosum*																		
Betula pendula - veg. part																		
Cornus sanguinea																		
Crataegus sp.																		
cf *Humulus lupulus*																		
Quercus sp. - veg. part																		
Rosa sp.																		50
Solanum dulcamara																		
Solanum cf *dulcamara*	1	1																
Stellaria cf *nemorum*																		
Torilis cf *japonica*																		
Valeriana cf *tripteris*																		
Viburnum lantana																		
Viburnum opulus																		
Calamintha sylvatica																		
Galium verum																		
Hypericum perforatum																		
Saponaria cf *ocymoides*																		
Silene cf *nutans*																		
Silene nutans																		
Thalictrum minus																		
VARIA																		
Ajuga sp.																		
Allium sp.					1									1				100
Apiaceae - fragments																		
Asteraceae			1	1	1								2					50
Boraginaceae																		
Brassicaceae																		
Bromus sp.																		
Campanula sp.																		
Cannabinaceae																		
Carduus sp.																		
Caryophyllaceae																		
Cerastium sp.																		
Chenopodiaceae																		
Chenopodiaceae/Amaranthaceae																		50
Chenopodium sp.																		
Cichorium sp.																		50
Crepis sp.																		
Cuscuta sp.																		
Cyperaceae							2											
Epilobium sp.																		
Euphorbia sp.			1	1	1			2						1				
Euphorbia sp. - fruit																		
Euphorbia sp. - capsule																		
Fallopia sp.																		
Filipendula sp.																		50
Galium sp.																		
Hypericum sp.																		
Inula sp.																		

Chronology																		
Context																		
Structure	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**Tranchée4**	**71**	**71**	**72**	**72**	**72**	**72**	**55**
US	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	02 V	A	B	P26	35	37	07	08	08	08	02 A
Sample N°	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**	**BK14180**	**BK24016**
Volume	5000	5000	5000	7000	6000	5500	8000	8000	5000	3000	6000	2000	5000	9000	8000	8000	8000	10000
Lamiaceae												2	2					50
Lamium sp.																		
Liliaceae																		
Malva sp.																		
cf *Matricaria* sp.																		
Mentha sp.																		
Nasturtium sp.																		
Papaver sp.																		
Physalis sp.																		
Physalis/Solanum																		100
Phyteuma sp.																		
Plantago sp. - chalice+A54																		
Plantago sp.																		
Poa sp.																		
Poaceae													1					
Poaceae										2								
Polygonaceae																		
Polygonum sp.																		
Polygonum sp.		1																50
Potentilla sp.			1														1	
Primulaceae																		
Ranunculaceae																		
Ranunculus sp.						2	2			2		2						
cf *Raphanus* sp.																		
Rosaceae - thorn																		
Rosaceae																		
Rosaceae - flower																		
Rumex sp. - tubercle																		
Rumex sp.																		
Rumex sp. - perianth									1				3					100
Sambucus sp.			1														1	
Satureja sp.																		
Scabiosa sp.	1	1															1	100
cf *Scandix* sp.																		
Scrophulariaceae																		
Silene alba/dioica																		
Silene sp.																		
Sinapis sp.																		
Solanaceae																		
Solanum sp.																		
Sonchus sp.																		
Stachys sp.			1															
Stachys/Lamium						2	2		2									
Stellaria graminea/palustris											1							
Stellaria sp.																		
Teucrium sp.																		
Tilia sp. - fruit																		
Torilis sp.																		
Veronica sp.																		
Vicia sp.																		
Viola sp. - capsule																		
Viola sp.		1	1			2	2	2						2				
Indeterminata - rhizome						3	3											
Indeterminata - fruitstem																		
Indeterminata - endocarp																		
Indeterminata						3							2					
CHARRED																		
CEREALS _ grain																		
Avena sp.																		
Hordeum vulgare																		

Chronology																		
Context																		
Structure	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**Tranchée4**	**71**	**71**	**72**	**72**	**72**	**72**	**55**
US	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	02 V	A	B	P26	35	37	07	08	08	08	02 A
Sample N°	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**	**BK14180**	**BK24016**
Volume	5000	5000	5000	7000	6000	5500	8000	8000	5000	3000	6000	2000	5000	9000	8000	8000	8000	10000
Hordeum sp.													2					
Secale cereale																		
Triticum aestivum																		
Triticum aestivum/durum/turgidum																		
Triticum dicoccon																		
Triticum cf *dicoccon*																		
Triticum spelta																		
Triticum sp.		1																
Cerealia ohne Hirsen																		
Panicum miliaceum										2								
Setaria italica																		
Panicum/Setaria																		
CEREALS _ chaff																		
Hordeum vulgare - rachis																		
Hordeum sp. - rachis																		
Secale cereale - rachis																		
Triticum aestivum - rachis																		
Triticum dicoccon - spikelet fork																		
Triticum dicoccon - glume																		
Triticum monococcum - spikelet fork																		
Triticum monococcum - glume																		
Triticum spelta - spikelet fork																		
Triticum spelta - glume base																		
Triticum spelta - glume																		
Triticum sp. - spikelet fork																		
Triticum sp. - glume																		
Cerealia																		
NUTS																		
Corylus avellana																		
Juglans regia																		
Pinus pinea																		
PULSES																		
cf *Lathyrus* sp.																		
Lens culinaris																		
Pisum sativum																		
Vicia faba																		
Vicia/Lathyrus																		
Fabaceae																		
SPICES																		
Apium graveolens																		
Satureja hortensis																		
VEGETABLES AND SALADS																		
Allium sativum																		
Atriplex sp.																		
Brassica sp.																		
FRUITS																		
Ficus carica - fruitflesh																		
Phoenix dactylifera																		
Prunus domestica/insititia																		
Prunus persica																		
Sambucus nigra/racemosa																		
Vitis vinifera																		
OIL AND FIBRE PLANTS																		
WEEDS OF WINTER CEREALS																		
Galium aparine																		
Veronica hederifolia																		
Order Aperetalia_weeds of rather acidic/neutral soils																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Avena fatua																		
Caucalis platycarpos																		
Galium spurium		1																

Chronology																		
Context																		
Structure	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**Tranchée4**	**71**	**71**	**72**	**72**	**72**	**72**	**55**
US	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	02 V	A	B	P26	35	37	07	08	08	08	02 A
Sample N°	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**	**BK14180**	**BK24016**
Volume	5000	5000	5000	7000	6000	5500	8000	8000	5000	3000	6000	2000	5000	9000	8000	8000	8000	10000
Glaucium corniculatum																		
Myagrum perfoliatum																		
Vicia cf *angustifolia*													2					
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Chenopodium album																		
Chenopodium polyspermum																		
Galeospis ladanum/segetum																		
cf *Solanum nigrum*																		
Thlaspi arvense																		
PERENNIAL RUDERALS																		
Cruciata laevipes																		
Rumex obtusifolius																		
Silene alba																		
MEADOWS AND PASTURES																		
Centaurea sp.														1				
Festuca/Lolium																		
Galium boreale																		
Plantago lanceolata																		
Plantago media																		
Trifolium sp.																		
Aquatic plants																		
Sparganium sp.																		
Reed fields																		
cf *Alisma plantago-aquatica*																		
Carex sp. tricarpellate																		
Galium cf *palustre*																		
Riverbank plants (pioneer)																		
Teucrium scordium																		
Forests, forest edges and clearings, hedges																		
Abies alba - needle																		
Galium verum																		
cf *Humulus lupulus*																		
VARIA																		
Asperula sp.																		
Bromus sp.																		
Chenopodiaceae																		
Chenopodium sp.																		
Galium sp.																		
Poaceae																		
Rumex sp.																		
Sambucus sp.																		
Vicia sp.																		
Indeterminata - amorphous object																		
Indeterminata - crusts																		
Indeterminata - seed/fruit																		
MINERALISED																		
CEREALS _ grain																		
Avena sp.																		
Hordeum vulgare																		
Triticum spelta																		
Triticum sp.																		
Panicum miliaceum																		
Setaria italica																		
Panicum/Setaria																		
Cerealia ohne Hirsen																		
CEREALS _ chaff																		
Hordeum vulgare - rachis																		
Triticum spelta - spikelet fork																		
Cerealia - ear																		

Chronology																		
Context																		
Structure	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**Tranchée4**	**71**	**71**	**72**	**72**	**72**	**72**	**55**
US	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	02 V	A	B	P26	35	37	07	08	08	08	02 A
Sample N°	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**	**BK14180**	**BK24016**
Volume	5000	5000	5000	7000	6000	5500	8000	8000	5000	3000	6000	2000	5000	9000	8000	8000	8000	10000
Cerealia - glume																		
Panicum miliaceum - glume																		
Setaria italica - glume																		
Panicum/Setaria - glume																		
PULSES																		
Lens culinaris																		
Pisum sativum																		
Vicia faba																		
Fabaceae - fruitflesh																		
Fabaceae																		
FRUITS																		
Cucumis melo																		
Cucumis melo/sativa																		
Ficus carica																		
Fragaria vesca																		
Malus domestica																		
Malus sylvestris/domestica																		
Pyrus sp.																		
Malus/Pyrus																		
Morus sp.																		
Physalis alkekengi																		
Prunus sp. - fragment																		
Rubus caesius																		
Rubus sp. - inner																		
Sambucus nigra/racemosa																		
Vitis vinifera - fruitflesh																		
Vitis vinifera - aborted seed																		
Vitis vinifera																		
SPICES																		
Anethum graveolens																		
Apium graveolens																		
Carum carvi																		
Coriandrum sativum																		
Foeniculum vulgare																		
Nigella cf *sativa*																		
VEGETABLES AND SALADS																		
Atriplex sp.																		
Beta vulgaris																		
Brassica sp.																		
Daucus carota																		
Lagenaria siceraria																		
OIL AND FIBRE PLANTS																		
Linum usitatissimum																		
Papaver somniferum																		
WEEDS OF WINTER CEREALS																		
Agrostemma githago																		
Buglossoides arvensis																		
Fallopia convolvulus																		
Galium aparine																		
cf *Veronica hederifolia*																		
Order Aperetalia_weeds of rather acidic/neutral soils																		
Camelina sativa																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Caucalis platycarpos																		
Galium spurium																		
Vaccaria pyramidata																		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Galeopsis cf *speciosa*																		
Polygonum lapathifolium/persicaria																		
Solanum nigrum																		

Chronology																		
Context																		
Structure	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**Tranchée4**	**71**	**71**	**72**	**72**	**72**	**72**	**55**
US	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	02 V	A	B	P26	35	37	07	08	08	08	02 A
Sample N°	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**	**BK14180**	**BK24016**
Volume	5000	5000	5000	7000	6000	5500	8000	8000	5000	3000	6000	2000	5000	9000	8000	8000	8000	10000
Sonchus oleraceus																		
Stellaria media																		
Thlaspi arvense																		
PERENNIAL RUDERALS																		
Arctium sp.																		
Convolvulus arvensis																		
Hyoscyamus niger																		
Lapsana communis																		
MEADOWS AND PASTURES																		
Centaurea sp.																		
Rhinanthus sp.																		
Scabiosa sp.																		
Reed fields																		
Carex sp. tricarpellat																		
Galium palustre																		
Forests, forest edges and clearings, hedges																		
Rosa sp.																		
cf *Seseli libanotis*																		
VARIA																		
Apiaceae									2	2								
Asteraceae																		
Brassicaceae																		
Bromus sp.																		
Cannabinaceae																		
Chenopodium sp.																		
Galium sp.																		
Lamiaceae																		
Lolium sp.																		
Papaver sp.																		
Poa sp.																		
Poaceae																		
Potentilla sp.																		
Rumex sp.																		
Indeterminata - endocarp																		
Indeterminata - fruitflesh																		
Indeterminata - coprolithes													2					
Indeterminata - crusts																		
Indeterminata - seed/fruit																		

Civil East																
Chronology																
Context																
Structure	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**
US	02A	02 B	02 B	02 D	02 D	03	03B	03 C	05 A	05 A	05 A	05C	01 A	01B	01 B	01 B
Sample N°	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24040**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**
Volume	14000	10000	13000	10000	10000	10000	9000	7000	7000	7000	7000	7000	11000	11000	6000	7000
Analysis	FU	FU	FU	FU	FU	FU	FU	FU	FU	FU	FU	RS	FU	RS	FU	FU
Field	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04
WATERLOGGED																
CEREALS _ grain																
Avena sativa/fatua																
Cerealia - Testa			70			23										
Panicum miliaceum																
Setaria italica																
Panicum/Setaria			70													
CEREALS _ chaff																
Hordeum vulgare - rachis																
Hordeum sp. - rachis								70	50			2	45			
Secale cereale - rachis																
Triticum aestivum - rachis																
Triticum cf aestivum/durum/turgidum - rachis																
Triticum dicoccon - glume base																
Triticum dicoccon - spikelet fork																
Triticum dicoccon - glume		240				180		35	75			2				
Triticum cf *dicoccon* - glume															10	
Triticum dicoccon/spelta - glume		7520	70						100							
Triticum monococcum - glume base																
Triticum monococcum - spikelet fork																
Triticum monococcum - glume						158			100				90			
Triticum cf *monococcum* - spikelet fork																
Triticum cf *monococcum* - glume																
Triticum spelta - glume base																
Triticum spelta - spikelet fork																
Triticum spelta - glume		1800	70	80		743		70	300	60		3			15	
Triticum sp. - spikelet fork																
Triticum sp. - glume				48			1	35		50		3				
Cerealia - rachis																
Cerealia ohne Hirsen - glume		40				1350										
Panicum miliaceum - glume	1			16	5	68	3	35	350	165	8	3	45			
Setaria italica - glume												1				
Panicum/Setaria - glume											8					
NUTS																
Corylus avellana	1	41	1				1	1	1				46	2		
Juglans regia			1			1	2						1	2		
Pinus pinea																
PULSES																
Lens culinaris																
Pisum sativum										15						
Pisum cf *sativum*																
Vicia faba																
Fabaceae																
SPICES																
Anethum graveolens				16				35		20			90			
Apium graveolens	1			32	30			70	75	10						
Carum carvi																
Coriandrum sativum	1	40	211	112	5	68		210	200	110		2	225			
Foeniculum vulgare									25							
Origanum vulgare																
cf *Petroselinum crispum*																
Pimpinella anisum																
cf *Piper nigrum*																
Piper nigrum																
cf *Ruta graveolens*																
Satureja hortensis			420		5					5	15					
cf *Thymus* sp. - stem																
VEGETABLES AND SALADS																
Amaranthus sp.	2			48	25	90	2		100	15		2	181			
Atriplex sp. - perianth																

Chronology																
Context																
Structure	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**
US	02A	02 B	02 B	02 D	02 D	03	03B	03 C	05 A	05 A	05 A	05C	01 A	01B	01 B	01 B
Sample N°	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24040**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**
Volume	14000	10000	13000	10000	10000	10000	9000	7000	7000	7000	7000	7000	11000	11000	6000	7000
Atriplex sp.				64		23	1	35		35		1	90			
Beta vulgaris							1	35		5				3		
Brassica cf *oleracea*																
Brassica rapa/nigra																
Brassica sp.				16	5							1				
Brassica/Sinapis																
Daucus carota				32					25			2				
Lagenaria siceraria							1									
Pastinaca sativa				112		23										
Portulaca oleracea																
FRUITS																
Cucumis melo																
Cucumis sativus																
Cucumis melo/sativa																
Ficus carica			70						200	205			540	2		
Fragaria vesca					5					15						
Malus domestica																
Malus sylvestris/domestica																
Malus/Pyrus - stem																
Malus/Pyrus - fragment																
Malus/Pyrus - seed base																
Malus/Pyrus - pericarp						1			1							
Malus/Pyrus	1		9	16	5	23		1	143	145		1	90			
Pyrus sp.									1							
Pyrus sp. - stone cells		1	1						1							
Pyrus sp. - flower				16						16				1		
Morus sp.										5						
Olea europaea																
Physalis alkekengi					5											
Prunus cf *avium*																
Prunus avium/cerasus																
Prunus cf *domestica*																
Prunus domestica																
Prunus domestica/insititia																
Prunus insititia									1							
Prunus persica						1			25				2			
Prunus cf *spinosa*																
Prunus spinosa																
Prunus sp.													1			
Rubus caesius																
Rubus cf *fruticosus*																
Rubus fruticosus																
Rubus idaeus																
Rubus sp.																
Sambucus nigra/racemosa						23										5
Vitis vinifera - aborted seed																
Vitis vinifera		1	1	16				35						2		
OIL, DYE AND FIBRE PLANTS																
Cannabis sativa		40				23										
Carthamus tinctorius																
cf *Isatis tinctoria*																
Linum usitatissimum																
Papaver cf *somniferum*																
Papaver somniferum																
WEEDS OF WINTER CEREALS																
Adonis sp.		40														
Agrostemma githago		440	630	32	60	563		105	325	315		2	45			
Anthemis arvensis		40		32	10					30						
Bromus arvensis Type																
Buglossoides arvensis																
Fallopia convolvulus	1			32								1				
Galium aparine			70	48					25	5						
Silene gallica																

Chronology																
Context																
Structure	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**
US	02A	02 B	02 B	02 D	02 D	03	03B	03 C	05 A	05 A	05 A	05C	01 A	01B	01 B	01 B
Sample N°	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24040**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**
Volume	14000	10000	13000	10000	10000	10000	9000	7000	7000	7000	7000	7000	11000	11000	6000	7000
Stachys annua/arvensis																
Valerianella locusta																
Valerianella rimosa																
Veronica hederifolia																
Viola tricolor																
Order Aperetalia_weeds of rather acidic/neutral soils																
Aphanes arvensis																
Aphanes sp																
cf *Bromus secalinus*																
Camelina sativa - pod			1													
Camelina sativa																
Camelina cf *sativa*																
Centaurea cf *cyanus*																
Centaurea cyanus									25							
Papaver argemone					10											
Papaver dubium																
Raphanus raphanistrum																
Scleranthus sp. - capsule																
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																
Ajuga cf *chamaepitys*																
Ajuga chamaepitys				16												
Bupleurum rotundifolium																
Caucalis platycarpos		40				2		71							5	
Euphorbia exigua																
Galium spurium										10						
Glaucium corniculatum																
Myagrum perfoliatum						3		3				2		2		26
Myosoton aquaticum																
Nigella arvensis																
Orlaya grandiflora	2									20		1		1		
Ranunculus arvensis																
Scandix pecten-veneris								35								
Silene cf *dichotoma*																
Stachys annua				16			1			10		2				
Thymelaea passerina																
Torilis arvensis																
Vaccaria pyramidata			70		5											
Valerianella dentata																
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																
Aethusa cynapium																
Anagallis arvensis/foemina			70	32						15				2		
Arenaria serpyllifolia					5						15					
Atriplex/Chenopodium																
Capsella bursa-pastoris																
Chenopodium album	3	160	280	784	155	113	2	70	375	545	83	2	90	2		25
Chenopodium ficifolium					10											
Chenopodium cf *ficifolium*																
Chenopodium foliosum																
Chenopodium hybridum	1				5		1		25	10		1				
Chenopodium murale																
Chenopodium polyspermum																
Echinochloa crus-galli																
Euphorbia helioscopia														1		
Euphorbia platyphyllos																
Fumaria officinalis										5						
Fumaria sp.																
Galeopsis bifida							1									
Galeopsis ladanum				32												
Galeopsis sp.										10		2				
Galeopsis cf *speciosa*																

Chronology																
Context																
Structure	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**
US	02A	02 B	02 B	02 D	02 D	03	03B	03 C	05 A	05 A	05 A	05C	01 A	01B	01 B	01 B
Sample N°	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24040**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**
Volume	14000	10000	13000	10000	10000	10000	9000	7000	7000	7000	7000	7000	11000	11000	6000	7000
Galeopsis tetrahit																
Galeospis ladanum/segetum																
cf *Heliotropium europaeum*																
Heliotropium sp.																
Lamium amplexicaule/purpureum																
Lamium cf *purpureum*										5						
Malva sylvestris																
Mercurialis annua																
Poa annua					5											
Polygonum lapathifolium/persicaria	1	40						35	75	115		2		2		
Polygonum persicaria						68		35	50				45			
Portulaca sp.																
Setaria verticillata/viridis																
Solanum nigrum	1	80	70	16		23	2		75	40		1				
Sonchus asper												1				
Sonchus asper/oleraceus										5			45			
Sonchus oleraceus											8					
Stachys cf *arvensis*																
Stellaria media	2	40	140	320	25	90	2	35	2000	2050	68	2	90			
Thlaspi arvense		40		16	5	23				5		1				
Urtica urens							1		75	55		1				
Verbena officinalis																
Xanthium strumarium																
PERENNIAL RUDERALS																
Agropyron repens										5						
Arctium lappa																
Arctium minus																
Arctium sp.												1				
Bryonia dioica																
Carduus crispus																
Cerastium arvense																
Chelidonium majus																
cf *Chondrilla juncea*								35								
Cirsium sp.				16						5		1				
Cirsium/Carduus									75			1				
Conium maculatum																
Convolvulus arvensis																
Cruciata laevipes																
Dipsacus cf *fullonum*																
Fallopia dumetorum																
Hyoscyamus niger												1				
Lactuca serriola																
Lamium cf *album*																
Lamium album																
Lapsana communis												2				
cf *Marrubium vulgare*																
Onopordum acanthium																
Plantago major					10					5	15					
Poa compressa																
Polygonum cf *aviculare*																
Polygonum aviculare	1	40	70	64		113	1		150	145		2				
Potentilla anserina									25							
Ranunculus repens			70	16								3		1	5	
Reseda sp.																
Rumex conglomeratus - perianth	1											2				
Rumex conglomeratus - tubercle										60						
Rumex cf *conglomeratus* - perianth																
Rumex cf *crispus*									25							
Rumex crispus - perianth																
Rumex crispus - tubercle										25						
Rumex obtusifolius - perianth																
Rumex obtusifolius		120	280	48		158	2	35	325	305		4	135	2		
Sambucus cf *ebulus*		40				23										

Chronology																
Context																
Structure	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**
US	02A	02 B	02 B	02 D	02 D	03	03B	03 C	05 A	05 A	05 A	05C	01 A	01B	01 B	01 B
Sample N°	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24040**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**
Volume	14000	10000	13000	10000	10000	10000	9000	7000	7000	7000	7000	7000	11000	11000	6000	7000
Sambucus ebulus			70				1			5					15	
Saponaria officinalis																
Saponaria cf *officinalis*																
Silene alba				16												
Urtica dioica											68		45			
MEADOWS AND PASTURES																
Achillea millefolium																
Agrostis sp.																
Ajuga cf *reptans*																
Ajuga reptans							1					1				
Anthriscus sp.																
Bromus cf *commutatus*																
Bromus hordeaceus																
Centaurea cf *jacea*																
Centaurea sp.										25		2				
Cichorium intybus										15						
Cirsium/Centaurea										50						
cf *Cynosurus* sp.																
Dactylis glomerata																
Deschampsia caespitosa																
Dianthus cf *armeria*																
Festuca rubra/ovina																
Festuca/Lolium																
Holcus lanatus																
Leontodon autumnalis																
Leontodon sp.																
Leucanthemum vulgare											15					
Lolium perenne																
Nardus stricta																
Plantago lanceolata																
Plantago media																
Poa pratensis																
Poa pratensis Type																
Poa pratensis/trivialis																
Potentilla cf *erecta*																
Potentilla erecta																
Prunella cf *vulgaris*																
Prunella vulgaris			70	16	15					10	8	1				
Ranunculus cf *acris*																
Ranunculus acris						23			75			1				
Rhinanthus sp.										5						
Rumex acetosa - perianth																
Rumex acetosella																
Silene vulgaris																
Taraxacum officinale																
Thalictrum flavum																
Trifolium pratense - pod with seeds																
Trifolium pratense - capsule																
Trifolium sp. - chalice				16	5						8	1				
Open swards																
Acinos arvensis											8					
Ajuga genevensis		40		16												
Artemisia campestris																
Centaurea scabiosa																
Dianthus sp.																
Euphorbia cf *seguieriana*																
Euphrasia/Odontites					5											
Gentiana cruciata																
Medicago lupulina - pod with seed																
Medicago lupulina - pod									25	5						
Medicago minima - pod				16			1		25			2				
Odontites sp.																
cf *Petrorhagia prolifera*																

Chronology																
Context																
Structure	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**
US	02A	02 B	02 B	02 D	02 D	03	03B	03 C	05 A	05 A	05 A	05C	01 A	01B	01 B	01 B
Sample N°	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24040**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**
Volume	14000	10000	13000	10000	10000	10000	9000	7000	7000	7000	7000	7000	11000	11000	6000	7000
Prunella grandiflora																
Scabiosa columbaria																
Stachys cf *recta*																
Stachys recta				16												
Teucrium botrys																
Teucrium cf *chamaedrys*																
Teucrium montanum																
Trifolium cf *campestre* - chalice																
Aquatic plants																
Ceratophyllum cf *submersum*																
Lemna sp.											83					
Polygonum cf *amphibium*																
Potamogeton sp.												1				
Ranunculus aquatilis																
Sparganium sp.				16						5						
Zannichellia palustris																
Reed fields																
Alisma plantago-aquatica			70		10						8					
Carex sp.																
Carex sp. - utriculus						23				5						
Carex sp. bicarpellate				32		23			25	20	8	2				
Carex sp. tricarpellate	2	40	281	112		473			25	40		1	45	1	5	
Cicuta virosa																
Eleocharis palustris		40	140	16		23	1			35	8	1				
Eupatorium cannabinum																
Galium cf *palustre*																
Galium palustre																
Glyceria sp.										5						
Hippuris vulgaris																
Iris pseudacorus																
Juncus sp.											30					
Lycopus europaeus				16												
Mentha arvensis/aquatica					10											
Nasturtium officinale																
Oenanthe fistulosa				16						30		3				
Oenanthe sp.																
Poa palustris																
Rorippa amphibia					5											
Rumex cf *aquaticus/hydrolapatum*																
Salix sp. - veg. part																
Schoenoplectus lacustris																
Schoenoplectus sp.		80	71	32						5		1				
Riverbank plants (pioneer)																
Alnus glutinosa - veg. part									25							
Alnus sp. - veg. Part																
Bidens sp.																
Bidens tripartita																
Cyperus flavescens																
Cyperus fuscus					10											
cf *Myosoton aquaticum*																
Polygonum cf *hydropiper*										190						
Polygonum hydropiper		80	422	48	5			70	100				90			
Polygonum hydropiper/mite	2		352	496		270	3	105	750	730		3	495	1		
Polygonum lapathifolium		200	2			360			100							
Polygonum minus						45			50							
Polygonum mite																
Polygonum mite/minus																
Ranunculus cf *flammula*												1				
Ranunculus flammula																
Ranunculus sardous										5		1				
Ranunculus sceleratus											8					
Teucrium cf *scordium*																
Wet meadows																

Chronology																
Context																
Structure	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**
US	02A	02 B	02 B	02 D	02 D	03	03B	03 C	05 A	05 A	05 A	05C	01 A	01B	01 B	01 B
Sample N°	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24040**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**
Volume	14000	10000	13000	10000	10000	10000	9000	7000	7000	7000	7000	7000	11000	11000	6000	7000
cf *Euphorbia palustris*																
Filipendula ulmaria					5											
Linum catharticum											8					
Lychnis flos-cuculi											8			2		
Scirpus sylvaticus																
Stachys officinalis																
Forests, forest edges and clearings, hedges																
Abies alba - needle								35								
Acer sp. - veg. part																
Agrimonia eupatoria																
Arctium cf *nemorosum*																
Betula pendula - veg. part																
Cornus sanguinea										6						
Crataegus sp.																
cf *Humulus lupulus*																
Quercus sp. - veg. part																
Rosa sp.																
Solanum dulcamara																
Solanum cf *dulcamara*						23										
Stellaria cf *nemorum*					5											
Torilis cf *japonica*																
Valeriana cf *tripteris*																
Viburnum lantana																
Viburnum opulus																
Calamintha sylvatica											8					
Galium verum																
Hypericum perforatum																
Saponaria cf *ocymoides*																
Silene cf *nutans*																
Silene nutans																
Thalictrum minus							1									
VARIA																
Ajuga sp.																
Allium sp.										5						
Apiaceae - fragments				112												
Asteraceae			70	16	15											
Boraginaceae										5						
Brassicaceae																
Bromus sp.																
Campanula sp.																
Cannabinaceae																
Carduus sp.	1															
Caryophyllaceae											60					
Cerastium sp.																
Chenopodiaceae				16												
Chenopodiaceae/Amaranthaceae																
Chenopodium sp.					50						60					
Cichorium sp.																
Crepis sp.																
Cuscuta sp.					5											
Cyperaceae				16			1		25	5						
Epilobium sp.					5											
Euphorbia sp.																
Euphorbia sp. - fruit		120														
Euphorbia sp. - capsule		240														
Fallopia sp.																
Filipendula sp.										5		1				
Galium sp.			70	16	5	23						1				
Hypericum sp.					5											
Inula sp.																

Chronology																
Context																
Structure	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**
US	02A	02 B	02 B	02 D	02 D	03	03B	03 C	05 A	05 A	05 A	05C	01 A	01B	01 B	01 B
Sample N°	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24040**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**
Volume	14000	10000	13000	10000	10000	10000	9000	7000	7000	7000	7000	7000	11000	11000	6000	7000
Lamiaceae				16	10											
Lamium sp.												1				
Liliaceae																
Malva sp.																
cf *Matricaria* sp.																
Mentha sp.																
Nasturtium sp.																
Papaver sp.					5						30					
Physalis sp.																
Physalis/Solanum			70													
Phyteuma sp.																
Plantago sp. - chalice+A54																
Plantago sp.																
Poa sp.					25						233					
Poaceae																
Poaceae				16	10							1				
Polygonaceae					5											
Polygonum sp.																
Polygonum sp.			70	112		90		35	275	215			180			
Potentilla sp.				16	5					5	15					
Primulaceae																
Ranunculaceae																
Ranunculus sp.																
cf *Raphanus* sp.												1				
Rosaceae - thorn																
Rosaceae																
Rosaceae - flower									25							
Rumex sp. - tubercle										50						
Rumex sp.																
Rumex sp. - perianth				32	5		1		250	70		2				
Sambucus sp.				16	5	23	1			5	8	2		2		
Satureja sp.																
Scabiosa sp.				32								1				
cf *Scandix* sp.								70								
Scrophulariaceae					15											
Silene alba/dioica																
Silene sp.																
Sinapis sp.																
Solanaceae					5											
Solanum sp.				48												
Sonchus sp.					5											
Stachys sp.				16	5											
Stachys/Lamium																
Stellaria graminea/palustris					10											
Stellaria sp.																
Teucrium sp.																
Tilia sp. - fruit																
Torilis sp.																
Veronica sp.																
Vicia sp.						23										
Viola sp. - capsule																
Viola sp.										5		1		1		
Indeterminata - rhizome																
Indeterminata - fruitstem																
Indeterminata - endocarp				64												
Indeterminata				416	150											
CHARRED																
CEREALS _ grain																
Avena sp.																5
Hordeum vulgare										10						10

Chronology																
Context																
Structure	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**
US	02A	02 B	02 B	02 D	02 D	03	03B	03 C	05 A	05 A	05 A	05C	01 A	01B	01 B	01 B
Sample N°	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24040**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**
Volume	14000	10000	13000	10000	10000	10000	9000	7000	7000	7000	7000	7000	11000	11000	6000	7000
Hordeum sp.																
Secale cereale																
Triticum aestivum																
Triticum aestivum/durum/turgidum																
Triticum dicoccon																
Triticum cf *dicoccon*																
Triticum spelta																
Triticum sp.																5
Cerealia ohne Hirsen							1									115
Panicum miliaceum																5
Setaria italica																
Panicum/Setaria																
CEREALS _ chaff																
Hordeum vulgare - rachis																
Hordeum sp. - rachis																
Secale cereale - rachis																
Triticum aestivum - rachis																
Triticum dicoccon - spikelet fork																
Triticum dicoccon - glume																35
Triticum monococcum - spikelet fork																
Triticum monococcum - glume		80														10
Triticum spelta - spikelet fork																
Triticum spelta - glume base																
Triticum spelta - glume						23										20
Triticum sp. - spikelet fork																
Triticum sp. - glume																35
Cerealia																
NUTS																
Corylus avellana																
Juglans regia																
Pinus pinea																
PULSES																
cf *Lathyrus* sp.																
Lens culinaris																
Pisum sativum																
Vicia faba																
Vicia/Lathyrus																
Fabaceae																
SPICES																
Apium graveolens																
Satureja hortensis																
VEGETABLES AND SALADS																
Allium sativum																
Atriplex sp.																
Brassica sp.																
FRUITS																
Ficus carica - fruitflesh																
Phoenix dactylifera																
Prunus domestica/insititia																
Prunus persica																
Sambucus nigra/racemosa																
Vitis vinifera																
OIL AND FIBRE PLANTS																
WEEDS OF WINTER CEREALS																
Galium aparine																
Veronica hederifolia																
Order Aperetalia_weeds of rather acidic/neutral soils																
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																
Avena fatua																
Caucalis platycarpos																
Galium spurium																

Chronology																
Context																
Structure	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**
US	02A	02 B	02 B	02 D	02 D	03	03B	03 C	05 A	05 A	05 A	05C	01 A	01B	01 B	01 B
Sample N°	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24040**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**
Volume	14000	10000	13000	10000	10000	10000	9000	7000	7000	7000	7000	7000	11000	11000	6000	7000
Glaucium corniculatum																
Myagrum perfoliatum																
Vicia cf *angustifolia*																
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																
Chenopodium album																
Chenopodium polyspermum																
Galeospis ladanum/segetum																
cf *Solanum nigrum*																
Thlaspi arvense	1															
PERENNIAL RUDERALS																
Cruciata laevipes																
Rumex obtusifolius										5						
Silene alba																
MEADOWS AND PASTURES																
Centaurea sp.																
Festuca/Lolium																
Galium boreale																
Plantago lanceolata																
Plantago media																
Trifolium sp.																
Aquatic plants																
Sparganium sp.																
Reed fields																
cf *Alisma plantago-aquatica*																
Carex sp. tricarpellate																
Galium cf *palustre*									25							
Riverbank plants (pioneer)																
Teucrium scordium					5											
Forests, forest edges and clearings, hedges																
Abies alba - needle																
Galium verum																
cf *Humulus lupulus*																
VARIA																
Asperula sp.																
Bromus sp.																
Chenopodiaceae																
Chenopodium sp.					5											
Galium sp.										5						10
Poaceae																5
Rumex sp.																
Sambucus sp.																
Vicia sp.														1		
Indeterminata - amorphous object																
Indeterminata - crusts																
Indeterminata - seed/fruit															5	10
MINERALISED																
CEREALS _ grain																
Avena sp.																
Hordeum vulgare																
Triticum spelta																
Triticum sp.																
Panicum miliaceum																
Setaria italica																
Panicum/Setaria																
Cerealia ohne Hirsen																
CEREALS _ chaff																
Hordeum vulgare - rachis																
Triticum spelta - spikelet fork																
Cerealia - ear																

Chronology																
Context																
Structure	55	55	55	55	55	55	55	55	55	55	55	55	64	64	65	67
US	02A	02 B	02 B	02 D	02 D	03	03B	03 C	05 A	05 A	05 A	05C	01 A	01B	01 B	01 B
Sample N°	BK24023	BK24017	BK24024	BK24022	BK24022	BK24026	BK24028	BK24029	BK24040	BK24040	BK24040	BK24042	BK24045	BK24046	BK24021	BK24032
Volume	14000	10000	13000	10000	10000	10000	9000	7000	7000	7000	7000	7000	11000	11000	6000	7000
Cerealia - glume																
Panicum miliaceum - glume																
Setaria italica - glume																
Panicum/Setaria - glume																
PULSES																
Lens culinaris																
Pisum sativum																
Vicia faba																
Fabaceae - fruitflesh																
Fabaceae																
FRUITS																
Cucumis melo																
Cucumis melo/sativa																
Ficus carica																
Fragaria vesca																
Malus domestica																
Malus sylvestris/domestica																
Pyrus sp.																
Malus/Pyrus																
Morus sp.																
Physalis alkekengi																
Prunus sp. - fragment																
Rubus caesius																
Rubus sp. - inner																
Sambucus nigra/racemosa																
Vitis vinifera - fruitflesh																
Vitis vinifera - aborted seed																
Vitis vinifera																
SPICES																
Anethum graveolens																
Apium graveolens																
Carum carvi																
Coriandrum sativum																
Foeniculum vulgare																
Nigella cf *sativa*																
VEGETABLES AND SALADS																
Atriplex sp.																
Beta vulgaris																
Brassica sp.																
Daucus carota																
Lagenaria siceraria																
OIL AND FIBRE PLANTS																
Linum usitatissimum																
Papaver somniferum																
WEEDS OF WINTER CEREALS																
Agrostemma githago																
Buglossoides arvensis																
Fallopia convolvulus																
Galium aparine																
cf *Veronica hederifolia*																
Order Aperetalia_weeds of rather acidic/neutral soils																
Camelina sativa																
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																
Caucalis platycarpos																
Galium spurium																
Vaccaria pyramidata																
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																
Galeopsis cf *speciosa*																
Polygonum lapathifolium/persicaria																
Solanum nigrum																

Chronology																
Context																
Structure	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**
US	02A	02 B	02 B	02 D	02 D	03	03B	03 C	05 A	05 A	05 A	05C	01 A	01B	01 B	01 B
Sample N°	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24040**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**
Volume	14000	10000	13000	10000	10000	10000	9000	7000	7000	7000	7000	7000	11000	11000	6000	7000
Sonchus oleraceus																
Stellaria media																
Thlaspi arvense																
PERENNIAL RUDERALS																
Arctium sp.																
Convolvulus arvensis																
Hyoscyamus niger																
Lapsana communis																
MEADOWS AND PASTURES																
Centaurea sp.																
Rhinanthus sp.																
Scabiosa sp.																
Reed fields																
Carex sp. tricarpellat																
Galium palustre																
Forests, forest edges and clearings, hedges																
Rosa sp.																
cf *Seseli libanotis*																
VARIA																
Apiaceae																
Asteraceae																
Brassicaceae																
Bromus sp.																
Cannabinaceae																
Chenopodium sp.																5
Galium sp.																
Lamiaceae																
Lolium sp.																
Papaver sp.																
Poa sp.																
Poaceae																
Potentilla sp.																
Rumex sp.																
Indeterminata - endocarp																
Indeterminata - fruitflesh																
Indeterminata - coprolithes																
Indeterminata - crusts																
Indeterminata - seed/fruit																

Civil East																		
Chronology						**Horizon 2**												
Context						**Pit**												
Structure	**67**	**78**	**78**	**78**		**Tranchée5**	**Tranchée5**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**
US	02	01	02	02		P30	P30	02	02	02	02 09	02 09	01 2	04	04	08	09 06	09 10
Sample N°	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK004030P**	**BK14100**	**BK14107**	**BK14115**	**BK14108**	**BK14110**	**BK14116**	**BK14123**	**BK14124**	**BK14132**	**BK14151**	**BK14155**
Volume	7000	9000	10000	7000		7000	7000	6000	7000	1000	1000	4000	24000	6000	8000	8000	6000	10000
Analysis	FU	FU	FU	FU		FU	FU	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS
Field	04	04	04	04		04	04	04	04	04	04	04	04	04	04	04	04	04
WATERLOGGED																		
CEREALS _ grain																		
Avena sativa/fatua																		
Cerealia - Testa						4	1						4		4		3	
Panicum miliaceum						4												
Setaria italica																		
Panicum/Setaria																		
CEREALS _ chaff																		
Hordeum vulgare - rachis																		
Hordeum sp. - rachis				23														
Secale cereale - rachis																		
Triticum aestivum - rachis																		
Triticum cf aestivum/durum/turgidum - rachis																		
Triticum dicoccon - glume base													2					
Triticum dicoccon - spikelet fork							10											
Triticum dicoccon - glume	10	75		38														
Triticum cf *dicoccon* - glume																		
Triticum dicoccon/spelta - glume				23														
Triticum monococcum - glume base																		
Triticum monococcum - spikelet fork																		
Triticum monococcum - glume		50		15														
Triticum cf *monococcum* - spikelet fork							10											
Triticum cf *monococcum* - glume																		
Triticum spelta - glume base													2		1			
Triticum spelta - spikelet fork							30											
Triticum spelta - glume	20	150	1	75														
Triticum sp. - spikelet fork																		
Triticum sp. - glume			1															
Cerealia - rachis																		
Cerealia ohne Hirsen - glume				38														
Panicum miliaceum - glume		25		8									4	1	1			
Setaria italica - glume																		
Panicum/Setaria - glume																		
NUTS																		
Corylus avellana		25		1		1				2			2				2	1
Juglans regia		1				1		2	2				2	2	1		1	
Pinus pinea																		
PULSES																		
Lens culinaris																		
Pisum sativum																		
Pisum cf *sativum*																		
Vicia faba																		
Fabaceae																		
SPICES																		
Anethum graveolens			1	8		1	96				1			2	2		1	1
Apium graveolens						1	158			2			2	2				1
Carum carvi							10											
Coriandrum sativum	10	25				1							1		2		2	
Foeniculum vulgare																		
Origanum vulgare							10											
cf *Petroselinum crispum*																		
Pimpinella anisum																		
cf *Piper nigrum*																		
Piper nigrum																		
cf *Ruta graveolens*																		
Satureja hortensis																		
cf *Thymus* sp. - stem																		
VEGETABLES AND SALADS																		
Amaranthus sp.											1			1			2	1
Atriplex sp. - perianth																		

Chronology						Horizon 2												
Context						Pit												
Structure	**67**	**78**	**78**	**78**		**Tranchée5**	**Tranchée5**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**
US	02	01	02	02		P30	P30	02	02	02	02 09	02 09	01 2	04	04	08	09 06	09 10
Sample N°	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK004030P**	**BK14100**	**BK14107**	**BK14115**	**BK14108**	**BK14110**	**BK14116**	**BK14123**	**BK14124**	**BK14132**	**BK14151**	**BK14155**
Volume	7000	9000	10000	7000		7000	7000	6000	7000	1000	1000	4000	24000	6000	8000	8000	6000	10000
Atriplex sp.	110																	1
Beta vulgaris																		
Brassica cf *oleracea*																		
Brassica rapa/nigra																		
Brassica sp.							22							1			1	1
Brassica/Sinapis																		
Daucus carota																		
Lagenaria siceraria													2	2	2			
Pastinaca sativa																		
Portulaca oleracea																		
FRUITS																		
Cucumis melo																		
Cucumis sativus																		
Cucumis melo/sativa						4	632					1	2	3	2		2	2
Ficus carica			1			4		2		2	4	4		4	2	1	4	4
Fragaria vesca																		
Malus domestica						30												
Malus sylvestris/domestica																		
Malus/Pyrus - stem																		
Malus/Pyrus - fragment																		
Malus/Pyrus - seed base							10											2
Malus/Pyrus - pericarp						4	1104						4	2	1		2	1
Malus/Pyrus							10				2			3			3	
Pyrus sp.																		
Pyrus sp. - stone cells	1						1	3		4	1		4	3	4	3	2	3
Pyrus sp. - flower							10				2			2			1	2
Morus sp.						4		2				2	1	3	4		2	3
Olea europaea													3		4			2
Physalis alkekengi											1		2	2				2
Prunus cf *avium*																		
Prunus avium/cerasus								3	4	3	2		4	3	4		1	3
Prunus cf *domestica*																		
Prunus domestica								1			2			3	1		2	2
Prunus domestica/insititia						3												
Prunus insititia				1				3	4	3			4		4	1		
Prunus persica						1			1						1			1
Prunus cf *spinosa*																		
Prunus spinosa						2		3		3	2		3	2				2
Prunus sp.		25																2
Rubus caesius						1	206				1		1	3	3		2	3
Rubus cf *fruticosus*																		
Rubus fruticosus							68	2			2			2				
Rubus idaeus							60											
Rubus sp.																		
Sambucus nigra/racemosa							24	4			2		2					1
Vitis vinifera - aborted seed																		
Vitis vinifera						4					4	4					4	4
OIL, DYE AND FIBRE PLANTS																		
Cannabis sativa																		
Carthamus tinctorius																		
cf *Isatis tinctoria*																		
Linum usitatissimum							42											
Papaver cf *somniferum*																		
Papaver somniferum							52						3					
WEEDS OF WINTER CEREALS																		
Adonis sp.																		
Agrostemma githago		25	2	83		2							4	3			1	
Anthemis arvensis		75																
Bromus arvensis Type																		
Buglossoides arvensis																		
Fallopia convolvulus			1											2			1	2
Galium aparine		25												1				
Silene gallica													2					

Chronology						**Horizon 2**												
Context						**Pit**												
Structure	**67**	**78**	**78**	**78**		**Tranchée5**	**Tranchée5**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**
US	02	01	02	02		P30	P30	02	02	02	02 09	02 09	01 2	04	04	08	09 06	09 10
Sample N°	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK004030P**	**BK14100**	**BK14107**	**BK14115**	**BK14108**	**BK14110**	**BK14116**	**BK14123**	**BK14124**	**BK14132**	**BK14151**	**BK14155**
Volume	7000	9000	10000	7000		7000	7000	6000	7000	1000	1000	4000	24000	6000	8000	8000	6000	10000
Stachys annua/arvensis																		
Valerianella locusta		25																
Valerianella rimosa																		
Veronica hederifolia						1												
Viola tricolor																		
Order Aperetalia_weeds of rather acidic/neutral soils																		
Aphanes arvensis																		
Aphanes sp																		
cf *Bromus secalinus*																		
Camelina sativa - pod																		
Camelina sativa														1				
Camelina cf *sativa*																		
Centaurea cf *cyanus*																		
Centaurea cyanus																		
Papaver argemone																		
Papaver dubium																		
Raphanus raphanistrum																		
Scleranthus sp. - capsule																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Ajuga cf *chamaepitys*																		
Ajuga chamaepitys																		
Bupleurum rotundifolium																		
Caucalis platycarpos		26		8										1				
Euphorbia exigua																		
Galium spurium				8														
Glaucium corniculatum																		
Myagrum perfoliatum		25																
Myosoton aquaticum																		
Nigella arvensis																		
Orlaya grandiflora																		
Ranunculus arvensis														1				
Scandix pecten-veneris																		
Silene cf *dichotoma*																		
Stachys annua												1					1	1
Thymelaea passerina																		
Torilis arvensis																		
Vaccaria pyramidata													2	2	1			
Valerianella dentata						1								1				
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Aethusa cynapium																		
Anagallis arvensis/foemina													2					1
Arenaria serpyllifolia																		
Atriplex/Chenopodium						2				2			4					
Capsella bursa-pastoris																		
Chenopodium album	10	25	2	30								2		2			2	
Chenopodium ficifolium																		
Chenopodium cf *ficifolium*																		
Chenopodium foliosum																		
Chenopodium hybridum										2								1
Chenopodium murale																	1	2
Chenopodium polyspermum																		
Echinochloa crus-galli																		
Euphorbia helioscopia																		
Euphorbia platyphyllos																		
Fumaria officinalis																		
Fumaria sp.																		
Galeopsis bifida																		
Galeopsis ladanum																		
Galeopsis sp.																		
Galeopsis cf *speciosa*																		

Chronology						Horizon 2											
Context						Pit											
Structure	**67**	**78**	**78**	**78**		**Tranchée5**	**Tranchée5**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**
US	02	01	02	02		P30	P30	02	02	02	02 09	02 09	01 2	04	04	08	09 06	09 10
Sample N°	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK004030P**	**BK14100**	**BK14107**	**BK14115**	**BK14108**	**BK14110**	**BK14116**	**BK14123**	**BK14124**	**BK14132**	**BK14151**	**BK14155**
Volume	7000	9000	10000	7000		7000	7000	6000	7000	1000	1000	4000	24000	6000	8000	8000	6000	10000
Galeopsis tetrahit																		
Galeospis ladanum/segetum																		
cf *Heliotropium europaeum*																		
Heliotropium sp.																		
Lamium amplexicaule/purpureum																		
Lamium cf *purpureum*																		
Malva sylvestris														1				
Mercurialis annua																		
Poa annua																		
Polygonum lapathifolium/persicaria	430		3	135										1	2		2	
Polygonum persicaria				8														
Portulaca sp.																		
Setaria verticillata/viridis																		
Solanum nigrum	10	25	1	8			290											
Sonchus asper				8														
Sonchus asper/oleraceus			1															
Sonchus oleraceus																		
Stachys cf *arvensis*																		
Stellaria media			2	23									2					
Thlaspi arvense																	1	
Urtica urens																		
Verbena officinalis																		
Xanthium strumarium																		
PERENNIAL RUDERALS																		
Agropyron repens																		
Arctium lappa																		
Arctium minus																		
Arctium sp.																		
Bryonia dioica																		
Carduus crispus																		
Cerastium arvense																		
Chelidonium majus																		
cf *Chondrilla juncea*																		
Cirsium sp.																		
Cirsium/Carduus														1				
Conium maculatum																		
Convolvulus arvensis																		
Cruciata laevipes																		
Dipsacus cf *fullonum*				8														
Fallopia dumetorum																		
Hyoscyamus niger						1												
Lactuca serriola																		
Lamium cf *album*																		
Lamium album																		
Lapsana communis																		
cf *Marrubium vulgare*																		
Onopordum acanthium																		
Plantago major																		
Poa compressa																		
Polygonum cf *aviculare*																		
Polygonum aviculare		50	2	30		1							2	1				1
Potentilla anserina																		
Ranunculus repens			2	15														
Reseda sp.																		
Rumex conglomeratus - perianth				8														
Rumex conglomeratus - tubercle																		
Rumex cf *conglomeratus* - perianth				23														
Rumex cf *crispus*																		
Rumex crispus - perianth																		
Rumex crispus - tubercle																		
Rumex obtusifolius - perianth			1															
Rumex obtusifolius	30	50	2	68										1				
Sambucus cf *ebulus*				8														

Chronology						Horizon 2												
Context						Pit												
Structure	**67**	**78**	**78**	**78**		**Tranchée5**	**Tranchée5**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**
US	02	01	02	02		P30	P30	02	02	02	02 09	02 09	01 2	04	04	08	09 06	09 10
Sample N°	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK004030P**	**BK14100**	**BK14107**	**BK14115**	**BK14108**	**BK14110**	**BK14116**	**BK14123**	**BK14124**	**BK14132**	**BK14151**	**BK14155**
Volume	7000	9000	10000	7000		7000	7000	6000	7000	1000	1000	4000	24000	6000	8000	8000	6000	10000
Sambucus ebulus												1						
Saponaria officinalis																		
Saponaria cf *officinalis*																		
Silene alba																		
Urtica dioica																		
MEADOWS AND PASTURES																		
Achillea millefolium																		
Agrostis sp.																		
Ajuga cf *reptans*																		
Ajuga reptans																		
Anthriscus sp.		25																
Bromus cf *commutatus*																		
Bromus hordeaceus																		
Centaurea cf *jacea*																		
Centaurea sp.																		
Cichorium intybus																		
Cirsium/Centaurea		50																
cf *Cynosurus* sp.																		
Dactylis glomerata																		
Deschampsia caespitosa																		
Dianthus cf *armeria*																		
Festuca rubra/ovina																		
Festuca/Lolium																		
Holcus lanatus																		
Leontodon autumnalis																		
Leontodon sp.																		
Leucanthemum vulgare																		
Lolium perenne																		
Nardus stricta																		
Plantago lanceolata																		
Plantago media																		
Poa pratensis																		
Poa pratensis Type																		
Poa pratensis/trivialis																		
Potentilla cf *erecta*																		
Potentilla erecta																		
Prunella cf *vulgaris*																		
Prunella vulgaris				15														
Ranunculus cf *acris*																		
Ranunculus acris																		
Rhinanthus sp.																		
Rumex acetosa - perianth																		
Rumex acetosella																		
Silene vulgaris																		
Taraxacum officinale				8														
Thalictrum flavum																		
Trifolium pratense - pod with seeds																		
Trifolium pratense - capsule																		
Trifolium sp. - chalice																		
Open swards																		
Acinos arvensis																		
Ajuga genevensis																		
Artemisia campestris																		
Centaurea scabiosa																		
Dianthus sp.																		
Euphorbia cf *seguieriana*																		
Euphrasia/Odontites																		
Gentiana cruciata																		
Medicago lupulina - pod with seed																		
Medicago lupulina - pod																		
Medicago minima - pod																		
Odontites sp.																		
cf *Petrorhagia prolifera*																		

Chronology						Horizon 2												
Context						Pit												
Structure	**67**	**78**	**78**	**78**		**Tranchée5**	**Tranchée5**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**
US	02	01	02	02		P30	P30	02	02	02	02 09	02 09	01 2	04	04	08	09 06	09 10
Sample N°	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK004030P**	**BK14100**	**BK14107**	**BK14115**	**BK14108**	**BK14110**	**BK14116**	**BK14123**	**BK14124**	**BK14132**	**BK14151**	**BK14155**
Volume	7000	9000	10000	7000		7000	7000	6000	7000	1000	1000	4000	24000	6000	8000	8000	6000	10000
Prunella grandiflora																		
Scabiosa columbaria																		
Stachys cf *recta*				8														
Stachys recta																		
Teucrium botrys			1															
Teucrium cf *chamaedrys*																		
Teucrium montanum														1				
Trifolium cf *campestre* - chalice																		
Aquatic plants																		
Ceratophyllum cf *submersum*																		
Lemna sp.			1															
Polygonum cf *amphibium*																		
Potamogeton sp.			1															
Ranunculus aquatilis																		
Sparganium sp.																		
Zannichellia palustris																		
Reed fields																		
Alisma plantago-aquatica				8														
Carex sp.						1												
Carex sp. - utriculus																		
Carex sp. bicarpellate		25	1	38														
Carex sp. tricarpellate				8								1	2	1				
Cicuta virosa																		
Eleocharis palustris				8														
Eupatorium cannabinum																		
Galium cf *palustre*																		
Galium palustre																		
Glyceria sp.																		
Hippuris vulgaris																		
Iris pseudacorus																		
Juncus sp.																		
Lycopus europaeus																		
Mentha arvensis/aquatica																		
Nasturtium officinale																		
Oenanthe fistulosa			1	15														
Oenanthe sp.																		
Poa palustris																		
Rorippa amphibia																		
Rumex cf *aquaticus/hydrolapatum*																		
Salix sp. - veg. part																		
Schoenoplectus lacustris																		
Schoenoplectus sp.														1				
Riverbank plants (pioneer)																		
Alnus glutinosa - veg. part																		
Alnus sp. - veg. Part																		
Bidens sp.																		
Bidens tripartita																		
Cyperus flavescens																		
Cyperus fuscus																		
cf *Myosoton aquaticum*																		
Polygonum cf *hydropiper*																		
Polygonum hydropiper				15														
Polygonum hydropiper/mite		100	3	405														
Polygonum lapathifolium				8														
Polygonum minus	20			23														
Polygonum mite																		
Polygonum mite/minus																		
Ranunculus cf *flammula*																		
Ranunculus flammula																		
Ranunculus sardous																		
Ranunculus sceleratus																		
Teucrium cf *scordium*																		
Wet meadows																		

Chronology						Horizon 2												
Context						Pit												
Structure	**67**	**78**	**78**	**78**		**Tranchée5**	**Tranchée5**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**
US	02	01	02	02		P30	P30	02	02	02	02 09	02 09	01 2	04	04	08	09 06	09 10
Sample N°	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK004030P**	**BK14100**	**BK14107**	**BK14115**	**BK14108**	**BK14110**	**BK14116**	**BK14123**	**BK14124**	**BK14132**	**BK14151**	**BK14155**
Volume	7000	9000	10000	7000		7000	7000	6000	7000	1000	1000	4000	24000	6000	8000	8000	6000	10000
cf *Euphorbia palustris*																		
Filipendula ulmaria																		
Linum catharticum																		
Lychnis flos-cuculi																		
Scirpus sylvaticus																		
Stachys officinalis																		
Forests, forest edges and clearings, hedges																		
Abies alba - needle														1				
Acer sp. - veg. part																		
Agrimonia eupatoria																		
Arctium cf *nemorosum*																		
Betula pendula - veg. part																		
Cornus sanguinea																		
Crataegus sp.																		
cf *Humulus lupulus*																		
Quercus sp. - veg. part																		
Rosa sp.						1	46				1			1			1	
Solanum dulcamara																		
Solanum cf *dulcamara*																		
Stellaria cf *nemorum*																		
Torilis cf *japonica*																		
Valeriana cf *tripteris*																		
Viburnum lantana																		
Viburnum opulus																		
Calamintha sylvatica																		
Galium verum																		
Hypericum perforatum																		
Saponaria cf *ocymoides*																		
Silene cf *nutans*																		
Silene nutans																		
Thalictrum minus																		
VARIA																		
Ajuga sp.																		
Allium sp.																		
Apiaceae - fragments																		
Asteraceae																		
Boraginaceae																		
Brassicaceae																		
Bromus sp.																		
Campanula sp.																		
Cannabinaceae																		
Carduus sp.																		
Caryophyllaceae																		
Cerastium sp.																		
Chenopodiaceae																		
Chenopodiaceae/Amaranthaceae																		
Chenopodium sp.																		
Cichorium sp.																		
Crepis sp.																		
Cuscuta sp.																		
Cyperaceae			1															
Epilobium sp.																		
Euphorbia sp.																		
Euphorbia sp. - fruit																		
Euphorbia sp. - capsule																		
Fallopia sp.																		
Filipendula sp.																		
Galium sp.			1											1				
Hypericum sp.																		
Inula sp.																		

Chronology						Horizon 2												
Context						Pit												
Structure	**67**	**78**	**78**	**78**		**Tranchée5**	**Tranchée5**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**
US	02	01	02	02		P30	P30	02	02	02	02 09	02 09	01 2	04	04	08	09 06	09 10
Sample N°	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK004030P**	**BK14100**	**BK14107**	**BK14115**	**BK14108**	**BK14110**	**BK14116**	**BK14123**	**BK14124**	**BK14132**	**BK14151**	**BK14155**
Volume	7000	9000	10000	7000		7000	7000	6000	7000	1000	1000	4000	24000	6000	8000	8000	6000	10000
Lamiaceae													2					
Lamium sp.																		
Liliaceae																		
Malva sp.																		
cf *Matricaria* sp.																		
Mentha sp.																		
Nasturtium sp.																		
Papaver sp.																		
Physalis sp.																		
Physalis/Solanum																		
Phyteuma sp.																		
Plantago sp. - chalice+A54																		
Plantago sp.																		
Poa sp.																		
Poaceae																		
Poaceae							36											
Polygonaceae																		
Polygonum sp.																		
Polygonum sp.	530			30														
Potentilla sp.																		
Primulaceae																		
Ranunculaceae																		
Ranunculus sp.													2					
cf *Raphanus* sp.																		
Rosaceae - thorn																		
Rosaceae																		
Rosaceae - flower																		
Rumex sp. - tubercle																		
Rumex sp.																		
Rumex sp. - perianth													2			1		
Sambucus sp.														1				
Satureja sp.																		
Scabiosa sp.				8														
cf *Scandix* sp.																		
Scrophulariaceae																		
Silene alba/dioica																		
Silene sp.							10										1	
Sinapis sp.																		
Solanaceae																		
Solanum sp.																		
Sonchus sp.																		
Stachys sp.																		
Stachys/Lamium																		
Stellaria graminea/palustris																		
Stellaria sp.																		
Teucrium sp.																		
Tilia sp. - fruit																		
Torilis sp.																		
Veronica sp.																		
Vicia sp.																		
Viola sp. - capsule																		
Viola sp.																		
Indeterminata - rhizome																		
Indeterminata - fruitstem							12											
Indeterminata - endocarp																		
Indeterminata													3					
CHARRED																		
CEREALS _ grain																		
Avena sp.																		
Hordeum vulgare																		

Chronology						Horizon 2												
Context						Pit												
Structure	**67**	**78**	**78**	**78**		**Tranchée5**	**Tranchée5**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**
US	02	01	02	02		P30	P30	02	02	02	02 09	02 09	01 2	04	04	08	09 06	09 10
Sample N°	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK004030P**	**BK14100**	**BK14107**	**BK14115**	**BK14108**	**BK14110**	**BK14116**	**BK14123**	**BK14124**	**BK14132**	**BK14151**	**BK14155**
Volume	7000	9000	10000	7000		7000	7000	6000	7000	1000	1000	4000	24000	6000	8000	8000	6000	10000
Hordeum sp.								1										
Secale cereale																		
Triticum aestivum																		
Triticum aestivum/durum/turgidum																		
Triticum dicoccon	10																	
Triticum cf *dicoccon*																		
Triticum spelta																		
Triticum sp.																		
Cerealia ohne Hirsen	10															1		
Panicum miliaceum										1								
Setaria italica																		
Panicum/Setaria																		
CEREALS _ chaff																		
Hordeum vulgare - rachis		25																
Hordeum sp. - rachis																		
Secale cereale - rachis																		
Triticum aestivum - rachis																		
Triticum dicoccon - spikelet fork																		
Triticum dicoccon - glume	20																	
Triticum monococcum - spikelet fork																		
Triticum monococcum - glume		25																
Triticum spelta - spikelet fork																		
Triticum spelta - glume base																		
Triticum spelta - glume	10						12											
Triticum sp. - spikelet fork																		
Triticum sp. - glume																		
Cerealia																		
NUTS																		
Corylus avellana																		
Juglans regia																1		
Pinus pinea																		
PULSES																		
cf *Lathyrus* sp.																		
Lens culinaris												1						
Pisum sativum																		
Vicia faba									2				1					
Vicia/Lathyrus																		
Fabaceae																		
SPICES																		
Apium graveolens																		
Satureja hortensis																		
VEGETABLES AND SALADS																		
Allium sativum																		
Atriplex sp.																		
Brassica sp.																		
FRUITS																		
Ficus carica - fruitflesh																		
Phoenix dactylifera																		
Prunus domestica/insititia																		
Prunus persica																		
Sambucus nigra/racemosa																		
Vitis vinifera																		
OIL AND FIBRE PLANTS																		
WEEDS OF WINTER CEREALS																		
Galium aparine																		
Veronica hederifolia																		
Order Aperetalia_weeds of rather acidic/neutral soils																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Avena fatua	10																	
Caucalis platycarpos																		
Galium spurium																		

Chronology						Horizon 2												
Context						Pit												
Structure	**67**	**78**	**78**	**78**		**Tranchée5**	**Tranchée5**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**
US	02	01	02	02		P30	P30	02	02	02	02 09	02 09	01 2	04	04	08	09 06	09 10
Sample N°	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK004030P**	**BK14100**	**BK14107**	**BK14115**	**BK14108**	**BK14110**	**BK14116**	**BK14123**	**BK14124**	**BK14132**	**BK14151**	**BK14155**
Volume	7000	9000	10000	7000		7000	7000	6000	7000	1000	1000	4000	24000	6000	8000	8000	6000	10000
Glaucium corniculatum																		
Myagrum perfoliatum																		
Vicia cf *angustifolia*																		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Chenopodium album																		
Chenopodium polyspermum																		
Galeospis ladanum/segetum																		
cf *Solanum nigrum*																		
Thlaspi arvense																		
PERENNIAL RUDERALS																		
Cruciata laevipes																		
Rumex obtusifolius																1		
Silene alba																		
MEADOWS AND PASTURES																		
Centaurea sp.																		
Festuca/Lolium																		
Galium boreale																		
Plantago lanceolata																		
Plantago media																		
Trifolium sp.																		
Aquatic plants																		
Sparganium sp.																		
Reed fields																		
cf *Alisma plantago-aquatica*																		
Carex sp. tricarpellate																		
Galium cf *palustre*																		
Riverbank plants (pioneer)																		
Teucrium scordium																		
Forests, forest edges and clearings, hedges																		
Abies alba - needle																		
Galium verum																		
cf *Humulus lupulus*																		
VARIA																		
Asperula sp.																		
Bromus sp.																		
Chenopodiaceae																		
Chenopodium sp.																		
Galium sp.												1						
Poaceae																		
Rumex sp.																		
Sambucus sp.																		
Vicia sp.																		
Indeterminata - amorphous object																		
Indeterminata - crusts																		
Indeterminata - seed/fruit																		
MINERALISED																		
CEREALS _ grain																		
Avena sp.																		
Hordeum vulgare																		
Triticum spelta							10											
Triticum sp.														1				
Panicum miliaceum							1194							3			1	1
Setaria italica																		
Panicum/Setaria																		
Cerealia ohne Hirsen	10						60						2					
CEREALS _ chaff																		
Hordeum vulgare - rachis																		
Triticum spelta - spikelet fork																		
Cerealia - ear																		

Chronology					Horizon 2												
Context					Pit												
Structure	**67**	**78**	**78**	**78**	**Tranchée5**	**Tranchée5**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**
US	02	01	02	02	P30	P30	02	02	02	02 09	02 09	01 2	04	04	08	09 06	09 10
Sample N°	**BK24037**	**BK24035**	**BK24043**	**BK24044**	**BK004030**	**BK004030P**	**BK14100**	**BK14107**	**BK14115**	**BK14108**	**BK14110**	**BK14116**	**BK14123**	**BK14124**	**BK14132**	**BK14151**	**BK14155**
Volume	7000	9000	10000	7000	7000	7000	6000	7000	1000	1000	4000	24000	6000	8000	8000	6000	10000
Cerealia - glume																	
Panicum miliaceum - glume																	
Setaria italica - glume																	
Panicum/Setaria - glume																	
PULSES																	
Lens culinaris					4	554					2	1	3	4			1
Pisum sativum																	
Vicia faba												1	1				
Fabaceae - fruitflesh													4				
Fabaceae																	
FRUITS																	
Cucumis melo																	
Cucumis melo/sativa												4	2	4			
Ficus carica						7440	4		4					4	1		
Fragaria vesca																	
Malus domestica						308											
Malus sylvestris/domestica							2					4		4			
Pyrus sp.																	
Malus/Pyrus											2		3				
Morus sp.						160											
Physalis alkekengi															2		
Prunus sp. - fragment																	
Rubus caesius													2				
Rubus sp. - inner																	
Sambucus nigra/racemosa																	
Vitis vinifera - fruitflesh												4					
Vitis vinifera - aborted seed													2				
Vitis vinifera						1076	4	4	4	3	2	4	5	4	1		
SPICES																	
Anethum graveolens												2	2				
Apium graveolens														3			
Carum carvi												2		2			
Coriandrum sativum						178							2				
Foeniculum vulgare																	
Nigella cf *sativa*																	
VEGETABLES AND SALADS																	
Atriplex sp.						476											
Beta vulgaris																	
Brassica sp.											1						
Daucus carota																	1
Lagenaria siceraria																	
OIL AND FIBRE PLANTS																	
Linum usitatissimum											1						1
Papaver somniferum																	
WEEDS OF WINTER CEREALS																	
Agrostemma githago						1254											
Buglossoides arvensis																	
Fallopia convolvulus						24											
Galium aparine												3					1
cf *Veronica hederifolia*																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Camelina sativa																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Caucalis platycarpos																	
Galium spurium																	
Vaccaria pyramidata												2					
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Galeopsis cf *speciosa*																	
Polygonum lapathifolium/persicaria												2					
Solanum nigrum																	

Chronology						Horizon 2												
Context						Pit												
Structure	**67**	**78**	**78**	**78**		**Tranchée5**	**Tranchée5**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**
US	02	01	02	02		P30	P30	02	02	02	02 09	02 09	01 2	04	04	08	09 06	09 10
Sample N°	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK004030P**	**BK14100**	**BK14107**	**BK14115**	**BK14108**	**BK14110**	**BK14116**	**BK14123**	**BK14124**	**BK14132**	**BK14151**	**BK14155**
Volume	7000	9000	10000	7000		7000	7000	6000	7000	1000	1000	4000	24000	6000	8000	8000	6000	10000
Sonchus oleraceus																		
Stellaria media																		
Thlaspi arvense																		
PERENNIAL RUDERALS																		
Arctium sp.																		
Convolvulus arvensis														1				
Hyoscyamus niger																		
Lapsana communis																		
MEADOWS AND PASTURES																		
Centaurea sp.																		
Rhinanthus sp.							12											
Scabiosa sp.																		
Reed fields																		
Carex sp. tricarpellat																		
Galium palustre																		
Forests, forest edges and clearings, hedges																		
Rosa sp.																		
cf *Seseli libanotis*																		
VARIA																		
Apiaceae						1							1		2			
Asteraceae																		
Brassicaceae																		
Bromus sp.																		
Cannabinaceae																		
Chenopodium sp.																		
Galium sp.																		
Lamiaceae																		
Lolium sp.																		
Papaver sp.																		
Poa sp.																		
Poaceae						1												
Potentilla sp.																		
Rumex sp.							48											
Indeterminata - endocarp							24											
Indeterminata - fruitflesh																		
Indeterminata - coprolithes																		
Indeterminata - crusts																		
Indeterminata - seed/fruit							1106						3					

Civil East																		
Chronology																		
Context																		
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
US	09b 04	09b 05	09b 05	09b 06	09b 07	09b 08	09b 09	09b 09	09b 09	09B 10	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	**BK14166**	**BK14167**	**BK14167**	**BK14168**	**BK14169**	**BK14170**	**BK14171**	**BK14171**	**BK14171**	**BK14172**	**BK14172**	**BK14181**	**BK14182**	**BK24001**	**BK24002**	**BK24003**	**BK24007**	**BK24008**
Volume	5000	8000	8000	5000	5000	10000	7000	7000	7000	10000	10000	6000	6000	4000	4000	3000	4000	5000
Analysis	RS	FU	FU	RS	RS	RS	FU	FU	RS	FU	FU	RS	RS	FU	FU	FU	FU	FU
Field	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04
WATERLOGGED																		
CEREALS _ grain																		
Avena sativa/fatua																		
Cerealia - Testa	2	2		3	2				3	1		3	3					
Panicum miliaceum																		
Setaria italica		21								55								
Panicum/Setaria																		
CEREALS _ chaff																		
Hordeum vulgare - rachis																		
Hordeum sp. - rachis																		
Secale cereale - rachis																		
Triticum aestivum - rachis																		
Triticum cf aestivum/durum/turgidum - rachis																		
Triticum dicoccon - glume base																		
Triticum dicoccon - spikelet fork																		
Triticum dicoccon - glume		11										1						
Triticum cf *dicoccon* - glume																		
Triticum dicoccon/spelta - glume																		
Triticum monococcum - glume base																		
Triticum monococcum - spikelet fork																		
Triticum monococcum - glume		21																
Triticum cf *monococcum* - spikelet fork																		
Triticum cf *monococcum* - glume																		
Triticum spelta - glume base																		
Triticum spelta - spikelet fork																		
Triticum spelta - glume		11								18		1						
Triticum sp. - spikelet fork																		
Triticum sp. - glume			6		2		189	6	1	54	30							
Cerealia - rachis																		
Cerealia ohne Hirsen - glume		21																
Panicum miliaceum - glume							63	11		37	10	2						
Setaria italica - glume																		
Panicum/Setaria - glume			3								10							
NUTS																		
Corylus avellana		12		2			1		1	19		1		2		2	16	16
Juglans regia	1	1			1		1		2	1							1	1
Pinus pinea																		
PULSES																		
Lens culinaris										13								
Pisum sativum																		
Pisum cf *sativum*																		
Vicia faba																		
Fabaceae		11																
SPICES																		
Anethum graveolens		84		2	2		45		2	36		2	3					
Apium graveolens	2	200	123			1	153	99	1	198	80	2	2					
Carum carvi																		
Coriandrum sativum		168	57		2	2	108		2	127	80	3	2					
Foeniculum vulgare							9											
Origanum vulgare																		
cf *Petroselinum crispum*																		
Pimpinella anisum																		
cf *Piper nigrum*																		
Piper nigrum																		
cf *Ruta graveolens*																		
Satureja hortensis	1		12	1		1		39		36								
cf *Thymus* sp. - stem																		
VEGETABLES AND SALADS																		
Amaranthus sp.	2	210		2	2	2	252	11	3	289	50	2	2	6				
Atriplex sp. - perianth											10							

Chronology																		
Context																		
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
US	09b 04	09b 05	09b 05	09b 06	09b 07	09b 08	09b 09	09b 09	09b 09	09B 10	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	**BK14166**	**BK14167**	**BK14167**	**BK14168**	**BK14169**	**BK14170**	**BK14171**	**BK14171**	**BK14171**	**BK14172**	**BK14172**	**BK14181**	**BK14182**	**BK24001**	**BK24002**	**BK24003**	**BK24007**	**BK24008**
Volume	5000	8000	8000	5000	5000	10000	7000	7000	7000	10000	10000	6000	6000	4000	4000	3000	4000	5000
Atriplex sp.														8				
Beta vulgaris						1												
Brassica cf *oleracea*																		
Brassica rapa/nigra																		
Brassica sp.		11				1	9		1	18	10	1						
Brassica/Sinapis			3															
Daucus carota																		
Lagenaria siceraria				1	1		1		1	25		1	1					
Pastinaca sativa																		
Portulaca oleracea		11	27					39		18	40		1					
FRUITS																		
Cucumis melo							28			127								
Cucumis sativus		11					18			91								
Cucumis melo/sativa		790	3	2	3	3	508		3	767	10	3	3					
Ficus carica	4	6464	111	4	4	4	4869	94	4	7272	150	4	4					
Fragaria vesca			30				18	55		36	10	1						
Malus domestica																		
Malus sylvestris/domestica																		
Malus/Pyrus - stem																		
Malus/Pyrus - fragment							513											
Malus/Pyrus - seed base		203					54											
Malus/Pyrus - pericarp		1			2	2			3	1		2	2					
Malus/Pyrus		301			3		225		3	532								
Pyrus sp.																		
Pyrus sp. - stone cells	3	1		3	3	3	3		3	1		3						
Pyrus sp. - flower	2	84		2	2	2	25		2	94		1	1					15
Morus sp.	3	273	3	3	3	2	180		3	277	10	3	3					
Olea europaea										3								
Physalis alkekengi	2	11				1	9		1	18			1					
Prunus cf *avium*																		
Prunus avium/cerasus	1	37		2	2	2	25		3	34		3	2					
Prunus cf *domestica*																		
Prunus domestica	2			2	2	2			3			3	2					
Prunus domestica/insititia		46					34			56								
Prunus insititia																		
Prunus persica		1					11			1							1	1
Prunus cf *spinosa*																		
Prunus spinosa	2	25		2	1	1			1	25		1	1					
Prunus sp.		116								1					3			
Rubus caesius	3	379		1	3	2	180		3	489		3	3					
Rubus cf *fruticosus*									1				2					
Rubus fruticosus	1	42				1	18			55		2						
Rubus idaeus						2						1						
Rubus sp.			3															
Sambucus nigra/racemosa					2	1						1	1	8	3	1		
Vitis vinifera - aborted seed										145								
Vitis vinifera	4	3297		3		4				2749			3				15	15
OIL, DYE AND FIBRE PLANTS																		
Cannabis sativa																		
Carthamus tinctorius																		
cf *Isatis tinctoria*																		
Linum usitatissimum											10							
Papaver cf *somniferum*																		
Papaver somniferum			51				54	33			40							
WEEDS OF WINTER CEREALS																		
Adonis sp.													1					
Agrostemma githago		882	804	2	2	1	1944		2	10063	4160	3				1		
Anthemis arvensis			3				18	11										
Bromus arvensis Type																		
Buglossoides arvensis																		
Fallopia convolvulus				1	2	1	9			19		2						
Galium aparine		32					9			36								
Silene gallica																		

Chronology																		
Context																		
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
US	09b 04	09b 05	09b 05	09b 06	09b 07	09b 08	09b 09	09b 09	09b 09	09B 10	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	**BK14166**	**BK14167**	**BK14167**	**BK14168**	**BK14169**	**BK14170**	**BK14171**	**BK14171**	**BK14171**	**BK14172**	**BK14172**	**BK14181**	**BK14182**	**BK24001**	**BK24002**	**BK24003**	**BK24007**	**BK24008**
Volume	5000	8000	8000	5000	5000	10000	7000	7000	7000	10000	10000	6000	6000	4000	4000	3000	4000	5000
Stachys annua/arvensis														2				
Valerianella locusta																		
Valerianella rimosa																		
Veronica hederifolia																		
Viola tricolor																		
Order Aperetalia_weeds of rather acidic/neutral soils																		
Aphanes arvensis											10							
Aphanes sp																		
cf *Bromus secalinus*																		
Camelina sativa - pod																		
Camelina sativa										54			1					
Camelina cf *sativa*																		
Centaurea cf *cyanus*																		
Centaurea cyanus																		
Papaver argemone			3					6			20							
Papaver dubium			6															
Raphanus raphanistrum																		
Scleranthus sp. - capsule																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Ajuga cf *chamaepitys*																		
Ajuga chamaepitys						1												
Bupleurum rotundifolium																		
Caucalis platycarpos										18								
Euphorbia exigua																		
Galium spurium		53																
Glaucium corniculatum																		
Myagrum perfoliatum												1		12				15
Myosoton aquaticum																		
Nigella arvensis																		
Orlaya grandiflora												1						
Ranunculus arvensis			3							18								
Scandix pecten-veneris																		
Silene cf *dichotoma*																		
Stachys annua		21		1			18			36								
Thymelaea passerina																		
Torilis arvensis																		
Vaccaria pyramidata		21			1	1	9		1	18								
Valerianella dentata		11	3				18		1	18								
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Aethusa cynapium		11																
Anagallis arvensis/foemina	2	95				2	36		2	54								
Arenaria serpyllifolia			15					17			10							
Atriplex/Chenopodium																		
Capsella bursa-pastoris																		
Chenopodium album	2	42	21		2	1	261	22	2	163		2	1	8	13	1		
Chenopodium ficifolium																		
Chenopodium cf *ficifolium*											10							
Chenopodium foliosum																		
Chenopodium hybridum	2	11		1	1	2	9			18		1	1	2	2			
Chenopodium murale	1	137	15	2	1	2	117			108	10	1	2	2	3	1		
Chenopodium polyspermum																		
Echinochloa crus-galli																		
Euphorbia helioscopia																		
Euphorbia platyphyllos																		
Fumaria officinalis																		
Fumaria sp.						1												
Galeopsis bifida																		
Galeopsis ladanum																		
Galeopsis sp.	1	11		1														
Galeopsis cf *speciosa*																		

Chronology																		
Context																		
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
US	09b 04	09b 05	09b 05	09b 06	09b 07	09b 08	09b 09	09b 09	09b 09	09B 10	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	**BK14166**	**BK14167**	**BK14167**	**BK14168**	**BK14169**	**BK14170**	**BK14171**	**BK14171**	**BK14171**	**BK14172**	**BK14172**	**BK14181**	**BK14182**	**BK24001**	**BK24002**	**BK24003**	**BK24007**	**BK24008**
Volume	5000	8000	8000	5000	5000	10000	7000	7000	7000	10000	10000	6000	6000	4000	4000	3000	4000	5000
Galeopsis tetrahit																		
Galeospis ladanum/segetum																		
cf *Heliotropium europaeum*																		
Heliotropium sp.																		
Lamium amplexicaule/purpureum															84			
Lamium cf *purpureum*																		
Malva sylvestris		32					9	6						4				
Mercurialis annua																1		
Poa annua								6			10							
Polygonum lapathifolium/persicaria									1			1						
Polygonum persicaria																		
Portulaca sp.							9											
Setaria verticillata/viridis																		
Solanum nigrum		221	15		3	2	279	28	2	270	10	3	3					
Sonchus asper			6								10							
Sonchus asper/oleraceus								6										
Sonchus oleraceus							9											
Stachys cf *arvensis*																		
Stellaria media	1		9		1	1	27	17	2	72	10		1					
Thlaspi arvense							9	6	1	18		1						
Urtica urens	2	32	6				36	17	1	144	20	1						
Verbena officinalis			9															
Xanthium strumarium																		
PERENNIAL RUDERALS																		
Agropyron repens																		
Arctium lappa		11												92		2		
Arctium minus																		
Arctium sp.		11													1			
Bryonia dioica																		
Carduus crispus																		
Cerastium arvense																		
Chelidonium majus							9			18								
cf *Chondrilla juncea*																		
Cirsium sp.		11				1												
Cirsium/Carduus							18		1									
Conium maculatum						1									18	2		
Convolvulus arvensis																		
Cruciata laevipes																		
Dipsacus cf *fullonum*																		
Fallopia dumetorum																		
Hyoscyamus niger															1			15
Lactuca serriola																		
Lamium cf *album*																		
Lamium album														2				
Lapsana communis		11	3													1		
cf *Marrubium vulgare*																		
Onopordum acanthium																		
Plantago major			12					6										
Poa compressa																		
Polygonum cf *aviculare*																		
Polygonum aviculare	1	42					72		1	18		2						
Potentilla anserina																		
Ranunculus repens											10							
Reseda sp.																		
Rumex conglomeratus - perianth																		
Rumex conglomeratus - tubercle																		
Rumex cf *conglomeratus* - perianth																		
Rumex cf *crispus*																		
Rumex crispus - perianth																		
Rumex crispus - tubercle																		
Rumex obtusifolius - perianth																		
Rumex obtusifolius		53			2	2	45	11	1	36		2		4				
Sambucus cf *ebulus*																		

Chronology																		
Context																		
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
US	09b 04	09b 05	09b 05	09b 06	09b 07	09b 08	09b 09	09b 09	09b 09	09B 10	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	**BK14166**	**BK14167**	**BK14167**	**BK14168**	**BK14169**	**BK14170**	**BK14171**	**BK14171**	**BK14171**	**BK14172**	**BK14172**	**BK14181**	**BK14182**	**BK24001**	**BK24002**	**BK24003**	**BK24007**	**BK24008**
Volume	5000	8000	8000	5000	5000	10000	7000	7000	7000	10000	10000	6000	6000	4000	4000	3000	4000	5000
Sambucus ebulus														2				
Saponaria officinalis																		
Saponaria cf *officinalis*																		
Silene alba																		
Urtica dioica			12					6			20							
MEADOWS AND PASTURES																		
Achillea millefolium																		
Agrostis sp.																		
Ajuga cf *reptans*																		
Ajuga reptans																		
Anthriscus sp.																		
Bromus cf *commutatus*																		
Bromus hordeaceus																		
Centaurea cf *jacea*																		
Centaurea sp.																		
Cichorium intybus																		
Cirsium/Centaurea																		
cf *Cynosurus* sp.																		
Dactylis glomerata																		
Deschampsia caespitosa																		
Dianthus cf *armeria*																		
Festuca rubra/ovina																		
Festuca/Lolium																		
Holcus lanatus																		
Leontodon autumnalis																		
Leontodon sp.																		
Leucanthemum vulgare								6										
Lolium perenne																		
Nardus stricta																		
Plantago lanceolata																		
Plantago media																		
Poa pratensis																		
Poa pratensis Type																		
Poa pratensis/trivialis																		
Potentilla cf *erecta*																		
Potentilla erecta																		
Prunella cf *vulgaris*																		
Prunella vulgaris							9			36								
Ranunculus cf *acris*																		
Ranunculus acris																		
Rhinanthus sp.																		
Rumex acetosa - perianth																		
Rumex acetosella																		
Silene vulgaris										54								
Taraxacum officinale		11					9											
Thalictrum flavum																		
Trifolium pratense - pod with seeds																		
Trifolium pratense - capsule		11																
Trifolium sp. - chalice							9			18	10							
Open swards																		
Acinos arvensis		21																
Ajuga genevensis																		
Artemisia campestris											10							
Centaurea scabiosa																		
Dianthus sp.																		
Euphorbia cf *seguieriana*																		
Euphrasia/Odontites																		
Gentiana cruciata																		
Medicago lupulina - pod with seed																		
Medicago lupulina - pod																		
Medicago minima - pod							45		1									
Odontites sp.																		
cf *Petrorhagia prolifera*																		

Chronology																		
Context																		
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
US	09b 04	09b 05	09b 05	09b 06	09b 07	09b 08	09b 09	09b 09	09b 09	09B 10	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	**BK14166**	**BK14167**	**BK14167**	**BK14168**	**BK14169**	**BK14170**	**BK14171**	**BK14171**	**BK14171**	**BK14172**	**BK14172**	**BK14181**	**BK14182**	**BK24001**	**BK24002**	**BK24003**	**BK24007**	**BK24008**
Volume	5000	8000	8000	5000	5000	10000	7000	7000	7000	10000	10000	6000	6000	4000	4000	3000	4000	5000
Prunella grandiflora																		
Scabiosa columbaria																		
Stachys cf *recta*																		
Stachys recta																		
Teucrium botrys																		
Teucrium cf *chamaedrys*																		
Teucrium montanum												1						
Trifolium cf *campestre* - chalice																		
Aquatic plants																		
Ceratophyllum cf *submersum*																		
Lemna sp.																		
Polygonum cf *amphibium*																		
Potamogeton sp.																		
Ranunculus aquatilis																		
Sparganium sp.																		
Zannichellia palustris																		
Reed fields																		
Alisma plantago-aquatica																		
Carex sp.																		
Carex sp. - utriculus							9		1									
Carex sp. bicarpellate							18										15	30
Carex sp. tricarpellate		84	9	1	1		54	11	2	18		2	1	12			30	45
Cicuta virosa																		
Eleocharis palustris	1	11	3				27	11										
Eupatorium cannabinum																		
Galium cf *palustre*		11																
Galium palustre																		
Glyceria sp.																		
Hippuris vulgaris																		
Iris pseudacorus																		
Juncus sp.								6										
Lycopus europaeus											30							
Mentha arvensis/aquatica							9	17		18	10							
Nasturtium officinale		11																
Oenanthe fistulosa													1					
Oenanthe sp.																		
Poa palustris																		
Rorippa amphibia																		
Rumex cf *aquaticus/hydrolapatum*																		
Salix sp. - veg. part																		
Schoenoplectus lacustris																		
Schoenoplectus sp.																		
Riverbank plants (pioneer)																		
Alnus glutinosa - veg. part																		
Alnus sp. - veg. Part																		
Bidens sp.																		
Bidens tripartita																		
Cyperus flavescens																		
Cyperus fuscus			12															
cf *Myosoton aquaticum*																		
Polygonum cf *hydropiper*																		
Polygonum hydropiper																		
Polygonum hydropiper/mite		11												2				
Polygonum lapathifolium		11																
Polygonum minus																		
Polygonum mite																		
Polygonum mite/minus																		
Ranunculus cf *flammula*																		
Ranunculus flammula																		
Ranunculus sardous																		
Ranunculus sceleratus		11																
Teucrium cf *scordium*																		
Wet meadows																		

Chronology																		
Context																		
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
US	09b 04	09b 05	09b 05	09b 06	09b 07	09b 08	09b 09	09b 09	09b 09	09B 10	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	**BK14166**	**BK14167**	**BK14167**	**BK14168**	**BK14169**	**BK14170**	**BK14171**	**BK14171**	**BK14171**	**BK14172**	**BK14172**	**BK14181**	**BK14182**	**BK24001**	**BK24002**	**BK24003**	**BK24007**	**BK24008**
Volume	5000	8000	8000	5000	5000	10000	7000	7000	7000	10000	10000	6000	6000	4000	4000	3000	4000	5000
cf *Euphorbia palustris*																		
Filipendula ulmaria											10							
Linum catharticum																		
Lychnis flos-cuculi																		
Scirpus sylvaticus																		
Stachys officinalis																		
Forests, forest edges and clearings, hedges																		
Abies alba - needle																		
Acer sp. - veg. part																		
Agrimonia eupatoria																		
Arctium cf *nemorosum*																		
Betula pendula - veg. part																		
Cornus sanguinea																		
Crataegus sp.																		
cf *Humulus lupulus*																		15
Quercus sp. - veg. part																		
Rosa sp.	2	117		2	1	1	1		2	128		2	3					
Solanum dulcamara																		
Solanum cf *dulcamara*																		
Stellaria cf *nemorum*																		
Torilis cf *japonica*																		
Valeriana cf *tripteris*																		
Viburnum lantana																		
Viburnum opulus																		
Calamintha sylvatica																		
Galium verum																		
Hypericum perforatum			6					6										
Saponaria cf *ocymoides*																		
Silene cf *nutans*																		
Silene nutans																		
Thalictrum minus																		
VARIA																		
Ajuga sp.																		
Allium sp.																		
Apiaceae - fragments		63								18								
Asteraceae			3								10							
Boraginaceae																		
Brassicaceae								6										
Bromus sp.																		
Campanula sp.																		
Cannabinaceae																		
Carduus sp.																		
Caryophyllaceae			3					17										
Cerastium sp.																		
Chenopodiaceae		53	24					6										
Chenopodiaceae/Amaranthaceae														2		3	15	
Chenopodium sp.		32						39										
Cichorium sp.																		
Crepis sp.																		
Cuscuta sp.																		
Cyperaceae													1					
Epilobium sp.																		
Euphorbia sp.																		
Euphorbia sp. - fruit																		
Euphorbia sp. - capsule																		
Fallopia sp.			3															
Filipendula sp.																		
Galium sp.			6				27			18	10							
Hypericum sp.																		
Inula sp.																		

Chronology																		
Context																		
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
US	09b 04	09b 05	09b 05	09b 06	09b 07	09b 08	09b 09	09b 09	09b 09	09B 10	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	**BK14166**	**BK14167**	**BK14167**	**BK14168**	**BK14169**	**BK14170**	**BK14171**	**BK14171**	**BK14171**	**BK14172**	**BK14172**	**BK14181**	**BK14182**	**BK24001**	**BK24002**	**BK24003**	**BK24007**	**BK24008**
Volume	5000	8000	8000	5000	5000	10000	7000	7000	7000	10000	10000	6000	6000	4000	4000	3000	4000	5000
Lamiaceae								22				1						
Lamium sp.																		
Liliaceae																		
Malva sp.														16	2			
cf *Matricaria* sp.		11																
Mentha sp.																		
Nasturtium sp.																		
Papaver sp.	1	11	45	2		1	27	17		36	70							
Physalis sp.																		
Physalis/Solanum																		
Phyteuma sp.																		
Plantago sp. - chalice+A54																		
Plantago sp.																		
Poa sp.			21					6			10							
Poaceae																		
Poaceae								22		18	10							
Polygonaceae																		
Polygonum sp.																		
Polygonum sp.			3				27				10	1						
Potentilla sp.			3															
Primulaceae																		
Ranunculaceae																		
Ranunculus sp.														4				
cf *Raphanus* sp.																		
Rosaceae - thorn																		
Rosaceae																		
Rosaceae - flower																		
Rumex sp. - tubercle																		
Rumex sp.																		
Rumex sp. - perianth										18	30							
Sambucus sp.		11		1						18					1	1		15
Satureja sp.																		
Scabiosa sp.																		
cf *Scandix* sp.																		
Scrophulariaceae																		
Silene alba/dioica																		
Silene sp.		11	3		1		27		1				1					
Sinapis sp.																		
Solanaceae											10							
Solanum sp.	1		3	1											5			15
Sonchus sp.																		
Stachys sp.																		
Stachys/Lamium											20							
Stellaria graminea/palustris			6															
Stellaria sp.																		
Teucrium sp.																		
Tilia sp. - fruit																		
Torilis sp.																		
Veronica sp.																		
Vicia sp.																		
Viola sp. - capsule																		
Viola sp.																		
Indeterminata - rhizome																		
Indeterminata - fruitstem																		
Indeterminata - endocarp		4								72								
Indeterminata		1	204								330							
CHARRED																		
CEREALS _ grain																		
Avena sp.																		
Hordeum vulgare														4				15

Chronology																		
Context																		
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
US	09b 04	09b 05	09b 05	09b 06	09b 07	09b 08	09b 09	09b 09	09b 09	09B 10	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	**BK14166**	**BK14167**	**BK14167**	**BK14168**	**BK14169**	**BK14170**	**BK14171**	**BK14171**	**BK14171**	**BK14172**	**BK14172**	**BK14181**	**BK14182**	**BK24001**	**BK24002**	**BK24003**	**BK24007**	**BK24008**
Volume	5000	8000	8000	5000	5000	10000	7000	7000	7000	10000	10000	6000	6000	4000	4000	3000	4000	5000
Hordeum sp.																		
Secale cereale																		
Triticum aestivum																		
Triticum aestivum/durum/turgidum																		30
Triticum dicoccon																		
Triticum cf *dicoccon*														2				
Triticum spelta																		
Triticum sp.																		
Cerealia ohne Hirsen																		15
Panicum miliaceum																		
Setaria italica																	15	
Panicum/Setaria														2				
CEREALS _ chaff																		
Hordeum vulgare - rachis																		
Hordeum sp. - rachis					1													
Secale cereale - rachis																		
Triticum aestivum - rachis																		
Triticum dicoccon - spikelet fork																		
Triticum dicoccon - glume			3											2				30
Triticum monococcum - spikelet fork																		
Triticum monococcum - glume																		
Triticum spelta - spikelet fork																		
Triticum spelta - glume base																		
Triticum spelta - glume																	15	
Triticum sp. - spikelet fork																		
Triticum sp. - glume																		
Cerealia																		
NUTS																		
Corylus avellana																		
Juglans regia																		
Pinus pinea																		
PULSES																		
cf *Lathyrus* sp.																		
Lens culinaris																	15	
Pisum sativum																		
Vicia faba																		1
Vicia/Lathyrus					1													
Fabaceae																		
SPICES																		
Apium graveolens																		
Satureja hortensis																		
VEGETABLES AND SALADS																		
Allium sativum																		
Atriplex sp.																		
Brassica sp.																		
FRUITS																		
Ficus carica - fruitflesh																		
Phoenix dactylifera																		
Prunus domestica/insititia																		
Prunus persica																		
Sambucus nigra/racemosa																		
Vitis vinifera																		
OIL AND FIBRE PLANTS																		
WEEDS OF WINTER CEREALS																		
Galium aparine																	15	
Veronica hederifolia																		
Order Aperetalia_weeds of rather acidic/neutral soils																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Avena fatua																		
Caucalis platycarpos																		
Galium spurium																	15	

Chronology																		
Context																		
Structure	38	38	38	38	38	38	38	38	38	38	38	38	38	18	18	18	15	15
US	09b 04	09b 05	09b 05	09b 06	09b 07	09b 08	09b 09	09b 09	09b 09	09B 10	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	BK14166	BK14167	BK14167	BK14168	BK14169	BK14170	BK14171	BK14171	BK14171	BK14172	BK14172	BK14181	BK14182	BK24001	BK24002	BK24003	BK24007	BK24008
Volume	5000	8000	8000	5000	5000	10000	7000	7000	7000	10000	10000	6000	6000	4000	4000	3000	4000	5000
Glaucium corniculatum																		
Myagrum perfoliatum																		
Vicia cf *angustifolia*																		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Chenopodium album																		
Chenopodium polyspermum			3															
Galeospis ladanum/segetum																		
cf *Solanum nigrum*																		
Thlaspi arvense																		
PERENNIAL RUDERALS																		
Cruciata laevipes																		
Rumex obtusifolius																	15	
Silene alba																		
MEADOWS AND PASTURES																		
Centaurea sp.																		
Festuca/Lolium																		
Galium boreale																		
Plantago lanceolata																		
Plantago media																		
Trifolium sp.																		
Aquatic plants																		
Sparganium sp.																		
Reed fields																		
cf *Alisma plantago-aquatica*																		
Carex sp. tricarpellate													1					
Galium cf *palustre*																		
Riverbank plants (pioneer)																		
Teucrium scordium																		
Forests, forest edges and clearings, hedges																		
Abies alba - needle																		
Galium verum																		
cf *Humulus lupulus*																		
VARIA																		
Asperula sp.																		
Bromus sp.																		
Chenopodiaceae																		
Chenopodium sp.																		
Galium sp.					1							1						
Poaceae																		15
Rumex sp.																		
Sambucus sp.																		
Vicia sp.																		
Indeterminata - amorphous object																		15
Indeterminata - crusts																		
Indeterminata - seed/fruit														2				
MINERALISED																		
CEREALS _ grain																		
Avena sp.																		
Hordeum vulgare	1	11							1									
Triticum spelta																		
Triticum sp.						1												
Panicum miliaceum	4	1387		2	4	4	1026		4	793		3	3					
Setaria italica		22							1	126								
Panicum/Setaria		21						6										
Cerealia ohne Hirsen					1		55											
CEREALS _ chaff																		
Hordeum vulgare - rachis																		
Triticum spelta - spikelet fork																		
Cerealia - ear		1																

Chronology																		
Context																		
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
US	09b 04	09b 05	09b 05	09b 06	09b 07	09b 08	09b 09	09b 09	09b 09	09B 10	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	**BK14166**	**BK14167**	**BK14167**	**BK14168**	**BK14169**	**BK14170**	**BK14171**	**BK14171**	**BK14171**	**BK14172**	**BK14172**	**BK14181**	**BK14182**	**BK24001**	**BK24002**	**BK24003**	**BK24007**	**BK24008**
Volume	5000	8000	8000	5000	5000	10000	7000	7000	7000	10000	10000	6000	6000	4000	4000	3000	4000	5000
Cerealia - glume							9											
Panicum miliaceum - glume											10							
Setaria italica - glume			3															
Panicum/Setaria - glume			3															
PULSES																		
Lens culinaris	3	1037		3	3	3	530		4	702		4	4					
Pisum sativum																		
Vicia faba	1	26		1	1	1	5			18		1	1					
Fabaceae - fruitflesh	4			4	4	4						4						
Fabaceae																		
FRUITS																		
Cucumis melo							54			73								
Cucumis melo/sativa	2	287		2	2	2	171		2	273			2					
Ficus carica																		
Fragaria vesca		11																
Malus domestica																		
Malus sylvestris/domestica																		
Pyrus sp.																		
Malus/Pyrus	2	11		3	3	4	24		3			2	2					
Morus sp.				1														
Physalis alkekengi																		
Prunus sp. - fragment																		
Rubus caesius							9											
Rubus sp. - inner																		
Sambucus nigra/racemosa	1																	
Vitis vinifera - fruitflesh																		
Vitis vinifera - aborted seed		95	3				81											
Vitis vinifera	4	254		4	4	4	1634		4			4	4					
SPICES																		
Anethum graveolens	2			2	1	1	45		2				1					
Apium graveolens			6	2			9				20							
Carum carvi																		
Coriandrum sativum	3	11			2		27		2	18								
Foeniculum vulgare							27			18								
Nigella cf *sativa*	1						27		1									
VEGETABLES AND SALADS																		
Atriplex sp.																		
Beta vulgaris	1																	
Brassica sp.																		
Daucus carota									1									
Lagenaria siceraria	1	3					2						1					
OIL AND FIBRE PLANTS																		
Linum usitatissimum		21								1		1						
Papaver somniferum		32								90								
WEEDS OF WINTER CEREALS																		
Agrostemma githago					1	1						1						
Buglossoides arvensis																		
Fallopia convolvulus																		
Galium aparine		11								54								
cf *Veronica hederifolia*										36								
Order Aperetalia_weeds of rather acidic/neutral soils																		
Camelina sativa	2				2													
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Caucalis platycarpos																		
Galium spurium																		
Vaccaria pyramidata																		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Galeopsis cf *speciosa*							9											
Polygonum lapathifolium/persicaria																		
Solanum nigrum	1	32																15

Chronology																		
Context																		
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
US	09b 04	09b 05	09b 05	09b 06	09b 07	09b 08	09b 09	09b 09	09b 09	09B 10	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	**BK14166**	**BK14167**	**BK14167**	**BK14168**	**BK14169**	**BK14170**	**BK14171**	**BK14171**	**BK14171**	**BK14172**	**BK14172**	**BK14181**	**BK14182**	**BK24001**	**BK24002**	**BK24003**	**BK24007**	**BK24008**
Volume	5000	8000	8000	5000	5000	10000	7000	7000	7000	10000	10000	6000	6000	4000	4000	3000	4000	5000
Sonchus oleraceus							9											
Stellaria media																		
Thlaspi arvense																		
PERENNIAL RUDERALS																		
Arctium sp.																		
Convolvulus arvensis																		
Hyoscyamus niger																		
Lapsana communis																		
MEADOWS AND PASTURES																		
Centaurea sp.																		
Rhinanthus sp.																		
Scabiosa sp.																		
Reed fields																		
Carex sp. tricarpellat																		
Galium palustre		32																
Forests, forest edges and clearings, hedges																		
Rosa sp.				1														
cf *Seseli libanotis*		11																
VARIA																		
Apiaceae			6				27			1							15	
Asteraceae		11																
Brassicaceae																		
Bromus sp.													1					
Cannabinaceae																		
Chenopodium sp.																		
Galium sp.																		
Lamiaceae																		
Lolium sp.																		
Papaver sp.		32	9					6		90	20							
Poa sp.			24															
Poaceae	1	63	3				9			36								
Potentilla sp.																		
Rumex sp.																		
Indeterminata - endocarp																		
Indeterminata - fruitflesh							30			1								
Indeterminata - coprolithes																		
Indeterminata - crusts																		
Indeterminata - seed/fruit																		

Civil East																	
Chronology												**Roman, not specified**				**BK08**	
Context																	
Structure	**15**	**15**	**15**	**15**	**15**	**42**	**42**	**42**	**53**	**53**		**40**	**40**	**40**	**1004**	**Tr 1**	**Tr 1**
US	03 A	03 B	03 C	03 C	03 D	02 A	02 B	02 A	P34	P34		02 1	02 2	03			
Sample N°	**BK24009**	**BK24010**	**BK24011**	**BK24011**	**BK24012**	**BK24013**	**BK24014**	**BK24015**	**BK004034**	**BK004034P**		**BK24004**	**BK24005**	**BK24034**	**BK24036**	**BK28001**	**BK28002**
Volume	4000	6000	5000	5000	6000	4000	2000	2000	8000	8000		5000	6000	6000	14000	3000	10000
Analysis	FU	FU	FU	FU	FU	FU	FU	FU	FU	FU		FU	FU	FU	FU	FU	FU
Field	04	04	04	04	04	04	04	04	04	04		04	04	04	04	08	08
WATERLOGGED																	
CEREALS _ grain																	
Avena sativa/fatua																	
Cerealia - Testa																	
Panicum miliaceum										27							
Setaria italica																	
Panicum/Setaria		30															
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
Hordeum sp. - rachis																	
Secale cereale - rachis																	
Triticum aestivum - rachis																	
Triticum cf aestivum/durum/turgidum - rachis																	
Triticum dicoccon - glume base																	
Triticum dicoccon - spikelet fork																	
Triticum dicoccon - glume	45	150	53													10	50
Triticum cf *dicoccon* - glume																	
Triticum dicoccon/spelta - glume																	150
Triticum monococcum - glume base																	
Triticum monococcum - spikelet fork																	
Triticum monococcum - glume																	
Triticum cf *monococcum* - spikelet fork																	
Triticum cf *monococcum* - glume	15		35														
Triticum spelta - glume base																	
Triticum spelta - spikelet fork									1								
Triticum spelta - glume		30	18	21		1								5		5	
Triticum sp. - spikelet fork				39													
Triticum sp. - glume				115													
Cerealia - rachis				7													
Cerealia ohne Hirsen - glume			18														
Panicum miliaceum - glume			35	79													50
Setaria italica - glume																	
Panicum/Setaria - glume																	
NUTS																	
Corylus avellana	17	35	20	5	17		1		1	13		10	15	5	1	1	
Juglans regia	16	32	20	5	16				1				15				
Pinus pinea																	
PULSES																	
Lens culinaris										9							
Pisum sativum																	
Pisum cf *sativum*																	
Vicia faba										9							
Fabaceae																	
SPICES																	
Anethum graveolens										13				5			
Apium graveolens		150	53	941						40							100
Carum carvi																	
Coriandrum sativum			18	4					1								
Foeniculum vulgare																	
Origanum vulgare																	
cf *Petroselinum crispum*																	
Pimpinella anisum																	
cf *Piper nigrum*			1														
Piper nigrum																	
cf *Ruta graveolens*																	
Satureja hortensis	15			15													50
cf *Thymus* sp. - stem																	
VEGETABLES AND SALADS																	
Amaranthus sp.	150	120	53	207	30	2		20								45	50
Atriplex sp. - perianth																	

Chronology												Roman, not specified				BK08	
Context																	
Structure	**15**	**15**	**15**	**15**	**15**	**42**	**42**	**42**	**53**	**53**		**40**	**40**	**40**	**1004**	**Tr 1**	**Tr 1**
US	03 A	03 B	03 C	03 C	03 D	02 A	02 B	02 A	P34	P34		02 1	02 2	03			
Sample N°	**BK24009**	**BK24010**	**BK24011**	**BK24011**	**BK24012**	**BK24013**	**BK24014**	**BK24015**	**BK004034**	**BK004034P**		**BK24004**	**BK24005**	**BK24034**	**BK24036**	**BK28001**	**BK28002**
Volume	4000	6000	5000	5000	6000	4000	2000	2000	8000	8000		5000	6000	6000	14000	3000	10000
Atriplex sp.				4									15			5	100
Beta vulgaris																	
Brassica cf *oleracea*																	
Brassica rapa/nigra	15	90	18										15			15	
Brassica sp.			18														
Brassica/Sinapis																	
Daucus carota			53	11													
Lagenaria siceraria						1											
Pastinaca sativa																	
Portulaca oleracea				30													
FRUITS																	
Cucumis melo																	
Cucumis sativus																	
Cucumis melo/sativa																	
Ficus carica	30	30		33	45	2	4		4	1480							
Fragaria vesca				109										5			
Malus domestica									2	227							
Malus sylvestris/domestica																	
Malus/Pyrus - stem																	
Malus/Pyrus - fragment																	
Malus/Pyrus - seed base																	
Malus/Pyrus - pericarp		2	1						1								
Malus/Pyrus																	
Pyrus sp.																	
Pyrus sp. - stone cells			1		1												
Pyrus sp. - flower				1										5			
Morus sp.																	
Olea europaea		31	2		16												
Physalis alkekengi																	
Prunus cf *avium*																	
Prunus avium/cerasus		2	1							14							
Prunus cf *domestica*																	
Prunus domestica																	
Prunus domestica/insititia									4								
Prunus insititia	1				3					1							
Prunus persica	1	1	19		1				4							2	
Prunus cf *spinosa*																	
Prunus spinosa									3								
Prunus sp.										306						2	
Rubus caesius																	
Rubus cf *fruticosus*																	
Rubus fruticosus										13							
Rubus idaeus																	
Rubus sp.																	
Sambucus nigra/racemosa	15				15	3	1										
Vitis vinifera - aborted seed																	
Vitis vinifera	15			4	4			5	4	1480						5	
OIL, DYE AND FIBRE PLANTS																	
Cannabis sativa		30	18			1										10	
Carthamus tinctorius																	
cf *Isatis tinctoria*																	
Linum usitatissimum		30															
Papaver cf *somniferum*																	
Papaver somniferum																	
WEEDS OF WINTER CEREALS																	
Adonis sp.		30	18			1										5	
Agrostemma githago	15	60	18	19	45											15	
Anthemis arvensis		60	18	52													
Bromus arvensis Type																	
Buglossoides arvensis																	
Fallopia convolvulus		30							1								100
Galium aparine			18	4													
Silene gallica																	

Chronology												Roman, not specified				BK08	
Context																	
Structure	**15**	**15**	**15**	**15**	**15**	**42**	**42**	**42**	**53**	**53**		**40**	**40**	**40**	**1004**	**Tr 1**	**Tr 1**
US	03 A	03 B	03 C	03 C	03 D	02 A	02 B	02 A	P34	P34		02 1	02 2	03			
Sample N°	**BK24009**	**BK24010**	**BK24011**	**BK24011**	**BK24012**	**BK24013**	**BK24014**	**BK24015**	**BK004034**	**BK004034P**		**BK24004**	**BK24005**	**BK24034**	**BK24036**	**BK28001**	**BK28002**
Volume	4000	6000	5000	5000	6000	4000	2000	2000	8000	8000		5000	6000	6000	14000	3000	10000
Stachys annua/arvensis																	
Valerianella locusta																	
Valerianella rimosa																	
Veronica hederifolia																	
Viola tricolor																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Aphanes arvensis																	
Aphanes sp																	
cf *Bromus secalinus*																	
Camelina sativa - pod																	
Camelina sativa																	
Camelina cf *sativa*																	
Centaurea cf *cyanus*								5									
Centaurea cyanus																	
Papaver argemone				90													
Papaver dubium																	
Raphanus raphanistrum																	
Scleranthus sp. - capsule																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Ajuga cf *chamaepitys*																	
Ajuga chamaepitys																	
Bupleurum rotundifolium																	
Caucalis platycarpos			18	4													
Euphorbia exigua																	
Galium spurium			53	30													
Glaucium corniculatum							1										
Myagrum perfoliatum				4		9	11	10				30	15				
Myosoton aquaticum				15													100
Nigella arvensis																	
Orlaya grandiflora				19													
Ranunculus arvensis	15																
Scandix pecten-veneris																	
Silene cf *dichotoma*																	
Stachys annua		30		4		2											
Thymelaea passerina																	
Torilis arvensis																	
Vaccaria pyramidata																	
Valerianella dentata				19													
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Aethusa cynapium												10					
Anagallis arvensis/foemina	15	30	35	7		1										5	50
Arenaria serpyllifolia				30													
Atriplex/Chenopodium									1								
Capsella bursa-pastoris				15													
Chenopodium album	60	30	35	128		8	1	5				50	15	20		10	150
Chenopodium ficifolium																	
Chenopodium cf *ficifolium*																	
Chenopodium foliosum				15													
Chenopodium hybridum				26		4	1	5	1				15	10		5	
Chenopodium murale																	
Chenopodium polyspermum	15																50
Echinochloa crus-galli																	
Euphorbia helioscopia						1							15			10	
Euphorbia platyphyllos																	
Fumaria officinalis																	
Fumaria sp.																	
Galeopsis bifida																	
Galeopsis ladanum																	
Galeopsis sp.				4													50
Galeopsis cf *speciosa*																	

Chronology												Roman, not specified				BK08	
Context																	
Structure	**15**	**15**	**15**	**15**	**15**	**42**	**42**	**42**	**53**	**53**		**40**	**40**	**40**	**1004**	**Tr 1**	**Tr 1**
US	03 A	03 B	03 C	03 C	03 D	02 A	02 B	02 A	P34	P34		02 1	02 2	03			
Sample N°	**BK24009**	**BK24010**	**BK24011**	**BK24011**	**BK24012**	**BK24013**	**BK24014**	**BK24015**	**BK004034**	**BK004034P**		**BK24004**	**BK24005**	**BK24034**	**BK24036**	**BK28001**	**BK28002**
Volume	4000	6000	5000	5000	6000	4000	2000	2000	8000	8000		5000	6000	6000	14000	3000	10000
Galeopsis tetrahit																	
Galeospis ladanum/segetum																	
cf *Heliotropium europaeum*																	
Heliotropium sp.																	
Lamium amplexicaule/purpureum			18					10									100
Lamium cf *purpureum*																	
Malva sylvestris																	50
Mercurialis annua																	
Poa annua				15													
Polygonum lapathifolium/persicaria	15			18	30	4	2	15									
Polygonum persicaria						4											
Portulaca sp.																	
Setaria verticillata/viridis				45													
Solanum nigrum	60	120	123	210	45											15	600
Sonchus asper			18													5	150
Sonchus asper/oleraceus				4													
Sonchus oleraceus																	100
Stachys cf *arvensis*																	
Stellaria media			35	194		1			1	9						5	800
Thlaspi arvense	15	60	18	4	15			5	1							10	
Urtica urens				33													250
Verbena officinalis				90													50
Xanthium strumarium																	
PERENNIAL RUDERALS																	
Agropyron repens																	
Arctium lappa	15																
Arctium minus								5									
Arctium sp.									1								
Bryonia dioica																	
Carduus crispus						1											
Cerastium arvense																	50
Chelidonium majus				4													
cf *Chondrilla juncea*																	
Cirsium sp.			53											5			
Cirsium/Carduus																	
Conium maculatum																	
Convolvulus arvensis																	
Cruciata laevipes																	
Dipsacus cf *fullonum*																	
Fallopia dumetorum																	
Hyoscyamus niger				7					1								
Lactuca serriola																	
Lamium cf *album*																	
Lamium album						1		5								15	50
Lapsana communis		30															50
cf *Marrubium vulgare*																	
Onopordum acanthium																	
Plantago major				15													50
Poa compressa				15													
Polygonum cf *aviculare*													15				
Polygonum aviculare						1			1					5			50
Potentilla anserina						1											
Ranunculus repens	15		18	70												5	
Reseda sp.																	
Rumex conglomeratus - perianth					15												
Rumex conglomeratus - tubercle																	
Rumex cf *conglomeratus* - perianth																	
Rumex cf *crispus*																	
Rumex crispus - perianth																	
Rumex crispus - tubercle																	
Rumex obtusifolius - perianth																	
Rumex obtusifolius	45	120	105	127	30	2	2	5				20	45	10		5	150
Sambucus cf *ebulus*												10					

Chronology												Roman, not specified				BK08	
Context																	
Structure	**15**	**15**	**15**	**15**	**15**	**42**	**42**	**42**	**53**	**53**		**40**	**40**	**40**	**1004**	**Tr 1**	**Tr 1**
US	03 A	03 B	03 C	03 C	03 D	02 A	02 B	02 A	P34	P34		02 1	02 2	03			
Sample N°	**BK24009**	**BK24010**	**BK24011**	**BK24011**	**BK24012**	**BK24013**	**BK24014**	**BK24015**	**BK004034**	**BK004034P**		**BK24004**	**BK24005**	**BK24034**	**BK24036**	**BK28001**	**BK28002**
Volume	4000	6000	5000	5000	6000	4000	2000	2000	8000	8000		5000	6000	6000	14000	3000	10000
Sambucus ebulus																	
Saponaria officinalis																	
Saponaria cf *officinalis*																	
Silene alba			18		15												
Urtica dioica				180													250
MEADOWS AND PASTURES																	
Achillea millefolium																	
Agrostis sp.				30													
Ajuga cf *reptans*						1											
Ajuga reptans																	
Anthriscus sp.																	
Bromus cf *commutatus*																	
Bromus hordeaceus																	
Centaurea cf *jacea*																	
Centaurea sp.																	
Cichorium intybus																	
Cirsium/Centaurea		30		7													
cf *Cynosurus* sp.																	
Dactylis glomerata																	
Deschampsia caespitosa																	
Dianthus cf *armeria*																	
Festuca rubra/ovina																	
Festuca/Lolium				4													
Holcus lanatus																	
Leontodon autumnalis																	
Leontodon sp.																	
Leucanthemum vulgare				15													
Lolium perenne																	
Nardus stricta																	
Plantago lanceolata						1											
Plantago media																	
Poa pratensis																	
Poa pratensis Type				120													
Poa pratensis/trivialis																	
Potentilla cf *erecta*																	
Potentilla erecta																	
Prunella cf *vulgaris*																	
Prunella vulgaris		30		124													
Ranunculus cf *acris*																	
Ranunculus acris	30	30	18			2											
Rhinanthus sp.				14													
Rumex acetosa - perianth																	
Rumex acetosella																	
Silene vulgaris				11													
Taraxacum officinale																	
Thalictrum flavum																	
Trifolium pratense - pod with seeds																	
Trifolium pratense - capsule																	
Trifolium sp. - chalice				4													
Open swards																	
Acinos arvensis																	
Ajuga genevensis																	
Artemisia campestris																	
Centaurea scabiosa																	
Dianthus sp.																	
Euphorbia cf *seguieriana*																	
Euphrasia/Odontites																	
Gentiana cruciata																	
Medicago lupulina - pod with seed																	
Medicago lupulina - pod																	
Medicago minima - pod																	
Odontites sp.																	
cf *Petrorhagia prolifera*																	

Chronology												Roman, not specified				BK08	
Context																	
Structure	**15**	**15**	**15**	**15**	**15**	**42**	**42**	**42**	**53**	**53**		**40**	**40**	**40**	**1004**	**Tr 1**	**Tr 1**
US	03 A	03 B	03 C	03 C	03 D	02 A	02 B	02 A	P34	P34		02 1	02 2	03			
Sample N°	**BK24009**	**BK24010**	**BK24011**	**BK24011**	**BK24012**	**BK24013**	**BK24014**	**BK24015**	**BK004034**	**BK004034P**		**BK24004**	**BK24005**	**BK24034**	**BK24036**	**BK28001**	**BK28002**
Volume	4000	6000	5000	5000	6000	4000	2000	2000	8000	8000		5000	6000	6000	14000	3000	10000
Prunella grandiflora																	
Scabiosa columbaria																	
Stachys cf *recta*																	
Stachys recta																	
Teucrium botrys																	
Teucrium cf *chamaedrys*																	
Teucrium montanum																	
Trifolium cf *campestre* - chalice																	
Aquatic plants																	
Ceratophyllum cf *submersum*																	
Lemna sp.																	
Polygonum cf *amphibium*																	
Potamogeton sp.																	
Ranunculus aquatilis																	
Sparganium sp.																	
Zannichellia palustris																	
Reed fields																	
Alisma plantago-aquatica				30													
Carex sp.									1								
Carex sp. - utriculus	15	30	18		15												50
Carex sp. bicarpellate	15	30		64	15			5				10	15	5			50
Carex sp. tricarpellate	165	240	158	229	15	14	4	20				50	15	15		30	50
Cicuta virosa																	
Eleocharis palustris	30	60		37		1											
Eupatorium cannabinum																	
Galium cf *palustre*																	
Galium palustre																	
Glyceria sp.																	
Hippuris vulgaris																	
Iris pseudacorus																	
Juncus sp.				15													
Lycopus europaeus																	
Mentha arvensis/aquatica				105													
Nasturtium officinale																	100
Oenanthe fistulosa	30		18	14				15								5	
Oenanthe sp.																	
Poa palustris																	
Rorippa amphibia																	
Rumex cf *aquaticus/hydrolapatum*																	
Salix sp. - veg. part																	
Schoenoplectus lacustris																	
Schoenoplectus sp.	15			11													
Riverbank plants (pioneer)																	
Alnus glutinosa - veg. part																	
Alnus sp. - veg. Part																	
Bidens sp.																	
Bidens tripartita																	
Cyperus flavescens																	
Cyperus fuscus				30													
cf *Myosoton aquaticum*																	
Polygonum cf *hydropiper*																	
Polygonum hydropiper																	
Polygonum hydropiper/mite					15										3	5	
Polygonum lapathifolium	15	60	53				1										
Polygonum minus					15												
Polygonum mite																	
Polygonum mite/minus																	
Ranunculus cf *flammula*																	
Ranunculus flammula																	
Ranunculus sardous	15																
Ranunculus sceleratus				15													50
Teucrium cf *scordium*																	
Wet meadows																	

Chronology												Roman, not specified				BK08	
Context																	
Structure	**15**	**15**	**15**	**15**	**15**	**42**	**42**	**42**	**53**	**53**		**40**	**40**	**40**	**1004**	**Tr 1**	**Tr 1**
US	03 A	03 B	03 C	03 C	03 D	02 A	02 B	02 A	P34	P34		02 1	02 2	03			
Sample N°	**BK24009**	**BK24010**	**BK24011**	**BK24011**	**BK24012**	**BK24013**	**BK24014**	**BK24015**	**BK004034**	**BK004034P**		**BK24004**	**BK24005**	**BK24034**	**BK24036**	**BK28001**	**BK28002**
Volume	4000	6000	5000	5000	6000	4000	2000	2000	8000	8000		5000	6000	6000	14000	3000	10000
cf *Euphorbia palustris*																	
Filipendula ulmaria																	
Linum catharticum				30													
Lychnis flos-cuculi																	
Scirpus sylvaticus																	
Stachys officinalis																	
Forests, forest edges and clearings, hedges																	
Abies alba - needle																	
Acer sp. - veg. part																	
Agrimonia eupatoria																	
Arctium cf *nemorosum*																5	
Betula pendula - veg. part																	
Cornus sanguinea																	
Crataegus sp.															1		
cf *Humulus lupulus*																	
Quercus sp. - veg. part																	
Rosa sp.																	
Solanum dulcamara																	
Solanum cf *dulcamara*		30															
Stellaria cf *nemorum*																	
Torilis cf *japonica*																	
Valeriana cf *tripteris*																	
Viburnum lantana																	
Viburnum opulus															1		
Calamintha sylvatica																	
Galium verum																	
Hypericum perforatum				15													
Saponaria cf *ocymoides*																	
Silene cf *nutans*																	
Silene nutans																	
Thalictrum minus																	
VARIA																	
Ajuga sp.																	
Allium sp.																	
Apiaceae - fragments																	
Asteraceae																5	
Boraginaceae																	
Brassicaceae		30															
Bromus sp.																	
Campanula sp.																	
Cannabinaceae																	
Carduus sp.																	
Caryophyllaceae																	
Cerastium sp.				15													
Chenopodiaceae				15													
Chenopodiaceae/Amaranthaceae	15	30				3										5	50
Chenopodium sp.				739													
Cichorium sp.																	
Crepis sp.																	
Cuscuta sp.																	
Cyperaceae																	
Epilobium sp.																	
Euphorbia sp.																	
Euphorbia sp. - fruit																	
Euphorbia sp. - capsule																	
Fallopia sp.																	
Filipendula sp.																	
Galium sp.																	
Hypericum sp.																	
Inula sp.																	

Chronology												Roman, not specified				BK08	
Context																	
Structure	**15**	**15**	**15**	**15**	**15**	**42**	**42**	**42**	**53**	**53**		**40**	**40**	**40**	**1004**	**Tr 1**	**Tr 1**
US	03 A	03 B	03 C	03 C	03 D	02 A	02 B	02 A	P34	P34		02 1	02 2	03			
Sample N°	**BK24009**	**BK24010**	**BK24011**	**BK24011**	**BK24012**	**BK24013**	**BK24014**	**BK24015**	**BK004034**	**BK004034P**		**BK24004**	**BK24005**	**BK24034**	**BK24036**	**BK28001**	**BK28002**
Volume	4000	6000	5000	5000	6000	4000	2000	2000	8000	8000		5000	6000	6000	14000	3000	10000
Lamiaceae				105					1			10					
Lamium sp.				15													
Liliaceae																	
Malva sp.																	
cf *Matricaria* sp.																	
Mentha sp.																	
Nasturtium sp.																	
Papaver sp.				30													
Physalis sp.																	
Physalis/Solanum																	50
Phyteuma sp.																	
Plantago sp. - chalice+A54				15													
Plantago sp.				60													
Poa sp.				165													
Poaceae																	
Poaceae			18	109													
Polygonaceae				11													
Polygonum sp.																	
Polygonum sp.	15				15			5						5			50
Potentilla sp.		30		105													50
Primulaceae																	
Ranunculaceae																	
Ranunculus sp.																	200
cf *Raphanus* sp.																	
Rosaceae - thorn																	
Rosaceae				15													
Rosaceae - flower																	
Rumex sp. - tubercle																	
Rumex sp.																	
Rumex sp. - perianth		30														5	100
Sambucus sp.		30		18		1	2						15			5	50
Satureja sp.																	
Scabiosa sp.		30															
cf *Scandix* sp.																	
Scrophulariaceae																	
Silene alba/dioica																	
Silene sp.				15													
Sinapis sp.																	
Solanaceae				22													
Solanum sp.																	
Sonchus sp.																	
Stachys sp.																	
Stachys/Lamium	15																
Stellaria graminea/palustris				30													
Stellaria sp.																	
Teucrium sp.																	
Tilia sp. - fruit																	
Torilis sp.																	
Veronica sp.																	
Vicia sp.				4													
Viola sp. - capsule				4													
Viola sp.																5	
Indeterminata - rhizome																	
Indeterminata - fruitstem																	
Indeterminata - endocarp																	
Indeterminata																	
CHARRED																	
CEREALS _ grain																	
Avena sp.			18														
Hordeum vulgare						6							30				

Chronology												Roman, not specified				BK08	
Context																	
Structure	**15**	**15**	**15**	**15**	**15**	**42**	**42**	**42**	**53**	**53**		**40**	**40**	**40**	**1004**	**Tr 1**	**Tr 1**
US	03 A	03 B	03 C	03 C	03 D	02 A	02 B	02 A	P34	P34		02 1	02 2	03			
Sample N°	**BK24009**	**BK24010**	**BK24011**	**BK24011**	**BK24012**	**BK24013**	**BK24014**	**BK24015**	**BK004034**	**BK004034P**		**BK24004**	**BK24005**	**BK24034**	**BK24036**	**BK28001**	**BK28002**
Volume	4000	6000	5000	5000	6000	4000	2000	2000	8000	8000		5000	6000	6000	14000	3000	10000
Hordeum sp.																	
Secale cereale																	
Triticum aestivum																	
Triticum aestivum/durum/turgidum												10					
Triticum dicoccon																	
Triticum cf *dicoccon*																	
Triticum spelta																	
Triticum sp.																	
Cerealia ohne Hirsen						2	1	5									
Panicum miliaceum	15																
Setaria italica				15													
Panicum/Setaria																	
CEREALS _ chaff																	
Hordeum vulgare - rachis													15				
Hordeum sp. - rachis																	
Secale cereale - rachis																	
Triticum aestivum - rachis																	
Triticum dicoccon - spikelet fork																	
Triticum dicoccon - glume						2	2	10						5			
Triticum monococcum - spikelet fork																	
Triticum monococcum - glume																	
Triticum spelta - spikelet fork										13							
Triticum spelta - glume base									1								
Triticum spelta - glume						1	1						15				
Triticum sp. - spikelet fork				4													
Triticum sp. - glume														5			
Cerealia																	
NUTS																	
Corylus avellana																	
Juglans regia													15				
Pinus pinea																	
PULSES																	
cf *Lathyrus* sp.					1												
Lens culinaris																	
Pisum sativum																	
Vicia faba		1															
Vicia/Lathyrus																	
Fabaceae																	
SPICES																	
Apium graveolens																	
Satureja hortensis																	
VEGETABLES AND SALADS																	
Allium sativum																	
Atriplex sp.																	
Brassica sp.																	
FRUITS																	
Ficus carica - fruitflesh																	
Phoenix dactylifera																	
Prunus domestica/insititia																	
Prunus persica																	
Sambucus nigra/racemosa																	
Vitis vinifera																	
OIL AND FIBRE PLANTS																	
WEEDS OF WINTER CEREALS																	
Galium aparine																	
Veronica hederifolia																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Avena fatua																	
Caucalis platycarpos																	
Galium spurium																	

Chronology												Roman, not specified				BK08	
Context																	
Structure	**15**	**15**	**15**	**15**	**15**	**42**	**42**	**42**	**53**	**53**		**40**	**40**	**40**	**1004**	**Tr 1**	**Tr 1**
US	03 A	03 B	03 C	03 C	03 D	02 A	02 B	02 A	P34	P34		02 1	02 2	03			
Sample N°	**BK24009**	**BK24010**	**BK24011**	**BK24011**	**BK24012**	**BK24013**	**BK24014**	**BK24015**	**BK004034**	**BK004034P**		**BK24004**	**BK24005**	**BK24034**	**BK24036**	**BK28001**	**BK28002**
Volume	4000	6000	5000	5000	6000	4000	2000	2000	8000	8000		5000	6000	6000	14000	3000	10000
Glaucium corniculatum																	
Myagrum perfoliatum																	
Vicia cf *angustifolia*																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Chenopodium album																	
Chenopodium polyspermum																	
Galeospis ladanum/segetum																	
cf *Solanum nigrum*																	
Thlaspi arvense																	
PERENNIAL RUDERALS																	
Cruciata laevipes																	
Rumex obtusifolius														5			
Silene alba																	
MEADOWS AND PASTURES																	
Centaurea sp.																	
Festuca/Lolium				4													
Galium boreale																	
Plantago lanceolata								5									
Plantago media																	
Trifolium sp.														5			
Aquatic plants																	
Sparganium sp.																	
Reed fields																	
cf *Alisma plantago-aquatica*				30													
Carex sp. tricarpellate																	
Galium cf *palustre*																	
Riverbank plants (pioneer)																	
Teucrium scordium																	
Forests, forest edges and clearings, hedges																	
Abies alba - needle													15				
Galium verum						1											
cf *Humulus lupulus*																	
VARIA																	
Asperula sp.																	
Bromus sp.																	
Chenopodiaceae																	
Chenopodium sp.																	
Galium sp.				7		1		5									
Poaceae				34		2	2						30				
Rumex sp.																	
Sambucus sp.																	
Vicia sp.																	
Indeterminata - amorphous object												10					
Indeterminata - crusts																	
Indeterminata - seed/fruit														5			
MINERALISED																	
CEREALS _ grain																	
Avena sp.								5									
Hordeum vulgare																	
Triticum spelta																	
Triticum sp.																	
Panicum miliaceum								5									
Setaria italica																	
Panicum/Setaria																	
Cerealia ohne Hirsen										27							
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
Triticum spelta - spikelet fork																	
Cerealia - ear																	

Chronology												Roman, not specified				BK08	
Context																	
Structure	15	15	15	15	15	42	42	42	53	53		40	40	40	1004	Tr 1	Tr 1
US	03 A	03 B	03 C	03 C	03 D	02 A	02 B	02 A	P34	P34		02 1	02 2	03			
Sample N°	BK24009	BK24010	BK24011	BK24011	BK24012	BK24013	BK24014	BK24015	BK004034	BK004034P		BK24004	BK24005	BK24034	BK24036	BK28001	BK28002
Volume	4000	6000	5000	5000	6000	4000	2000	2000	8000	8000		5000	6000	6000	14000	3000	10000
Cerealia - glume									1								
Panicum miliaceum - glume																	
Setaria italica - glume																	
Panicum/Setaria - glume																	
PULSES																	
Lens culinaris																	
Pisum sativum																	
Vicia faba																	
Fabaceae - fruitflesh																	
Fabaceae																	
FRUITS																	
Cucumis melo																	
Cucumis melo/sativa																	
Ficus carica																	
Fragaria vesca																	
Malus domestica																	
Malus sylvestris/domestica																	
Pyrus sp.																	
Malus/Pyrus																	
Morus sp.																	
Physalis alkekengi																	
Prunus sp. - fragment																	
Rubus caesius																	
Rubus sp. - inner																	
Sambucus nigra/racemosa																	
Vitis vinifera - fruitflesh																	
Vitis vinifera - aborted seed																	
Vitis vinifera																	
SPICES																	
Anethum graveolens																	
Apium graveolens																	
Carum carvi																	
Coriandrum sativum																	
Foeniculum vulgare																	
Nigella cf *sativa*																	
VEGETABLES AND SALADS																	
Atriplex sp.																	
Beta vulgaris																	
Brassica sp.																	
Daucus carota																	
Lagenaria siceraria																	
OIL AND FIBRE PLANTS																	
Linum usitatissimum																	
Papaver somniferum																	
WEEDS OF WINTER CEREALS																	
Agrostemma githago								5									
Buglossoides arvensis																	
Fallopia convolvulus																	
Galium aparine																	
cf *Veronica hederifolia*																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Camelina sativa																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Caucalis platycarpos																	
Galium spurium																	
Vaccaria pyramidata																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Galeopsis cf *speciosa*																	
Polygonum lapathifolium/persicaria																	
Solanum nigrum	15			7													

Chronology												**Roman, not specified**				**BK08**	
Context																	
Structure	**15**	**15**	**15**	**15**	**15**	**42**	**42**	**42**	**53**	**53**		**40**	**40**	**40**	**1004**	**Tr 1**	**Tr 1**
US	03 A	03 B	03 C	03 C	03 D	02 A	02 B	02 A	P34	P34		02 1	02 2	03			
Sample N°	**BK24009**	**BK24010**	**BK24011**	**BK24011**	**BK24012**	**BK24013**	**BK24014**	**BK24015**	**BK004034**	**BK004034P**		**BK24004**	**BK24005**	**BK24034**	**BK24036**	**BK28001**	**BK28002**
Volume	4000	6000	5000	5000	6000	4000	2000	2000	8000	8000		5000	6000	6000	14000	3000	10000
Sonchus oleraceus																	
Stellaria media																	
Thlaspi arvense																	
PERENNIAL RUDERALS																	
Arctium sp.																	
Convolvulus arvensis																	
Hyoscyamus niger																	
Lapsana communis																	
MEADOWS AND PASTURES																	
Centaurea sp.																	
Rhinanthus sp.																	
Scabiosa sp.																	
Reed fields																	
Carex sp. tricarpellat																	
Galium palustre																	
Forests, forest edges and clearings, hedges																	
Rosa sp.																	
cf *Seseli libanotis*																	
VARIA																	
Apiaceae																	
Asteraceae																	
Brassicaceae																	
Bromus sp.																	
Cannabinaceae																	
Chenopodium sp.																	
Galium sp.																	
Lamiaceae																	
Lolium sp.																	
Papaver sp.																	
Poa sp.																	
Poaceae																	
Potentilla sp.																	
Rumex sp.																	
Indeterminata - endocarp																	
Indeterminata - fruitflesh																	
Indeterminata - coprolithes																	
Indeterminata - crusts																	
Indeterminata - seed/fruit										173							

Table 1.b Raw data of the main archaeobotanical analysis of the Roman civil agglomeration Oedenburg/Biesheim-Kunheim. Temple complex.

Temple complex																		
Chronology	**Phase 1**																	
Context	**Alluvial clay**						**Marshland**								**Layer of sand**			**Ditch**
Structure	**56**	**56**	**56**	**56**	**56**	**56**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**32**	**32**	**32**	**49**
US	07	07	08	09	10	10	01	03	04	14	15	16	17	18	02	08	01	02
Sample N°	BK35012FA	BK35014FA	BK35015FA	BK35016FA	BK35030FA	BK35034FA	BK35013FA	BK35007FA	BK35008FA	BK35029FA	BK35027FA	BK35028FA	BK35017FA	BK35018FA	BK45001FA	BK45003FA	BK45007FA	BK45002FA
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS
Volume sample	7000	5000	8000	4000	2000	6000	10000	4000	4000	3000	6000	6000	7000	9000	3000	3000	3000	3000
Field	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
WATERLOGGED																		
CEREALS _ grain																		
Avena sativa/fatua																		
Cerealia - Testa																		
CEREALS _ chaff																		
Hordeum vulgare - rachis																		
Hordeum sp. - rachis																		
Secale cereale - rachis																		
Triticum aestivum - rachis																		
Triticum cf aestivum/durum/turgidum - rachis																		
Triticum dicoccon - glume																		
Triticum cf *dicoccon* - glume																		
Triticum monococcum - glume																		
Triticum spelta - glume																		
Triticum sp. - rachis																		
Triticum sp. - glume																		
Cerealia - glume																		
Cerealia - rachis																		
Panicum miliaceum - glume																		
Setaria italica - glume																		
Panicum/Setaria - glume																		
NUTS																		
Corylus avellana				1				1	2				1					1
Juglans regia																		
Pinus pinea																		
PULSES																		
Lens culinaris																		
Pisum sativum																		
Vicia faba																		
Fabaceae																		
SPICES																		
Anethum graveolens																		
Apium graveolens																		
Carum carvi																		
Coriandrum sativum																		
Foeniculum vulgare																		
Origanum vulgare																		
cf *Petroselinum crispum*																		
Pimpinella anisum																		
Piper nigrum																		
cf *Ruta graveolens*																		
Satureja hortensis																		
cf *Thymus* sp. - stem																		
VEGETABLES AND SALADS																		
Amaranthus sp.																		
Atriplex sp.								1										
Beta vulgaris																1		
Brassica cf *oleracea*																		
Brassica rapa/nigra																		
Brassica sp.			1															
Brassica/Sinapis																		
Daucus carota									1									
Lagenaria siceraria									1									
Pastinaca sativa																		
Portulaca oleracea																		
FRUITS																		
Cucumis melo																		
Cucumis sativus																		
Cucumis melo/sativa - fragment																		
Cucumis melo/sativa																		

Chronology	Phase 1																	
Context	**Alluvial clay**						**Marshland**								**Layer of sand**			**Ditch**
Structure	**56**	**56**	**56**	**56**	**56**	**56**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**32**	**32**	**32**	**49**
US	07	07	08	09	10	10	01	03	04	14	15	16	17	18	02	08	01	02
Sample N°	BK35012FA	BK35014FA	BK35015FA	BK35016FA	BK35030FA	BK35034FA	BK35013FA	BK35007FA	BK35008FA	BK35029FA	BK35027FA	BK35028FA	BK35017FA	BK35018FA	BK45001FA	BK45003FA	BK45007FA	BK45002FA
Ficus carica													1			1		
Fragaria vesca																		
Malus domestica																		
Malus sylvestris/domestica																		
Pyrus sp. - stone cells																		
Pyrus sp. - flower								1										
Malus/Pyrus - pericarp																		
Malus/Pyrus																		
Morus sp.																		
Olea europaea																		
Physalis alkekengi											1							
Prunus cf *avium*																		
Prunus avium/cerasus																		
Prunus domestica																		
Prunus domestica/insititia																		
Prunus insititia																		
Prunus persica								1					1					
Prunus spinosa																		
Prunus sp.																		
Rubus caesius									1									
Rubus fruticosus																		
Rubus idaeus																		
Rubus sp.											1							1
Sambucus nigra/racemosa	1	1						1	1	1	1	1	1			1		2
Vitis vinifera								2	1		1							
OIL, DYE AND FIBRE PLANTS																		
Cannabis sativa														1				
Carthamus tinctorius																		
cf *Isatis tinctoria*																		
Linum usitatissimum																		
Papaver somniferum																		
WEEDS OF WINTER CEREALS																		
cf *Adonis* sp.																		
Agrostemma githago																		
Anthemis arvensis																		
Bromus arvensis Type																		
Buglossoides arvensis																		
Fallopia convolvulus																		
Galium aparine																		
Silene gallica																		
Stachys annua/arvensis																		
Valerianella locusta																		
Valerianella cf *rimosa*																		
Valerianella rimosa																		
Valerianella sp.																		
Veronica hederifolia																		
Viola tricolor																		
Order Aperetalia_weeds of rather acidic/neutral soils																		
Aphanes arvensis																		
cf *Bromus secalinus*																		
Camelina sativa																		
Centaurea cf *cyanus*																		
Papaver argemone																		
Papaver dubium																		
Raphanus raphanistrum																		
Scleranthus sp. - capsule																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Ajuga chamaepitys										1	1							
Bupleurum rotundifolium																		
Caucalis platycarpos										1								
Euphorbia exigua																		
Galium spurium																		
Glaucium corniculatum																		

Chronology	Phase 1																	
Context	Alluvial clay						Marshland								Layer of sand			Ditch
Structure	56	56	56	56	56	56	53	53	53	53	53	53	53	53	32	32	32	49
US	07	07	08	09	10	10	01	03	04	14	15	16	17	18	02	08	01	02
Sample N°	BK35012FA	BK35014FA	BK35015FA	BK35016FA	BK35030FA	BK35034FA	BK35013FA	BK35007FA	BK35008FA	BK35029FA	BK35027FA	BK35028FA	BK35017FA	BK35018FA	BK45001FA	BK45003FA	BK45007FA	BK45002FA
Myagrum perfoliatum	1		1					1	1		1		1			1		1
Nigella arvensis																		
Orlaya grandiflora							1											
Ranunculus arvensis																		
Scandix pecten-veneris																		
Silene cf *dichotoma*																		
Stachys annua																		
Thymelaea passerina																		
Torilis arvensis																		
cf *Vaccaria pyramidata*																		
Valerianella dentata																		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Aethusa cynapium																		
Anagallis arvensis/foemina																		
Arenaria serpyllifolia																		
Capsella bursa-pastoris																		
Chenopodium album								1	1	1								
Chenopodium ficifolium																		
Chenopodium foliosum																		
Chenopodium hybridum								1	1	1	1							1
Chenopodium murale																		
Chenopodium polyspermum									1									
Echinochloa crus-galli																		
Euphorbia helioscopia																		
Euphorbia platyphyllos																		
Fumaria officinalis																		
Fumaria sp.								1	1									1
Galeopsis cf *bifida*																		
Galeopsis bifida																		
Galeopsis ladanum																		
Galeopsis sp.																		
Galeopsis cf *speciosa*																		
Galeopsis tetrahit																		
Galeopsis ladanum/segetum																		
cf *Heliotropium europaeum*																		
Lamium amplexicaule/purpureum																		
Lamium cf *purpureum*																		
Malva sylvestris																		
Mercurialis annua										1								
Poa annua																		
Polygonum lapathifolium/persicaria										1	1	1	1			1		
Polygonum persicaria								3										
Portulaca sp.																		
Setaria verticillata/viridis																		
Setaria cf *viridis* - glume																		
Solanum nigrum								2	1			1	1			2		
Sonchus asper																		
Sonchus asper/oleraceus																		
Sonchus oleraceus																		
Stachys cf *arvensis*													1					
Stellaria cf *media*																		
Stellaria media								1		1			1					
Thlaspi arvense									1									
Urtica urens							1		1				1					
Verbena officinalis																		
Xanthium strumarium																		
PERENNIAL RUDERALS																		
Agropyron repens																		
Arctium lappa																		
Arctium minus																		
Arctium sp.																		
Bryonia dioica																		
Carduus crispus																		
Cerastium arvense																		

Chronology	Phase 1																	
Context	Alluvial clay						Marshland								Layer of sand			Ditch
Structure	56	56	56	56	56	56	53	53	53	53	53	53	53	53	32	32	32	49
US	07	07	08	09	10	10	01	03	04	14	15	16	17	18	02	08	01	02
Sample N°	BK35012FA	BK35014FA	BK35015FA	BK35016FA	BK35030FA	BK35034FA	BK35013FA	BK35007FA	BK35008FA	BK35029FA	BK35027FA	BK35028FA	BK35017FA	BK35018FA	BK45001FA	BK45003FA	BK45007FA	BK45002FA
Chelidonium majus																		
cf *Chondrilla juncea*																		
Cirsium sp.																		
Cirsium/Carduus						1										1		
Conium maculatum																		
Convolvulus arvensis																		
Cruciata laevipes																		
Dipsacus cf *fullonum*																		
Fallopia dumetorum																		
Hyoscyamus niger									1	1								
Lactuca serriola																		
Lamium album																		
Lapsana communis										1								
cf *Marrubium vulgare*																		
Onopordum acanthium																		
Plantago major																		
Poa compressa																		
Polygonum aviculare																1		
Potentilla anserina																		
Ranunculus repens				1	1		1	1		1				1		1		
Reseda sp.																		
Rumex conglomeratus - perianth																		
Rumex crispus - perianth																		
Rumex obtusifolius - perianth																		
Rumex obtusifolius							1	1	1	1		1						
Sambucus ebulus	1	1						1		1						1		1
Saponaria cf *officinalis*																		
Silene alba																		
Urtica dioica																		
MEADOWS AND PASTURES																		
Achillea millefolium																		
Agrostis sp.																		
Ajuga reptans								1		1						1		
Anthriscus sp.																		
Bromus cf *commutatus*																		
Bromus hordeaceus																		
Centaurea cf *jacea*																		
Centaurea sp.																		
Cichorium intybus																		
Cirsium/Centaurea																		
cf *Cynosurus* sp.																		
Dactylis glomerata																		
Deschampsia caespitosa																		
Dianthus cf *armeria*																		
Festuca rubra/ovina																		
Festuca/Lolium																		
Holcus lanatus																		
Leontodon autumnalis																		
Leontodon sp.																		
Leucanthemum vulgare																		
Lolium perenne																		
Nardus stricta																		
Plantago lanceolata																		
Plantago cf *media*																		
Plantago media																		
Poa pratensis																		
Poa pratensis Type																		
Poa pratensis/trivialis																		
Potentilla erecta																		
Prunella vulgaris																1		
Ranunculus acris																1		
Rhinanthus sp.																		
Rumex acetosa - perianth																		
Rumex acetosella																		
Scabiosa sp.																		

Chronology	Phase 1																	
Context	Alluvial clay						Marshland								Layer of sand			Ditch
Structure	56	56	56	56	56	56	53	53	53	53	53	53	53	53	32	32	32	49
US	07	07	08	09	10	10	01	03	04	14	15	16	17	18	02	08	01	02
Sample N°	BK35012FA	BK35014FA	BK35015FA	BK35016FA	BK35030FA	BK35034FA	BK35013FA	BK35007FA	BK35008FA	BK35029FA	BK35027FA	BK35028FA	BK35017FA	BK35018FA	BK45001FA	BK45003FA	BK45007FA	BK45002FA
Silene vulgaris																		
Taraxacum officinale																		
Thalictrum flavum																		
Trifolium pratense - capsule																		
Trifolium sp. - chalice																		
Trifolium sp.																		
Open swards																		
cf *Acinos arvensis*																		
Ajuga genevensis																		
Artemisia campestris																		
Centaurea scabiosa																		
Dianthus sp.																		
Euphorbia cf *seguieriana*																		
Euphrasia/Odontites																		
Gentiana cruciata																		
Medicago lupulina - pod																1		
Medicago lupulina - pod with seeds																		
Medicago minima - pod																		
Odontites sp.																		
cf *Petrorhagia prolifera*																		
Prunella grandiflora																		
Scabiosa columbaria																		
Stachys recta																		
Teucrium botrys																		
Teucrium cf *chamaedrys*																		
Teucrium montanum																		
Trifolium cf *campestre* - chalice																		
Aquatic plants																		
Ceratophyllum cf *submersum*																		
Lemna sp.																		
Polygonum cf *amphibium*																		
Potamogeton sp.				1		1												
Ranunculus aquatilis																		
Sparganium sp.								1	1			1		1				
Zannichellia palustris																		
Reed fields																		
Alisma plantago-aquatica																		
Carex sp. - utriculus									1							1		
Carex sp. bicarpellate				1			1		1			1	1			1		
Carex sp. tricarpellate			1		1	1	1		1	1	1		1	1		1		1
Cicuta virosa																		
Eleocharis palustris				2		1	1			1			1	1				
Eupatorium cannabinum																		
Galium cf *palustre*																		
Glyceria sp.																		
Hippuris vulgaris																		
Iris cf *pseudacorus*																		
Juncus sp.																		
Lycopus europaeus													1					
Mentha arvensis/aquatica																		
Nasturtium officinale																		
Oenanthe fistulosa								1										1
Oenanthe sp.																		
Poa palustris																		
Rorippa amphibia																		
Rumex cf aquaticus/hydrolapathum???																		
Salix sp. - veg. part																		
Schoenoplectus lacustris																		
Schoenoplectus sp.																		1
Riverbank plants (pioneer)																		
Alnus glutinosa - veg. part																		
Alnus sp. - veg part																		
Bidens tripartita							1											
Bidens sp.																		
Cyperus flavescens																		

Chronology	Phase 1																	
Context	**Alluvial clay**						**Marshland**								**Layer of sand**			**Ditch**
Structure	**56**	**56**	**56**	**56**	**56**	**56**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**32**	**32**	**32**	**49**
US	07	07	08	09	10	10	01	03	04	14	15	16	17	18	02	08	01	02
Sample N°	BK35012FA	BK35014FA	BK35015FA	BK35016FA	BK35030FA	BK35034FA	BK35013FA	BK35007FA	BK35008FA	BK35029FA	BK35027FA	BK35028FA	BK35017FA	BK35018FA	BK45001FA	BK45003FA	BK45007FA	BK45002FA
Cyperus fuscus																		
Cyperus sp.																		
Myosoton aquaticum																		
Polygonum hydropiper										1								
Polygonum hydropiper/mite										1								
Polygonum lapathifolium																		
Polygonum minus																		
Polygonum mite																		
Polygonum mite/minus																		
Ranunculus flammula																		
Ranunculus sardous																		
Ranunculus sceleratus																		
Teucrium cf *scordium*																		
Wet meadows																		
cf *Euphorbia palustris*																		
Filipendula ulmaria																		
Linum catharticum																		
Lychnis flos-cuculi																		
Scirpus sylvaticus																		
Stachys officinalis																		
Forests, forest edges and clearings, hedges																		
Abies alba - needle																		
Acer sp. - veg. part																		
Agrimonia eupatoria																		
Arctium cf *nemorosum*																		
Betula pendula - veg. part																		
Cornus sanguinea																		
Crataegus sp.																		
Humulus lupulus																		
Quercus sp.																		
Rosa sp.											1							
Solanum cf *dulcamara*													1					
Stellaria cf *nemorum*																		
Torilis cf *japonica*																		
Viburnum lantana																		
Viburnum opulus																		
Calamintha sylvatica																		
Galium verum																		
Hypericum perforatum																		
Saponaria cf *ocymoides*																		
Silene nutans																		
Thalictrum minus																		
VARIA																		
Ajuga sp.																1		
Allium sp.																		
Apiaceae																		
Asteraceae																		
Boraginaceae																		
Brassicaceae																		
Bromus sp.																		
Campanula sp.																		
Cannabinaceae									1									
Carduus sp.																		
Caryophyllaceae																		
Cerastium sp.																		
Chenopodiaceae																		
Chenopodiaceae/Amaranthaceae																		
Chenopodium sp.											1					1		1
Cichorium sp.																		
Crepis sp.																		
Cuscuta sp.																		
Cyperaceae			1	1				1		1	1			1				

Chronology	Phase 1																	
Context	**Alluvial clay**						**Marshland**								**Layer of sand**			**Ditch**
Structure	**56**	**56**	**56**	**56**	**56**	**56**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**32**	**32**	**32**	**49**
US	07	07	08	09	10	10	01	03	04	14	15	16	17	18	02	08	01	02
Sample N°	BK35012FA	BK35014FA	BK35015FA	BK35016FA	BK35030FA	BK35034FA	BK35013FA	BK35007FA	BK35008FA	BK35029FA	BK35027FA	BK35028FA	BK35017FA	BK35018FA	BK45001FA	BK45003FA	BK45007FA	BK45002FA
Epilobium sp.																		
Euphorbia sp.																		
Fallopia sp.																		
Filipendula sp.																		
Galium sp.																		
Hypericum sp.																		
Inula sp.																		
Lamiaceae									1									
Lamium sp.																		
Liliaceae																		
Malva sp.																		
cf *Matricaria* sp.																		
Nasturtium sp.																		
Papaver sp.																		
Physalis/Solanum																		
Phyteuma sp.																		
Poa sp.																		
Poaceae							1											
Poaceae																		
Polygonaceae																		
Polygonum sp.				1	1		1									1		
Potentilla sp.										1								
Primulaceae																		
Ranunculaceae																		
Ranunculus sp.																		
Rosaceae																		
Rumex sp. - perianth								1		1								
Sambucus sp.			1												1		1	1
Satureja sp.																		
Scrophulariaceae																		
Silene sp.																		
Sinapis sp.																		
Solanaceae																		
Solanum sp.																		1
Sonchus sp.																		
Stachys sp.								1	1	1	1							1
Stellaria graminea/palustris																		
Stellaria sp.																		
Teucrium sp.																		
Tilia sp. - fruit																		
Torilis sp.																		
Veronica sp.																		
Vicia sp.																		
Viola sp.									1	1	1		1			1		1
Indeterminata																		
CHARRED																		
CEREALS _ grain																		
Avena sp.											1							
Hordeum vulgare								1										
Hordeum sp.									1									
Secale cereale																		
Triticum aestivum																		
Triticum cf *aestivum*																		
Triticum aestivum/durum/turgidum																		
Triticum dicoccon																		
Triticum spelta																		
Triticum sp.									1									
Cerealia ohne Hirsen																		
Panicum miliaceum											1							
Setaria italica									1									
Panicum/Setaria																		
CEREALS _ chaff																		
Hordeum vulgare - rachis																		

Chronology	Phase 1																	
Context	Alluvial clay						Marshland								Layer of sand			Ditch
Structure	56	56	56	56	56	56	53	53	53	53	53	53	53	53	32	32	32	49
US	07	07	08	09	10	10	01	03	04	14	15	16	17	18	02	08	01	02
Sample N°	BK35012FA	BK35014FA	BK35015FA	BK35016FA	BK35030FA	BK35034FA	BK35013FA	BK35007FA	BK35008FA	BK35029FA	BK35027FA	BK35028FA	BK35017FA	BK35018FA	BK45001FA	BK45003FA	BK45007FA	BK45002FA
Hordeum sp. - rachis																		
Secale cereale - rachis																		
Triticum aestivum - rachis																		
Triticum dicoccon - glume																		
Triticum monococcum - glume																		
Triticum spelta - glume																		
Triticum sp. - glume																		
NUTS																		
Corylus avellana																		
Juglans regia																		
cf *Pinus pinea* - cone fragment																		
Pinus pinea - cone fragment																		
Pinus pinea																		
Pinus pinea - scale																		
Pinus pinea - nut fragment																		
PULSES																		
Lathyrus sp.																		
Lens culinaris																		
Pisum sativum																		
Vicia faba																		
Vicia/Lathyrus																		
Fabaceae									1									
SPICES																		
Apium graveolens																		
Satureja hortensis																		
VEGETABLES AND SALADS																		
Allium sativum																		
cf *Allium sativum*																		
Atriplex sp.																		
Brassica sp.																		
FRUITS																		
Ficus carica																		
Ficus carica - fruitflesh																		
Phoenix dactylifera - fruit																		
Phoenix dactylifera - stone																		
Phoenix dactylifera - fruitflesh																		
Phoenix dactylifera - stone fragment																		
Prunus domestica/insititia																		
Prunus persica																		
Sambucus nigra/racemosa																		
Vitis vinifera																		
OIL AND FIBRE PLANTS																		
WEEDS OF WINTER CEREALS																		
Galium aparine											1							
Veronica hederifolia																		
Order Aperetalia_weeds of rather acidic/neutral soils																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Avena fatua																		
Caucalis platycarpos																		
Galium cf *spurium*																		
Glaucium corniculatum																		
Myagrum perfoliatum																		
Vicia cf *angustifolia*																		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Chenopodium album																		
Chenopodium polyspermum																		
Galeospis ladanum/segetum																		
cf *Solanum nigrum*																		
Thlaspi arvense																		
PERENNIAL RUDERALS																		
Cruciata laevipes																		
Rumex obtusifolius	1							1										

Chronology	Phase 1																	
Context	Alluvial clay						Marshland								Layer of sand			Ditch
Structure	56	56	56	56	56	56	53	53	53	53	53	53	53	53	32	32	32	49
US	07	07	08	09	10	10	01	03	04	14	15	16	17	18	02	08	01	02
Sample N°	BK35012FA	BK35014FA	BK35015FA	BK35016FA	BK35030FA	BK35034FA	BK35013FA	BK35007FA	BK35008FA	BK35029FA	BK35027FA	BK35028FA	BK35017FA	BK35018FA	BK45001FA	BK45003FA	BK45007FA	BK45002FA
Silene alba																		
MEADOWS AND PASTURES																		
Centaurea sp.																		
Festuca/Lolium																		
Galium boreale																		
Plantago lanceolata																		
Plantago media																		
Trifolium sp.																		
Aquatic plants																		
Sparganium sp.																		
Reed fields																		
cf *Alisma plantago-aquatica*																		
Carex sp. tricarpellate																		
Galium cf *palustre*																		
Riverbank plants (pioneer)																		
Teucrium scordium																		
Forests, forest edges and clearings, hedges																		
Abies alba - needle																		
Galium verum																		
cf *Humulus lupulus*																		
VARIA																		
Asperula sp.								1										
Bromus sp.																		
Chenopodiaceae																		
Chenopodium sp.																		
Galium sp.																		
Poaceae										1								
Rumex sp.																		
Sambucus sp.																		
Vicia sp.																		
Indeterminata - pastry																		
Indeterminata - bud																		
Indeterminata - amorphous object																		
Indeterminata - fruitflesh																		
Indeterminata - endocarp																		
Indeterminata - seed/fruit																		
MINERALISED																		
CEREALS _ grain																		
cf *Avena* sp.																		
Hordeum vulgare																		
Triticum spelta																		
Triticum sp.																		
Panicum miliaceum																		
Setaria italica																		
Panicum/Setaria																		
Cerealia ohne Hirsen																		
CEREALS _ chaff																		
Hordeum vulgare - rachis																		
Triticum spelta - spikelet fork																		
Cerealia - ear																		
Cerealia - glume																		
Panicum miliaceum - glume																		
Setaria italica - glume																		
Panicum/Setaria - glume																		
PULSES																		
Lens culinaris																		
Pisum sativum																		
Vicia faba																		
Fabaceae - fruitflesh																		
Fabaceae																		
FRUITS																		
Cucumis melo																		

Chronology	Phase 1																	
Context	**Alluvial clay**						**Marshland**								**Layer of sand**			**Ditch**
Structure	**56**	**56**	**56**	**56**	**56**	**56**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**32**	**32**	**32**	**49**
US	07	07	08	09	10	10	01	03	04	14	15	16	17	18	02	08	01	02
Sample N°	BK35012FA	BK35014FA	BK35015FA	BK35016FA	BK35030FA	BK35034FA	BK35013FA	BK35007FA	BK35008FA	BK35029FA	BK35027FA	BK35028FA	BK35017FA	BK35018FA	BK45001FA	BK45003FA	BK45007FA	BK45002FA
Cucumis melo/sativa																		
Ficus carica																		
Fragaria vesca																		
Malus domestica																		
Malus sylvestris/domestica																		
Pyrus sp.																		
Malus/Pyrus																		
Morus sp.																		
Physalis alkekengi																		
Prunus sp. - fragment																		
Rubus caesius																		
Rubus sp. - inner																		
Sambucus nigra/racemosa																		
Vitis vinifera - fruitflesh																		
Vitis vinifera - aborted seed																		
Vitis vinifera																		
SPICES																		
Anethum graveolens																		
Apium graveolens																		
Carum carvi																		
Coriandrum sativum																		
Foeniculum vulgare																		
Nigella cf *sativa*																		
VEGETABLES AND SALADS																		
Atriplex sp.																		
Beta vulgaris																		
Brassica sp.																		
Daucus carota																		
Lagenaria siceraria																		
OIL AND FIBRE PLANTS																		
Linum usitatissimum																		
Papaver somniferum																		
WEEDS OF WINTER CEREALS																		
Agrostemma githago																		
Buglossoides arvensis																		
Fallopia convolvulus																		
Galium aparine																		
cf *Veronica hederifolia*																		
Order Aperetalia_weeds of rather acidic/neutral soils																		
Camelina sativa																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Caucalis platycarpos																		
Galium spurium																		
Vaccaria pyramidata																		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Galeopsis cf *speciosa*																		
Polygonum lapathifolium/persicaria																		
Solanum nigrum																		
Sonchus oleraceus																		
Stellaria media																		
Thlaspi arvense																		
PERENNIAL RUDERALS																		
Arctium sp.																		
Convolvulus arvensis																		
Hyoscyamus niger																		
Lapsana communis																		
MEADOWS AND PASTURES																		
Centaurea sp.																		
Rhinanthus sp.																		
Scabiosa sp.																		
Reed fields																		
Carex sp. tricarpellat																		

Chronology	Phase 1																	
Context	**Alluvial clay**						**Marshland**								**Layer of sand**			**Ditch**
Structure	**56**	**56**	**56**	**56**	**56**	**56**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**32**	**32**	**32**	**49**
US	07	07	08	09	10	10	01	03	04	14	15	16	17	18	02	08	01	02
Sample N°	BK35012FA	BK35014FA	BK35015FA	BK35016FA	BK35030FA	BK35034FA	BK35013FA	BK35007FA	BK35008FA	BK35029FA	BK35027FA	BK35028FA	BK35017FA	BK35018FA	BK45001FA	BK45003FA	BK45007FA	BK45002FA
Galium palustre																		
Forests, forest edges and clearings, hedges																		
Rosa sp.																		
cf *Seseli libanotis*																		
VARIA																		
Apiaceae																		
Asteraceae																		
Brassicaceae																		
Bromus sp.																		
Cannabinaceae																		
Chenopodium sp.																		
Galium sp.																		
Lamiaceae																		
Lolium sp.																		
Papaver sp.																		
Poa sp.																		
Poaceae																		
Potentilla sp.																		
Rumex sp.																		
Indeterminata - endocarp																		
Indeterminata - fruitflesh																		
Indeterminata - coprolithes																		
Indeterminata - crusts																		
Indeterminata - seed/fruit																		

Temple complex																	
Chronology																	
Context												**Ceramic Vessel nr 6**	**Layer**				
Structure	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**180**	**17**	**17**	**17**	**17**	**17**
US	01	03	05	08	04	02	10	09	33	34	20	35	21 D	21 C	21 B	21 A	30
Sample N°	BK45004FA	BK45005FA	BK45006FA	BK45008FA	BK45010FA	BK45013FA	BK45050FA	BK45053FA	BK55016FA	BK55017FA	BK55021FA	BK55013FA	BK45024FA	BK45025FA	BK45026FA	BK45027FA	BK45063FA
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS
Volume sample	2000	3000	5000	5000	4000	5000	3000	4000	10000	11000	10000	7000	7000	9000	6000	6000	8000
Field	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
WATERLOGGED																	
CEREALS _ grain																	
Avena sativa/fatua																	
Cerealia - Testa																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
Hordeum sp. - rachis							1										
Secale cereale - rachis																	
Triticum aestivum - rachis																	
Triticum cf aestivum/durum/turgidum - rachis																	
Triticum dicoccon - glume																	
Triticum cf *dicoccon* - glume																	
Triticum monococcum - glume																	
Triticum spelta - glume				1					1								
Triticum sp. - rachis																	
Triticum sp. - glume																	
Cerealia - glume				1													
Cerealia - rachis				1													
Panicum miliaceum - glume				2		1											
Setaria italica - glume																	
Panicum/Setaria - glume																	
NUTS																	
Corylus avellana	1		2	1	2	2	2	1	3	3							
Juglans regia				1		1			2	1							
Pinus pinea																	
PULSES																	
Lens culinaris																	
Pisum sativum																	
Vicia faba																	
Fabaceae																	
SPICES																	
Anethum graveolens																	
Apium graveolens									1								
Carum carvi																	
Coriandrum sativum																	
Foeniculum vulgare																	
Origanum vulgare																	
cf *Petroselinum crispum*																	
Pimpinella anisum																	
Piper nigrum																	
cf *Ruta graveolens*																	
Satureja hortensis																	
cf *Thymus* sp. - stem																	
VEGETABLES AND SALADS																	
Amaranthus sp.																	
Atriplex sp.																	
Beta vulgaris																	
Brassica cf *oleracea*																	
Brassica rapa/nigra																	
Brassica sp.																	
Brassica/Sinapis																	
Daucus carota	1			1					1								
Lagenaria siceraria																	
Pastinaca sativa																	
Portulaca oleracea																	
FRUITS																	
Cucumis melo																	
Cucumis sativus																	
Cucumis melo/sativa - fragment																	
Cucumis melo/sativa																	

Chronology																	
Context												**Ceramic Vessel nr 6**	**Layer**				
Structure	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**180**	**17**	**17**	**17**	**17**	**17**
US	01	03	05	08	04	02	10	09	33	34	20	35	21 D	21 C	21 B	21 A	30
Sample N°	BK45004FA	BK45005FA	BK45006FA	BK45008FA	BK45010FA	BK45013FA	BK45050FA	BK45053FA	BK55016FA	BK55017FA	BK55021FA	BK55013FA	BK45024FA	BK45025FA	BK45026FA	BK45027FA	BK45063FA
Ficus carica		1	1	1	1		1			1	1						
Fragaria vesca																	
Malus domestica																	
Malus sylvestris/domestica																	
Pyrus sp. - stone cells																	
Pyrus sp. - flower						1											
Malus/Pyrus - pericarp																	
Malus/Pyrus																	
Morus sp.																	
Olea europaea																	
Physalis alkekengi								1									
Prunus cf *avium*																	
Prunus avium/cerasus																	
Prunus domestica																	
Prunus domestica/insititia									1	2							
Prunus insititia																	
Prunus persica			1		1	1	1	1		2							
Prunus spinosa																	
Prunus sp.						1											
Rubus caesius			1	1					2	1							
Rubus fruticosus																	
Rubus idaeus																	
Rubus sp.							1	1									
Sambucus nigra/racemosa	2	1	1	1	2	3	2		4	2	3						
Vitis vinifera	1							1									
OIL, DYE AND FIBRE PLANTS																	
Cannabis sativa				1		1	2	1									
Carthamus tinctorius																	
cf *Isatis tinctoria*																	
Linum usitatissimum																	
Papaver somniferum																	
WEEDS OF WINTER CEREALS																	
cf *Adonis* sp.																	
Agrostemma githago				2					1	1							
Anthemis arvensis									1								
Bromus arvensis Type																	
Buglossoides arvensis																	
Fallopia convolvulus				1					1		1						
Galium aparine																	
Silene gallica																	
Stachys annua/arvensis																	
Valerianella locusta																	
Valerianella cf *rimosa*																	
Valerianella rimosa																	
Valerianella sp.																	
Veronica hederifolia																	
Viola tricolor																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Aphanes arvensis																	
cf *Bromus secalinus*																	
Camelina sativa																	
Centaurea cf *cyanus*																	
Papaver argemone																	
Papaver dubium																	
Raphanus raphanistrum																	
Scleranthus sp. - capsule						1											
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Ajuga chamaepitys						1											
Bupleurum rotundifolium																	
Caucalis platycarpos						1				1							
Euphorbia exigua																	
Galium spurium																	
Glaucium corniculatum																	

Chronology																	
Context												Ceramic Vessel nr 6	Layer				
Structure	49	49	49	49	49	49	49	49	49	49	49	180	17	17	17	17	17
US	01	03	05	08	04	02	10	09	33	34	20	35	21 D	21 C	21 B	21 A	30
Sample N°	BK45004FA	BK45005FA	BK45006FA	BK45008FA	BK45010FA	BK45013FA	BK45050FA	BK45053FA	BK55016FA	BK55017FA	BK55021FA	BK55013FA	BK45024FA	BK45025FA	BK45026FA	BK45027FA	BK45063FA
Myagrum perfoliatum	1	1	1	1	1			1									
Nigella arvensis																	
Orlaya grandiflora																	
Ranunculus arvensis				1													
Scandix pecten-veneris																	
Silene cf *dichotoma*																	
Stachys annua																	
Thymelaea passerina																	
Torilis arvensis																	
cf *Vaccaria pyramidata*																	
Valerianella dentata				1		1											
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Aethusa cynapium																	
Anagallis arvensis/foemina							1										
Arenaria serpyllifolia																	
Capsella bursa-pastoris																	
Chenopodium album		1	1	1	1	2	2	1	3	2	2						
Chenopodium ficifolium																	
Chenopodium foliosum																	
Chenopodium hybridum		1	1	2	1	1	2	1	1								
Chenopodium murale																	
Chenopodium polyspermum																	
Echinochloa crus-galli																	
Euphorbia helioscopia					1												
Euphorbia platyphyllos																	
Fumaria officinalis																	
Fumaria sp.	1		1	1	1		1	1									
Galeopsis cf *bifida*																	
Galeopsis bifida																	
Galeopsis ladanum																	
Galeopsis sp.																	
Galeopsis cf *speciosa*																	
Galeopsis tetrahit				1													
Galeopsis ladanum/segetum																	
cf *Heliotropium europaeum*																	
Lamium amplexicaule/purpureum																	
Lamium cf *purpureum*																	
Malva sylvestris																	
Mercurialis annua																	
Poa annua																	
Polygonum lapathifolium/persicaria			1			1											
Polygonum persicaria																	
Portulaca sp.																	
Setaria verticillata/viridis																	
Setaria cf *viridis* - glume																	
Solanum nigrum	1		2				2	1	4	2	4						
Sonchus asper																	
Sonchus asper/oleraceus																	
Sonchus oleraceus																	
Stachys cf *arvensis*																	
Stellaria cf *media*																	
Stellaria media									3		1						
Thlaspi arvense				1	1	1	1		1	1							
Urtica urens				1		1			2								
Verbena officinalis																	
Xanthium strumarium																	
PERENNIAL RUDERALS																	
Agropyron repens																	
Arctium lappa																	
Arctium minus																	
Arctium sp.			1														
Bryonia dioica																	
Carduus crispus																	
Cerastium arvense																	

Chronology																	
Context												**Ceramic Vessel nr 6**	**Layer**				
Structure	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**180**	**17**	**17**	**17**	**17**	**17**
US	01	03	05	08	04	02	10	09	33	34	20	35	21 D	21 C	21 B	21 A	30
Sample N°	BK45004FA	BK45005FA	BK45006FA	BK45008FA	BK45010FA	BK45013FA	BK45050FA	BK45053FA	BK55016FA	BK55017FA	BK55021FA	BK55013FA	BK45024FA	BK45025FA	BK45026FA	BK45027FA	BK45063FA
Chelidonium majus					1												
cf *Chondrilla juncea*																	
Cirsium sp.																	
Cirsium/Carduus				2						1							
Conium maculatum																	
Convolvulus arvensis																	
Cruciata laevipes																	
Dipsacus cf *fullonum*																	
Fallopia dumetorum																	
Hyoscyamus niger			1					1	1								
Lactuca serriola																	
Lamium album																	
Lapsana communis																	
cf *Marrubium vulgare*																	
Onopordum acanthium																	
Plantago major										1							
Poa compressa																	
Polygonum aviculare			1	1		1			2	1							
Potentilla anserina																	
Ranunculus repens			2	2	1	2	2		2	2							
Reseda sp.																	
Rumex conglomeratus - perianth																	
Rumex crispus - perianth																	
Rumex obtusifolius - perianth																	
Rumex obtusifolius				2					2								
Sambucus ebulus					1				2								
Saponaria cf *officinalis*																	
Silene alba																	
Urtica dioica																	
MEADOWS AND PASTURES																	
Achillea millefolium																	
Agrostis sp.																	
Ajuga reptans					1												
Anthriscus sp.																	
Bromus cf *commutatus*																	
Bromus hordeaceus																	
Centaurea cf *jacea*																	
Centaurea sp.									1								
Cichorium intybus																	
Cirsium/Centaurea																	
cf *Cynosurus* sp.																	
Dactylis glomerata																	
Deschampsia caespitosa																	
Dianthus cf *armeria*																	
Festuca rubra/ovina																	
Festuca/Lolium																	
Holcus lanatus																	
Leontodon autumnalis																	
Leontodon sp.																	
Leucanthemum vulgare																	
Lolium perenne																	
Nardus stricta																	
Plantago lanceolata																	
Plantago cf *media*																	
Plantago media																	
Poa pratensis																	
Poa pratensis Type																	
Poa pratensis/trivialis																	
Potentilla erecta																	
Prunella vulgaris				1		1											
Ranunculus acris																	
Rhinanthus sp.																	
Rumex acetosa - perianth																	
Rumex acetosella																	
Scabiosa sp.																	

Chronology																	
Context												**Ceramic Vessel nr 6**	**Layer**				
Structure	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**180**	**17**	**17**	**17**	**17**	**17**
US	01	03	05	08	04	02	10	09	33	34	20	35	21 D	21 C	21 B	21 A	30
Sample N°	BK45004FA	BK45005FA	BK45006FA	BK45008FA	BK45010FA	BK45013FA	BK45050FA	BK45053FA	BK55016FA	BK55017FA	BK55021FA	BK55013FA	BK45024FA	BK45025FA	BK45026FA	BK45027FA	BK45063FA
Silene vulgaris																	
Taraxacum officinale																	
Thalictrum flavum																	
Trifolium pratense - capsule																	
Trifolium sp. - chalice																	
Trifolium sp.																	
Open swards																	
cf *Acinos arvensis*																	
Ajuga genevensis																	
Artemisia campestris																	
Centaurea scabiosa																	
Dianthus sp.																	
Euphorbia cf *seguieriana*																	
Euphrasia/Odontites																	
Gentiana cruciata																	
Medicago lupulina - pod																	
Medicago lupulina - pod with seeds																	
Medicago minima - pod																	
Odontites sp.																	
cf *Petrorhagia prolifera*																	
Prunella grandiflora																	
Scabiosa columbaria																	
Stachys recta																	
Teucrium botrys																	
Teucrium cf *chamaedrys*																	
Teucrium montanum																	
Trifolium cf *campestre* - chalice																	
Aquatic plants																	
Ceratophyllum cf *submersum*																	
Lemna sp.																	
Polygonum cf *amphibium*																	
Potamogeton sp.																	
Ranunculus aquatilis																	
Sparganium sp.																	
Zannichellia palustris																	
Reed fields																	
Alisma plantago-aquatica																	
Carex sp. - utriculus			1														
Carex sp. bicarpellate			1	1					1								
Carex sp. tricarpellate			1	2	1	1	1	1	2	1	2						
Cicuta virosa																	
Eleocharis palustris				1		1			2								
Eupatorium cannabinum																	
Galium cf *palustre*																	
Glyceria sp.																	
Hippuris vulgaris																	
Iris cf *pseudacorus*						1											
Juncus sp.																	
Lycopus europaeus																	
Mentha arvensis/aquatica																	
Nasturtium officinale																	
Oenanthe fistulosa		1	1			1	1										
Oenanthe sp.																	
Poa palustris																	
Rorippa amphibia																	
Rumex cf aquaticus/hydrolapathum???																	
Salix sp. - veg. part																	
Schoenoplectus lacustris																	
Schoenoplectus sp.						1											
Riverbank plants (pioneer)																	
Alnus glutinosa - veg. part																	
Alnus sp. - veg part																	
Bidens tripartita																	
Bidens sp.																	
Cyperus flavescens																	

Chronology																	
Context												Ceramic Vessel nr 6	Layer				
Structure	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**180**	**17**	**17**	**17**	**17**	**17**
US	01	03	05	08	04	02	10	09	33	34	20	35	21 D	21 C	21 B	21 A	30
Sample N°	BK45004FA	BK45005FA	BK45006FA	BK45008FA	BK45010FA	BK45013FA	BK45050FA	BK45053FA	BK55016FA	BK55017FA	BK55021FA	BK55013FA	BK45024FA	BK45025FA	BK45026FA	BK45027FA	BK45063FA
Cyperus fuscus																	
Cyperus sp.																	
Myosoton aquaticum																	
Polygonum hydropiper				2		1	2		2		2						
Polygonum hydropiper/mite									2								
Polygonum lapathifolium																	
Polygonum minus																	
Polygonum mite																	
Polygonum mite/minus																	
Ranunculus flammula																	
Ranunculus sardous																	
Ranunculus sceleratus									1								
Teucrium cf *scordium*																	
Wet meadows																	
cf *Euphorbia palustris*																	
Filipendula ulmaria																	
Linum catharticum																	
Lychnis flos-cuculi									1								
Scirpus sylvaticus																	
Stachys officinalis																	
Forests, forest edges and clearings, hedges																	
Abies alba - needle									1		1						
Acer sp. - veg. part																	
Agrimonia eupatoria																	
Arctium cf *nemorosum*																	
Betula pendula - veg. part																	
Cornus sanguinea																	
Crataegus sp.																	
Humulus lupulus									2	2	2						
Quercus sp.																	
Rosa sp.																	
Solanum cf *dulcamara*				2													
Stellaria cf *nemorum*																	
Torilis cf *japonica*																	
Viburnum lantana																	
Viburnum opulus																	
Calamintha sylvatica																	
Galium verum																	
Hypericum perforatum																	
Saponaria cf *ocymoides*																	
Silene nutans																	
Thalictrum minus																	
VARIA																	
Ajuga sp.																	
Allium sp.																	
Apiaceae																	
Asteraceae																	
Boraginaceae																	
Brassicaceae																	
Bromus sp.																	
Campanula sp.																	
Cannabinaceae																	
Carduus sp.						1											
Caryophyllaceae																	
Cerastium sp.																	
Chenopodiaceae																	
Chenopodiaceae/Amaranthaceae																	
Chenopodium sp.	1																
Cichorium sp.																	
Crepis sp.																	
Cuscuta sp.																	
Cyperaceae																	

Chronology																	
Context												**Ceramic Vessel nr 6**	**Layer**				
Structure	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**180**	**17**	**17**	**17**	**17**	**17**
US	01	03	05	08	04	02	10	09	33	34	20	35	21 D	21 C	21 B	21 A	30
Sample N°	BK45004FA	BK45005FA	BK45006FA	BK45008FA	BK45010FA	BK45013FA	BK45050FA	BK45053FA	BK55016FA	BK55017FA	BK55021FA	BK55013FA	BK45024FA	BK45025FA	BK45026FA	BK45027FA	BK45063FA
Epilobium sp.																	
Euphorbia sp.																	
Fallopia sp.																	
Filipendula sp.																	
Galium sp.					1			1									
Hypericum sp.																	
Inula sp.																	
Lamiaceae	1		1			1			1								
Lamium sp.									2	1							
Liliaceae																	
Malva sp.																	
cf *Matricaria* sp.																	
Nasturtium sp.																	
Papaver sp.																	
Physalis/Solanum		1			1	3											
Phyteuma sp.																	
Poa sp.																	
Poaceae																	
Poaceae																	
Polygonaceae																	
Polygonum sp.	1			1	1												
Potentilla sp.																	
Primulaceae																	
Ranunculaceae																	
Ranunculus sp.																	
Rosaceae																	
Rumex sp. - perianth																	
Sambucus sp.	1		1	2				1									
Satureja sp.																	
Scrophulariaceae																	
Silene sp.							1										
Sinapis sp.																	
Solanaceae																	
Solanum sp.									1								
Sonchus sp.																	
Stachys sp.	1			1	1		1	1									
Stellaria graminea/palustris									1		1						
Stellaria sp.																	
Teucrium sp.																	
Tilia sp. - fruit																	
Torilis sp.																	
Veronica sp.																	
Vicia sp.																	
Viola sp.	1				1												
Indeterminata																	
CHARRED																	
CEREALS _ grain																	
Avena sp.																	
Hordeum vulgare																	
Hordeum sp.																	
Secale cereale																	
Triticum aestivum																	
Triticum cf *aestivum*																	
Triticum aestivum/durum/turgidum																	
Triticum dicoccon																	
Triticum spelta																	
Triticum sp.																	
Cerealia ohne Hirsen								1									
Panicum miliaceum																	
Setaria italica																	
Panicum/Setaria																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	

Chronology																	
Context												**Ceramic Vessel nr 6**	**Layer**				
Structure	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**180**	**17**	**17**	**17**	**17**	**17**
US	01	03	05	08	04	02	10	09	33	34	20	35	21 D	21 C	21 B	21 A	30
Sample N°	BK45004FA	BK45005FA	BK45006FA	BK45008FA	BK45010FA	BK45013FA	BK45050FA	BK45053FA	BK55016FA	BK55017FA	BK55021FA	BK55013FA	BK45024FA	BK45025FA	BK45026FA	BK45027FA	BK45063FA
Hordeum sp. - rachis																	
Secale cereale - rachis																	
Triticum aestivum - rachis																	
Triticum dicoccon - glume																	
Triticum monococcum - glume																	
Triticum spelta - glume																	
Triticum sp. - glume																	
NUTS																	
Corylus avellana								1								1	1
Juglans regia																	
cf *Pinus pinea* - cone fragment																	
Pinus pinea - cone fragment																	
Pinus pinea												3					
Pinus pinea - scale																	
Pinus pinea - nut fragment																	
PULSES																	
Lathyrus sp.																	
Lens culinaris																	
Pisum sativum																	
Vicia faba									1								
Vicia/Lathyrus																	
Fabaceae																	
SPICES																	
Apium graveolens																	
Satureja hortensis																	
VEGETABLES AND SALADS																	
Allium sativum																	
cf *Allium sativum*																	
Atriplex sp.																	
Brassica sp.																	
FRUITS																	
Ficus carica																	
Ficus carica - fruitflesh																	
Phoenix dactylifera - fruit																	
Phoenix dactylifera - stone																	
Phoenix dactylifera - fruitflesh																	
Phoenix dactylifera - stone fragment																	
Prunus domestica/insititia																	
Prunus persica																	
Sambucus nigra/racemosa																	
Vitis vinifera						1											
OIL AND FIBRE PLANTS																	
WEEDS OF WINTER CEREALS																	
Galium aparine																	
Veronica hederifolia																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Avena fatua																	
Caucalis platycarpos																	
Galium cf *spurium*																	
Glaucium corniculatum																	
Myagrum perfoliatum																	
Vicia cf *angustifolia*																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Chenopodium album																	
Chenopodium polyspermum																	
Galeospis ladanum/segetum																	
cf *Solanum nigrum*																	
Thlaspi arvense																	
PERENNIAL RUDERALS																	
Cruciata laevipes																	
Rumex obtusifolius																	

Chronology																	
Context												Ceramic Vessel nr 6	Layer				
Structure	49	49	49	49	49	49	49	49	49	49	49	180	17	17	17	17	17
US	01	03	05	08	04	02	10	09	33	34	20	35	21 D	21 C	21 B	21 A	30
Sample N°	BK45004FA	BK45005FA	BK45006FA	BK45008FA	BK45010FA	BK45013FA	BK45050FA	BK45053FA	BK55016FA	BK55017FA	BK55021FA	BK55013FA	BK45024FA	BK45025FA	BK45026FA	BK45027FA	BK45063FA
Silene alba																	
MEADOWS AND PASTURES																	
Centaurea sp.																	
Festuca/Lolium																	
Galium boreale																	
Plantago lanceolata																	
Plantago media																	
Trifolium sp.																	
Aquatic plants																	
Sparganium sp.																	
Reed fields																	
cf *Alisma plantago-aquatica*																	
Carex sp. tricarpellate																	
Galium cf *palustre*																	
Riverbank plants (pioneer)																	
Teucrium scordium																	
Forests, forest edges and clearings, hedges																	
Abies alba - needle																	
Galium verum																	
cf *Humulus lupulus*																	
VARIA																	
Asperula sp.																	
Bromus sp.																	
Chenopodiaceae																	
Chenopodium sp.																	
Galium sp.													1	1	1	1	
Poaceae																	
Rumex sp.																	
Sambucus sp.																	
Vicia sp.																	
Indeterminata - pastry																	
Indeterminata - bud																	
Indeterminata - amorphous object												19					
Indeterminata - fruitflesh																	
Indeterminata - endocarp													1				
Indeterminata - seed/fruit																	
MINERALISED																	
CEREALS _ grain																	
cf *Avena* sp.																	
Hordeum vulgare																	
Triticum spelta																	
Triticum sp.																	
Panicum miliaceum																	
Setaria italica																	
Panicum/Setaria																	
Cerealia ohne Hirsen																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
Triticum spelta - spikelet fork																	
Cerealia - ear																	
Cerealia - glume																	
Panicum miliaceum - glume																	
Setaria italica - glume																	
Panicum/Setaria - glume																	
PULSES																	
Lens culinaris																	
Pisum sativum																	
Vicia faba																	
Fabaceae - fruitflesh																	
Fabaceae																	
FRUITS																	
Cucumis melo																	

Chronology																	
Context												Ceramic Vessel nr 6	Layer				
Structure	49	49	49	49	49	49	49	49	49	49	49	180	17	17	17	17	17
US	01	03	05	08	04	02	10	09	33	34	20	35	21 D	21 C	21 B	21 A	30
Sample N°	BK45004FA	BK45005FA	BK45006FA	BK45008FA	BK45010FA	BK45013FA	BK45050FA	BK45053FA	BK55016FA	BK55017FA	BK55021FA	BK55013FA	BK45024FA	BK45025FA	BK45026FA	BK45027FA	BK45063FA
Cucumis melo/sativa																	
Ficus carica																	
Fragaria vesca																	
Malus domestica																	
Malus sylvestris/domestica																	
Pyrus sp.																	
Malus/Pyrus																	
Morus sp.																	
Physalis alkekengi																	
Prunus sp. - fragment																	
Rubus caesius																	
Rubus sp. - inner																	
Sambucus nigra/racemosa																	
Vitis vinifera - fruitflesh																	
Vitis vinifera - aborted seed																	
Vitis vinifera																	
SPICES																	
Anethum graveolens																	
Apium graveolens																	
Carum carvi																	
Coriandrum sativum																	
Foeniculum vulgare																	
Nigella cf *sativa*																	
VEGETABLES AND SALADS																	
Atriplex sp.																	
Beta vulgaris																	
Brassica sp.																	
Daucus carota																	
Lagenaria siceraria																	
OIL AND FIBRE PLANTS																	
Linum usitatissimum																	
Papaver somniferum																	
WEEDS OF WINTER CEREALS																	
Agrostemma githago																	
Buglossoides arvensis																	
Fallopia convolvulus																	
Galium aparine																	
cf *Veronica hederifolia*																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Camelina sativa																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Caucalis platycarpos																	
Galium spurium																	
Vaccaria pyramidata																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Galeopsis cf *speciosa*																	
Polygonum lapathifolium/persicaria																	
Solanum nigrum																	
Sonchus oleraceus																	
Stellaria media																	
Thlaspi arvense																	
PERENNIAL RUDERALS																	
Arctium sp.																	
Convolvulus arvensis																	
Hyoscyamus niger																	
Lapsana communis																	
MEADOWS AND PASTURES																	
Centaurea sp.																	
Rhinanthus sp.																	
Scabiosa sp.																	
Reed fields																	
Carex sp. tricarpellat																	

Chronology																	
Context												**Ceramic Vessel nr 6**	**Layer**				
Structure	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**180**	**17**	**17**	**17**	**17**	**17**
US	01	03	05	08	04	02	10	09	33	34	20	35	21 D	21 C	21 B	21 A	30
Sample N°	BK45004FA	BK45005FA	BK45006FA	BK45008FA	BK45010FA	BK45013FA	BK45050FA	BK45053FA	BK55016FA	BK55017FA	BK55021FA	BK55013FA	BK45024FA	BK45025FA	BK45026FA	BK45027FA	BK45063FA
Galium palustre																	
Forests, forest edges and clearings, hedges																	
Rosa sp.																	
cf *Seseli libanotis*																	
VARIA																	
Apiaceae																	
Asteraceae																	
Brassicaceae																	
Bromus sp.																	
Cannabinaceae																	
Chenopodium sp.																	
Galium sp.																	
Lamiaceae																	
Lolium sp.																	
Papaver sp.																	
Poa sp.																	
Poaceae																	
Potentilla sp.																	
Rumex sp.																	
Indeterminata - endocarp																	
Indeterminata - fruitflesh																	
Indeterminata - coprolithes																	
Indeterminata - crusts																	
Indeterminata - seed/fruit																	

Temple complex																		
Chronology						**Phase 2**												
Context				**Posthole**	**Posthole**	**Astteppich**		**Astteppich?**		**Posthole**	**Postholes belonging to Temple C1**							
Structure	**19**	**19**	**19**	**138**	**139**	**75**	**75**	**2**	**211**	**65**	**63**	**80**	**83**	**84**	**86**	**88**	**123**	**135**
US	24	19	18	01	01	01	01	04	01	01	01	01	01	01	01	01	01	01
Sample N°	BK45064FA	BK45045FA	BK45046FA	BK45069FA	BK45067FA	BK35038FA	BK35522FA	BK45012FA	BK55014FA	BK35031FA	BK45020FA	BK45043FA	BK45035FA	BK45031FA	BK45032FA	BK45038FA	BK45062FA	BK45070FA
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS
Volume sample	7000	7000	8000	6000	4000	6000	0	5000	9800	5500	6000	6000	4000	5000	8000	1000	9000	8000
Field	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
WATERLOGGED																		
CEREALS _ grain																		
Avena sativa/fatua																		
Cerealia - Testa																		
CEREALS _ chaff																		
Hordeum vulgare - rachis																		
Hordeum sp. - rachis																		
Secale cereale - rachis																		
Triticum aestivum - rachis																		
Triticum cf aestivum/durum/turgidum - rachis																		
Triticum dicoccon - glume																		
Triticum cf *dicoccon* - glume																		
Triticum monococcum - glume						1												
Triticum spelta - glume																		
Triticum sp. - rachis																		
Triticum sp. - glume																		
Cerealia - glume																		
Cerealia - rachis																		
Panicum miliaceum - glume																		
Setaria italica - glume																		
Panicum/Setaria - glume																		
NUTS																		
Corylus avellana								1										
Juglans regia																		
Pinus pinea																		
PULSES																		
Lens culinaris																		
Pisum sativum																		
Vicia faba																		
Fabaceae																		
SPICES																		
Anethum graveolens																		
Apium graveolens																		
Carum carvi																		
Coriandrum sativum						1	1											
Foeniculum vulgare																		
Origanum vulgare																		
cf *Petroselinum crispum*																		
Pimpinella anisum																		
Piper nigrum																		
cf *Ruta graveolens*																		
Satureja hortensis																		
cf *Thymus* sp. - stem																		
VEGETABLES AND SALADS																		
Amaranthus sp.						1												
Atriplex sp.																		
Beta vulgaris																		
Brassica cf *oleracea*																		
Brassica rapa/nigra																		
Brassica sp.						1												
Brassica/Sinapis																		
Daucus carota						1		1										
Lagenaria siceraria							1											
Pastinaca sativa																		
Portulaca oleracea																		
FRUITS																		
Cucumis melo																		
Cucumis sativus																		
Cucumis melo/sativa - fragment																		
Cucumis melo/sativa																		

Chronology						Phase 2												
Context				**Posthole**	**Posthole**	**Astteppich**		**Astteppich?**		**Posthole**	**Postholes belonging to Temple C1**							
Structure	**19**	**19**	**19**	**138**	**139**	**75**	**75**	**2**	**211**	**65**	**63**	**80**	**83**	**84**	**86**	**88**	**123**	**135**
US	24	19	18	01	01	01	01	04	01	01	01	01	01	01	01	01	01	01
Sample N°	BK45064FA	BK45045FA	BK45046FA	BK45069FA	BK45067FA	BK35038FA	BK35522FA	BK45012FA	BK55014FA	BK35031FA	BK45020FA	BK45043FA	BK45035FA	BK45031FA	BK45032FA	BK45038FA	BK45062FA	BK45070FA
Ficus carica																		
Fragaria vesca																		
Malus domestica																		
Malus sylvestris/domestica																		
Pyrus sp. - stone cells																		
Pyrus sp. - flower																		
Malus/Pyrus - pericarp																		
Malus/Pyrus																		
Morus sp.																		
Olea europaea																		
Physalis alkekengi						1												
Prunus cf *avium*																		
Prunus avium/cerasus																		
Prunus domestica																		
Prunus domestica/insititia																		
Prunus insititia																		
Prunus persica																		
Prunus spinosa																		
Prunus sp.																		
Rubus caesius																		
Rubus fruticosus																		
Rubus idaeus																		
Rubus sp.																		
Sambucus nigra/racemosa						1			6	1								
Vitis vinifera																		
OIL, DYE AND FIBRE PLANTS																		
Cannabis sativa						1												
Carthamus tinctorius																		
cf *Isatis tinctoria*																		
Linum usitatissimum																		
Papaver somniferum																		
WEEDS OF WINTER CEREALS																		
cf *Adonis* sp.																		
Agrostemma githago							1											
Anthemis arvensis								1										
Bromus arvensis Type																		
Buglossoides arvensis																		
Fallopia convolvulus				1		1												
Galium aparine						1												
Silene gallica																		
Stachys annua/arvensis																		
Valerianella locusta																		
Valerianella cf *rimosa*																		
Valerianella rimosa																		
Valerianella sp.																		
Veronica hederifolia																		
Viola tricolor																		
Order Aperetalia_weeds of rather acidic/neutral soils																		
Aphanes arvensis																		
cf *Bromus secalinus*																		
Camelina sativa																		
Centaurea cf *cyanus*																		
Papaver argemone																		
Papaver dubium																		
Raphanus raphanistrum																		
Scleranthus sp. - capsule																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Ajuga chamaepitys								1										
Bupleurum rotundifolium																		
Caucalis platycarpos						1		1										
Euphorbia exigua																		
Galium spurium																		
Glaucium corniculatum						1												

Chronology						Phase 2												
Context				**Posthole**	**Posthole**	**Astteppich**		**Astteppich?**		**Posthole**	**Postholes belonging to Temple C1**							
Structure	**19**	**19**	**19**	**138**	**139**	**75**	**75**	**2**	**211**	**65**	**63**	**80**	**83**	**84**	**86**	**88**	**123**	**135**
US	24	19	18	01	01	01	01	04	01	01	01	01	01	01	01	01	01	01
Sample N°	BK45064FA	BK45045FA	BK45046FA	BK45069FA	BK45067FA	BK35038FA	BK35522FA	BK45012FA	BK55014FA	BK35031FA	BK45020FA	BK45043FA	BK45035FA	BK45031FA	BK45032FA	BK45038FA	BK45062FA	BK45070FA
Myagrum perfoliatum				1		1		1	2									
Nigella arvensis																		
Orlaya grandiflora																		
Ranunculus arvensis																		
Scandix pecten-veneris																		
Silene cf *dichotoma*																		
Stachys annua																		
Thymelaea passerina																		
Torilis arvensis																		
cf *Vaccaria pyramidata*																		
Valerianella dentata																		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Aethusa cynapium																		
Anagallis arvensis/foemina						1												
Arenaria serpyllifolia																		
Capsella bursa-pastoris																		
Chenopodium album				1	1		1	1										
Chenopodium ficifolium																		
Chenopodium foliosum																		
Chenopodium hybridum																		
Chenopodium murale																		
Chenopodium polyspermum																		
Echinochloa crus-galli																		
Euphorbia helioscopia																		
Euphorbia platyphyllos																		
Fumaria officinalis																		
Fumaria sp.					1													
Galeopsis cf *bifida*																		
Galeopsis bifida																		
Galeopsis ladanum																		
Galeopsis sp.																		
Galeopsis cf *speciosa*																		
Galeopsis tetrahit																		
Galeopsis ladanum/segetum																		
cf *Heliotropium europaeum*																		
Lamium amplexicaule/purpureum																		
Lamium cf *purpureum*																		
Malva sylvestris																		
Mercurialis annua				1														
Poa annua																		
Polygonum lapathifolium/persicaria																		
Polygonum persicaria																		
Portulaca sp.																		
Setaria verticillata/viridis																		
Setaria cf *viridis* - glume																		
Solanum nigrum						1	1	1										
Sonchus asper																		
Sonchus asper/oleraceus																		
Sonchus oleraceus																		
Stachys cf *arvensis*																		
Stellaria cf *media*																		
Stellaria media																		
Thlaspi arvense						1												
Urtica urens																		
Verbena officinalis																		
Xanthium strumarium																		
PERENNIAL RUDERALS																		
Agropyron repens																		
Arctium lappa																		
Arctium minus																		
Arctium sp.																		
Bryonia dioica																		
Carduus crispus																		
Cerastium arvense																		

Chronology						Phase 2												
Context				**Posthole**	**Posthole**	**Astteppich**		**Astteppich?**		**Posthole**	**Postholes belonging to Temple C1**							
Structure	**19**	**19**	**19**	**138**	**139**	**75**	**75**	**2**	**211**	**65**	**63**	**80**	**83**	**84**	**86**	**88**	**123**	**135**
US	24	19	18	01	01	01	01	04	01	01	01	01	01	01	01	01	01	01
Sample N°	BK45064FA	BK45045FA	BK45046FA	BK45069FA	BK45067FA	BK35038FA	BK35522FA	BK45012FA	BK55014FA	BK35031FA	BK45020FA	BK45043FA	BK45035FA	BK45031FA	BK45032FA	BK45038FA	BK45062FA	BK45070FA
Chelidonium majus																		
cf *Chondrilla juncea*																		
Cirsium sp.																		
Cirsium/Carduus																		
Conium maculatum																		
Convolvulus arvensis																		
Cruciata laevipes																		
Dipsacus cf *fullonum*																		
Fallopia dumetorum																		
Hyoscyamus niger																		
Lactuca serriola																		
Lamium album																		
Lapsana communis																		
cf *Marrubium vulgare*																		
Onopordum acanthium																		
Plantago major																		
Poa compressa																		
Polygonum aviculare						1												
Potentilla anserina																		
Ranunculus repens						2	1	1										
Reseda sp.																		
Rumex conglomeratus - perianth																		
Rumex crispus - perianth																		
Rumex obtusifolius - perianth																		
Rumex obtusifolius																		
Sambucus ebulus						1				1								
Saponaria cf *officinalis*																		
Silene alba																		
Urtica dioica																		
MEADOWS AND PASTURES																		
Achillea millefolium																		
Agrostis sp.																		
Ajuga reptans					1													
Anthriscus sp.																		
Bromus cf *commutatus*																		
Bromus hordeaceus																		
Centaurea cf *jacea*																		
Centaurea sp.						1	1											
Cichorium intybus																		
Cirsium/Centaurea																		
cf *Cynosurus* sp.																		
Dactylis glomerata																		
Deschampsia caespitosa																		
Dianthus cf *armeria*																		
Festuca rubra/ovina																		
Festuca/Lolium																		
Holcus lanatus																		
Leontodon autumnalis																		
Leontodon sp.																		
Leucanthemum vulgare																		
Lolium perenne																		
Nardus stricta																		
Plantago lanceolata																		
Plantago cf *media*																		
Plantago media																		
Poa pratensis																		
Poa pratensis Type																		
Poa pratensis/trivialis																		
Potentilla erecta																		
Prunella vulgaris							1											
Ranunculus acris																		
Rhinanthus sp.																		
Rumex acetosa - perianth																		
Rumex acetosella																		
Scabiosa sp.																		

Chronology						Phase 2												
Context				**Posthole**	**Posthole**	**Astteppich**		**Astteppich?**		**Posthole**	**Postholes belonging to Temple C1**							
Structure	**19**	**19**	**19**	**138**	**139**	**75**	**75**	**2**	**211**	**65**	**63**	**80**	**83**	**84**	**86**	**88**	**123**	**135**
US	24	19	18	01	01	01	01	04	01	01	01	01	01	01	01	01	01	01
Sample N°	BK45064FA	BK45045FA	BK45046FA	BK45069FA	BK45067FA	BK35038FA	BK35522FA	BK45012FA	BK55014FA	BK35031FA	BK45020FA	BK45043FA	BK45035FA	BK45031FA	BK45032FA	BK45038FA	BK45062FA	BK45070FA
Silene vulgaris																		
Taraxacum officinale																		
Thalictrum flavum																		
Trifolium pratense - capsule																		
Trifolium sp. - chalice																		
Trifolium sp.																		
Open swards																		
cf *Acinos arvensis*																		
Ajuga genevensis																		
Artemisia campestris																		
Centaurea scabiosa																		
Dianthus sp.																		
Euphorbia cf *seguieriana*																		
Euphrasia/Odontites																		
Gentiana cruciata																		
Medicago lupulina - pod																		
Medicago lupulina - pod with seeds																		
Medicago minima - pod																		
Odontites sp.																		
cf *Petrorhagia prolifera*																		
Prunella grandiflora																		
Scabiosa columbaria						1												
Stachys recta																		
Teucrium botrys																		
Teucrium cf *chamaedrys*																		
Teucrium montanum																		
Trifolium cf *campestre* - chalice																		
Aquatic plants																		
Ceratophyllum cf *submersum*																		
Lemna sp.																		
Polygonum cf *amphibium*																		
Potamogeton sp.							1											
Ranunculus aquatilis																		
Sparganium sp.																		
Zannichellia palustris																		
Reed fields																		
Alisma plantago-aquatica																		
Carex sp. - utriculus						1												
Carex sp. bicarpellate						2												
Carex sp. tricarpellate				1	1	2	1	1										
Cicuta virosa																		
Eleocharis palustris						1	1	1										
Eupatorium cannabinum																		
Galium cf *palustre*																		
Glyceria sp.																		
Hippuris vulgaris																		
Iris cf *pseudacorus*																		
Juncus sp.																		
Lycopus europaeus																		
Mentha arvensis/aquatica																		
Nasturtium officinale																		
Oenanthe fistulosa						1												
Oenanthe sp.																		
Poa palustris																		
Rorippa amphibia																		
Rumex cf aquaticus/hydrolapathum???																		
Salix sp. - veg. part																		
Schoenoplectus lacustris																		
Schoenoplectus sp.						1												
Riverbank plants (pioneer)																		
Alnus glutinosa - veg. part																		
Alnus sp. - veg part																		
Bidens tripartita																		
Bidens sp.																		
Cyperus flavescens																		

Chronology						Phase 2												
Context				Posthole	Posthole	Astteppich		Astteppich?		Posthole	Postholes belonging to Temple C1							
Structure	19	19	19	138	139	75	75	2	211	65	63	80	83	84	86	88	123	135
US	24	19	18	01	01	01	01	04	01	01	01	01	01	01	01	01	01	01
Sample N°	BK45064FA	BK45045FA	BK45046FA	BK45069FA	BK45067FA	BK35038FA	BK35522FA	BK45012FA	BK55014FA	BK35031FA	BK45020FA	BK45043FA	BK45035FA	BK45031FA	BK45032FA	BK45038FA	BK45062FA	BK45070FA
Cyperus fuscus																		
Cyperus sp.																		
Myosoton aquaticum																		
Polygonum hydropiper							1											
Polygonum hydropiper/mite						1	1											
Polygonum lapathifolium																		
Polygonum minus																		
Polygonum mite																		
Polygonum mite/minus																		
Ranunculus flammula																		
Ranunculus sardous						1												
Ranunculus sceleratus																		
Teucrium cf *scordium*																		
Wet meadows																		
cf *Euphorbia palustris*																		
Filipendula ulmaria																		
Linum catharticum																		
Lychnis flos-cuculi																		
Scirpus sylvaticus																		
Stachys officinalis																		
Forests, forest edges and clearings, hedges																		
Abies alba - needle																		
Acer sp. - veg. part																		
Agrimonia eupatoria																		
Arctium cf *nemorosum*																		
Betula pendula - veg. part																		
Cornus sanguinea																		
Crataegus sp.																		
Humulus lupulus																		
Quercus sp.																		
Rosa sp.																		
Solanum cf *dulcamara*																		
Stellaria cf *nemorum*																		
Torilis cf *japonica*																		
Viburnum lantana																		
Viburnum opulus																		
Calamintha sylvatica																		
Galium verum																		
Hypericum perforatum																		
Saponaria cf *ocymoides*																		
Silene nutans																		
Thalictrum minus																		
VARIA																		
Ajuga sp.																		
Allium sp.																		
Apiaceae																		
Asteraceae																		
Boraginaceae																		
Brassicaceae																		
Bromus sp.																		
Campanula sp.																		
Cannabinaceae																		
Carduus sp.																		
Caryophyllaceae																		
Cerastium sp.																		
Chenopodiaceae																		
Chenopodiaceae/Amaranthaceae																		
Chenopodium sp.																		
Cichorium sp.																		
Crepis sp.																		
Cuscuta sp.																		
Cyperaceae						2												

Chronology						Phase 2												
Context				Posthole	Posthole	Astteppich		Astteppich?		Posthole	Postholes belonging to Temple C1							
Structure	**19**	**19**	**19**	**138**	**139**	**75**	**75**	**2**	**211**	**65**	**63**	**80**	**83**	**84**	**86**	**88**	**123**	**135**
US	24	19	18	01	01	01	01	04	01	01	01	01	01	01	01	01	01	01
Sample N°	BK45064FA	BK45045FA	BK45046FA	BK45069FA	BK45067FA	BK35038FA	BK35522FA	BK45012FA	BK55014FA	BK35031FA	BK45020FA	BK45043FA	BK45035FA	BK45031FA	BK45032FA	BK45038FA	BK45062FA	BK45070FA
Epilobium sp.																		
Euphorbia sp.																		
Fallopia sp.																		
Filipendula sp.																		
Galium sp.																		
Hypericum sp.																		
Inula sp.																		
Lamiaceae																		
Lamium sp.																		
Liliaceae																		
Malva sp.																		
cf *Matricaria* sp.																		
Nasturtium sp.																		
Papaver sp.																		
Physalis/Solanum																		
Phyteuma sp.																		
Poa sp.																		
Poaceae																		
Poaceae																		
Polygonaceae																		
Polygonum sp.				1														
Potentilla sp.																		
Primulaceae																		
Ranunculaceae																		
Ranunculus sp.																		
Rosaceae																		
Rumex sp. - perianth						1												
Sambucus sp.	1			1				1										
Satureja sp.																		
Scrophulariaceae																		
Silene sp.																		
Sinapis sp.																		
Solanaceae																		
Solanum sp.																		
Sonchus sp.																		
Stachys sp.						1		1										
Stellaria graminea/palustris																		
Stellaria sp.																		
Teucrium sp.																		
Tilia sp. - fruit																		
Torilis sp.																		
Veronica sp.																		
Vicia sp.																		
Viola sp.				1		1		1										
Indeterminata																		
CHARRED																		
CEREALS _ grain																		
Avena sp.																		
Hordeum vulgare									2									
Hordeum sp.																		
Secale cereale																		
Triticum aestivum																		
Triticum cf *aestivum*																		
Triticum aestivum/durum/turgidum																		
Triticum dicoccon																		
Triticum spelta																		
Triticum sp.																		
Cerealia ohne Hirsen		1									1	1						
Panicum miliaceum																		
Setaria italica																		
Panicum/Setaria																		
CEREALS _ chaff																		
Hordeum vulgare - rachis																		

Chronology						Phase 2												
Context				Posthole	Posthole	Astteppich		Astteppich?		Posthole	Postholes belonging to Temple C1							
Structure	19	19	19	138	139	75	75	2	211	65	63	80	83	84	86	88	123	135
US	24	19	18	01	01	01	01	04	01	01	01	01	01	01	01	01	01	01
Sample N°	BK45064FA	BK45045FA	BK45046FA	BK45069FA	BK45067FA	BK35038FA	BK35522FA	BK45012FA	BK55014FA	BK35031FA	BK45020FA	BK45043FA	BK45035FA	BK45031FA	BK45032FA	BK45038FA	BK45062FA	BK45070FA
Hordeum sp. - rachis																		
Secale cereale - rachis																		
Triticum aestivum - rachis																		
Triticum dicoccon - glume																		
Triticum monococcum - glume																		
Triticum spelta - glume																		
Triticum sp. - glume																		
NUTS																		
Corylus avellana		1							1		1							1
Juglans regia																		
cf *Pinus pinea* - cone fragment																		
Pinus pinea - cone fragment																		
Pinus pinea																		
Pinus pinea - scale																		
Pinus pinea - nut fragment																		
PULSES																		
Lathyrus sp.																		
Lens culinaris																		
Pisum sativum																		
Vicia faba																		
Vicia/Lathyrus																		
Fabaceae																	1	
SPICES																		
Apium graveolens																		
Satureja hortensis																		
VEGETABLES AND SALADS																		
Allium sativum																		
cf *Allium sativum*																		
Atriplex sp.																		
Brassica sp.																		
FRUITS																		
Ficus carica																		
Ficus carica - fruitflesh																		
Phoenix dactylifera - fruit																		
Phoenix dactylifera - stone																		
Phoenix dactylifera - fruitflesh																		
Phoenix dactylifera - stone fragment																		
Prunus domestica/insititia																		
Prunus persica																		
Sambucus nigra/racemosa									14									
Vitis vinifera									2									
OIL AND FIBRE PLANTS																		
WEEDS OF WINTER CEREALS																		
Galium aparine																		
Veronica hederifolia																		
Order Aperetalia_weeds of rather acidic/neutral soils																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Avena fatua																		
Caucalis platycarpos																		
Galium cf *spurium*																		
Glaucium corniculatum																		
Myagrum perfoliatum									2									
Vicia cf *angustifolia*																		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Chenopodium album																		
Chenopodium polyspermum																		
Galeospis ladanum/segetum																		
cf *Solanum nigrum*																		
Thlaspi arvense																		
PERENNIAL RUDERALS																		
Cruciata laevipes																		
Rumex obtusifolius																		

Chronology					Phase 2													
Context				**Posthole**	**Posthole**	**Astteppich**		**Astteppich?**		**Posthole**	**Postholes belonging to Temple C1**							
Structure	**19**	**19**	**19**	**138**	**139**	**75**	**75**	**2**	**211**	**65**	**63**	**80**	**83**	**84**	**86**	**88**	**123**	**135**
US	24	19	18	01	01	01	01	04	01	01	01	01	01	01	01	01	01	01
Sample N°	BK45064FA	BK45045FA	BK45046FA	BK45069FA	BK45067FA	BK35038FA	BK35522FA	BK45012FA	BK55014FA	BK35031FA	BK45020FA	BK45043FA	BK45035FA	BK45031FA	BK45032FA	BK45038FA	BK45062FA	BK45070FA
Silene alba																		
MEADOWS AND PASTURES																		
Centaurea sp.																		
Festuca/Lolium																		
Galium boreale																		
Plantago lanceolata																		
Plantago media																		
Trifolium sp.																		
Aquatic plants																		
Sparganium sp.																		
Reed fields																		
cf *Alisma plantago-aquatica*																		
Carex sp. tricarpellate																		
Galium cf *palustre*																		
Riverbank plants (pioneer)																		
Teucrium scordium																		
Forests, forest edges and clearings, hedges																		
Abies alba - needle																		
Galium verum																		
cf *Humulus lupulus*																		
VARIA																		
Asperula sp.																		
Bromus sp.																		
Chenopodiaceae																		
Chenopodium sp.																		
Galium sp.	1		2											1		1		1
Poaceae																		
Rumex sp.																		
Sambucus sp.																		
Vicia sp.																		
Indeterminata - pastry																		
Indeterminata - bud																		
Indeterminata - amorphous object																		
Indeterminata - fruitflesh																		
Indeterminata - endocarp												1						
Indeterminata - seed/fruit															1			
MINERALISED																		
CEREALS _ grain																		
cf *Avena* sp.																		
Hordeum vulgare																		
Triticum spelta																		
Triticum sp.																		
Panicum miliaceum																		
Setaria italica																		
Panicum/Setaria																		
Cerealia ohne Hirsen																		
CEREALS _ chaff																		
Hordeum vulgare - rachis																		
Triticum spelta - spikelet fork																		
Cerealia - ear																		
Cerealia - glume																		
Panicum miliaceum - glume																		
Setaria italica - glume																		
Panicum/Setaria - glume																		
PULSES																		
Lens culinaris																		
Pisum sativum																		
Vicia faba																		
Fabaceae - fruitflesh																		
Fabaceae																		
FRUITS																		
Cucumis melo																		

Chronology						Phase 2												
Context				**Posthole**	**Posthole**	**Astteppich**		**Astteppich?**		**Posthole**	**Postholes belonging to Temple C1**							
Structure	**19**	**19**	**19**	**138**	**139**	**75**	**75**	**2**	**211**	**65**	**63**	**80**	**83**	**84**	**86**	**88**	**123**	**135**
US	24	19	18	01	01	01	01	04	01	01	01	01	01	01	01	01	01	01
Sample N°	BK45064FA	BK45045FA	BK45046FA	BK45069FA	BK45067FA	BK35038FA	BK35522FA	BK45012FA	BK55014FA	BK35031FA	BK45020FA	BK45043FA	BK45035FA	BK45031FA	BK45032FA	BK45038FA	BK45062FA	BK45070FA
Cucumis melo/sativa																		
Ficus carica																		
Fragaria vesca																		
Malus domestica																		
Malus sylvestris/domestica																		
Pyrus sp.																		
Malus/Pyrus																		
Morus sp.																		
Physalis alkekengi																		
Prunus sp. - fragment																		
Rubus caesius																		
Rubus sp. - inner																		
Sambucus nigra/racemosa																		
Vitis vinifera - fruitflesh																		
Vitis vinifera - aborted seed																		
Vitis vinifera																		
SPICES																		
Anethum graveolens																		
Apium graveolens																		
Carum carvi																		
Coriandrum sativum																		
Foeniculum vulgare																		
Nigella cf *sativa*																		
VEGETABLES AND SALADS																		
Atriplex sp.																		
Beta vulgaris																		
Brassica sp.																		
Daucus carota																		
Lagenaria siceraria																		
OIL AND FIBRE PLANTS																		
Linum usitatissimum																		
Papaver somniferum																		
WEEDS OF WINTER CEREALS																		
Agrostemma githago																		
Buglossoides arvensis																		
Fallopia convolvulus																		
Galium aparine																		
cf *Veronica hederifolia*																		
Order Aperetalia_weeds of rather acidic/neutral soils																		
Camelina sativa																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Caucalis platycarpos																		
Galium spurium																		
Vaccaria pyramidata																		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Galeopsis cf *speciosa*																		
Polygonum lapathifolium/persicaria																		
Solanum nigrum																		
Sonchus oleraceus																		
Stellaria media																		
Thlaspi arvense																		
PERENNIAL RUDERALS																		
Arctium sp.																		
Convolvulus arvensis																		
Hyoscyamus niger																		
Lapsana communis																		
MEADOWS AND PASTURES																		
Centaurea sp.																		
Rhinanthus sp.																		
Scabiosa sp.																		
Reed fields																		
Carex sp. tricarpellat																		

Chronology	Phase 2																	
Context				**Posthole**	**Posthole**	**Astteppich**		**Astteppich?**		**Posthole**	**Postholes belonging to Temple C1**							
Structure	**19**	**19**	**19**	**138**	**139**	**75**	**75**	**2**	**211**	**65**	**63**	**80**	**83**	**84**	**86**	**88**	**123**	**135**
US	24	19	18	01	01	01	01	04	01	01	01	01	01	01	01	01	01	01
Sample N°	BK45064FA	BK45045FA	BK45046FA	BK45069FA	BK45067FA	BK35038FA	BK35522FA	BK45012FA	BK55014FA	BK35031FA	BK45020FA	BK45043FA	BK45035FA	BK45031FA	BK45032FA	BK45038FA	BK45062FA	BK45070FA
Galium palustre																		
Forests, forest edges and clearings, hedges																		
Rosa sp.																		
cf *Seseli libanotis*																		
VARIA																		
Apiaceae																		
Asteraceae																		
Brassicaceae																		
Bromus sp.																		
Cannabinaceae																		
Chenopodium sp.																		
Galium sp.																		
Lamiaceae																		
Lolium sp.																		
Papaver sp.																		
Poa sp.																		
Poaceae																		
Potentilla sp.																		
Rumex sp.																		
Indeterminata - endocarp																		
Indeterminata - fruitflesh																		
Indeterminata - coprolithes																		
Indeterminata - crusts																		
Indeterminata - seed/fruit																		

Temple complex																	
Chronology	**Phase 2-3**			**Phase 3**													
Context				**Brandopferplatz**									**Posthole belonging to Temple B1**				**Posthole**
Structure	**17**	**17**	**19**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**181**	**180**	**106**	**106**	**106**	**106**	**174**
US	06	07	08	02	02	07	05	10	13	12	01	48	03	04	05	06	04
Sample N°	BK45018FA	BK45019FA	BK45017FA	BK45009PB	BK45011PB	BK45030PB	BK45034PB	BK45044PB	BK45059PB	BK45060PB	BK55006FA	BK55012FA	BK45052FA	BK45055FA	BK45056FA	BK45057FA	BK55008FA
Analysis	RS	RS	RS	FU	FU	FU	FU	FU	FU	FU	FU	RS	RS	RS	RS	RS	RS
Volume sample	6000	6000	6000	9000	9000	3000	6000	2000	47000	227000	16000	6000	4000	2000	2200	8000	12000
Field	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
WATERLOGGED																	
CEREALS _ grain																	
Avena sativa/fatua																	
Cerealia - Testa																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
Hordeum sp. - rachis																	
Secale cereale - rachis																	
Triticum aestivum - rachis																	
Triticum cf aestivum/durum/turgidum - rachis																	
Triticum dicoccon - glume																	
Triticum cf *dicoccon* - glume																	
Triticum monococcum - glume																	
Triticum spelta - glume																	
Triticum sp. - rachis																	
Triticum sp. - glume																	
Cerealia - glume																	
Cerealia - rachis																	
Panicum miliaceum - glume																	
Setaria italica - glume																	
Panicum/Setaria - glume																	
NUTS																	
Corylus avellana																	
Juglans regia																	
Pinus pinea																	
PULSES																	
Lens culinaris																	
Pisum sativum																	
Vicia faba																	
Fabaceae																	
SPICES																	
Anethum graveolens																	
Apium graveolens																	
Carum carvi																	
Coriandrum sativum																	
Foeniculum vulgare																	
Origanum vulgare																	
cf *Petroselinum crispum*																	
Pimpinella anisum																	
Piper nigrum																	
cf *Ruta graveolens*																	
Satureja hortensis																	
cf *Thymus* sp. - stem																	
VEGETABLES AND SALADS																	
Amaranthus sp.																	
Atriplex sp.																	
Beta vulgaris																	
Brassica cf *oleracea*																	
Brassica rapa/nigra																	
Brassica sp.																	
Brassica/Sinapis																	
Daucus carota																	
Lagenaria siceraria																	
Pastinaca sativa																	
Portulaca oleracea																	
FRUITS																	
Cucumis melo																	
Cucumis sativus																	
Cucumis melo/sativa - fragment																	
Cucumis melo/sativa																	

Chronology	Phase 2-3			Phase 3													
Context				Brandopferplatz									Posthole belonging to Temple B1				Posthole
Structure	17	17	19	50	50	50	50	50	50	50	181	180	106	106	106	106	174
US	06	07	08	02	02	07	05	10	13	12	01	48	03	04	05	06	04
Sample N°	BK45018FA	BK45019FA	BK45017FA	BK45009PB	BK45011PB	BK45030PB	BK45034PB	BK45044PB	BK45059PB	BK45060PB	BK55006FA	BK55012FA	BK45052FA	BK45055FA	BK45056FA	BK45057FA	BK55008FA
Ficus carica																	
Fragaria vesca																	
Malus domestica																	
Malus sylvestris/domestica																	
Pyrus sp. - stone cells																	
Pyrus sp. - flower																	
Malus/Pyrus - pericarp																	
Malus/Pyrus																	
Morus sp.																	
Olea europaea																	
Physalis alkekengi																	
Prunus cf *avium*																	
Prunus avium/cerasus																	
Prunus domestica																	
Prunus domestica/insititia																	
Prunus insititia																	
Prunus persica																	
Prunus spinosa																	
Prunus sp.																	
Rubus caesius																	
Rubus fruticosus																	
Rubus idaeus																	
Rubus sp.																	
Sambucus nigra/racemosa																	
Vitis vinifera																	
OIL, DYE AND FIBRE PLANTS																	
Cannabis sativa																	
Carthamus tinctorius																	
cf *Isatis tinctoria*																	
Linum usitatissimum																	
Papaver somniferum																	
WEEDS OF WINTER CEREALS																	
cf *Adonis* sp.																	
Agrostemma githago																	
Anthemis arvensis																	
Bromus arvensis Type																	
Buglossoides arvensis																	
Fallopia convolvulus																	
Galium aparine																	
Silene gallica																	
Stachys annua/arvensis																	
Valerianella locusta																	
Valerianella cf *rimosa*																	
Valerianella rimosa																	
Valerianella sp.																	
Veronica hederifolia																	
Viola tricolor																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Aphanes arvensis																	
cf *Bromus secalinus*																	
Camelina sativa																	
Centaurea cf *cyanus*																	
Papaver argemone																	
Papaver dubium																	
Raphanus raphanistrum																	
Scleranthus sp. - capsule																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Ajuga chamaepitys																	
Bupleurum rotundifolium																	
Caucalis platycarpos																	
Euphorbia exigua																	
Galium spurium																	
Glaucium corniculatum																	

Chronology	Phase 2-3			Phase 3													
Context				Brandopferplatz									Posthole belonging to Temple B1				Posthole
Structure	17	17	19	50	50	50	50	50	50	50	181	180	106	106	106	106	174
US	06	07	08	02	02	07	05	10	13	12	01	48	03	04	05	06	04
Sample N°	BK45018FA	BK45019FA	BK45017FA	BK45009PB	BK45011PB	BK45030PB	BK45034PB	BK45044PB	BK45059PB	BK45060PB	BK55006FA	BK55012FA	BK45052FA	BK45055FA	BK45056FA	BK45057FA	BK55008FA
Myagrum perfoliatum																	
Nigella arvensis																	
Orlaya grandiflora																	
Ranunculus arvensis																	
Scandix pecten-veneris																	
Silene cf *dichotoma*																	
Stachys annua																	
Thymelaea passerina																	
Torilis arvensis																	
cf *Vaccaria pyramidata*																	
Valerianella dentata																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Aethusa cynapium																	
Anagallis arvensis/foemina																	
Arenaria serpyllifolia																	
Capsella bursa-pastoris																	
Chenopodium album																	
Chenopodium ficifolium																	
Chenopodium foliosum																	
Chenopodium hybridum																	
Chenopodium murale																	
Chenopodium polyspermum																	
Echinochloa crus-galli																	
Euphorbia helioscopia																	
Euphorbia platyphyllos																	
Fumaria officinalis																	
Fumaria sp.																	
Galeopsis cf *bifida*																	
Galeopsis bifida																	
Galeopsis ladanum																	
Galeopsis sp.																	
Galeopsis cf *speciosa*																	
Galeopsis tetrahit																	
Galeopsis ladanum/segetum																	
cf *Heliotropium europaeum*																	
Lamium amplexicaule/purpureum																	
Lamium cf *purpureum*																	
Malva sylvestris																	
Mercurialis annua		1		1						8							
Poa annua																	
Polygonum lapathifolium/persicaria																	
Polygonum persicaria																	
Portulaca sp.																	
Setaria verticillata/viridis																	
Setaria cf *viridis* - glume																	
Solanum nigrum																	
Sonchus asper																	
Sonchus asper/oleraceus																	
Sonchus oleraceus																	
Stachys cf *arvensis*																	
Stellaria cf *media*																	
Stellaria media																	
Thlaspi arvense																	
Urtica urens																	
Verbena officinalis																	
Xanthium strumarium																	
PERENNIAL RUDERALS																	
Agropyron repens																	
Arctium lappa																	
Arctium minus																	
Arctium sp.																	
Bryonia dioica																	
Carduus crispus																	
Cerastium arvense																	

Chronology	Phase 2-3			Phase 3													
Context				**Brandopferplatz**									**Posthole belonging to Temple B1**				**Posthole**
Structure	**17**	**17**	**19**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**181**	**180**	**106**	**106**	**106**	**106**	**174**
US	06	07	08	02	02	07	05	10	13	12	01	48	03	04	05	06	04
Sample N°	BK45018FA	BK45019FA	BK45017FA	BK45009PB	BK45011PB	BK45030PB	BK45034PB	BK45044PB	BK45059PB	BK45060PB	BK55006FA	BK55012FA	BK45052FA	BK45055FA	BK45056FA	BK45057FA	BK55008FA
Chelidonium majus																	
cf *Chondrilla juncea*																	
Cirsium sp.																	
Cirsium/Carduus																	
Conium maculatum																	
Convolvulus arvensis																	
Cruciata laevipes																	
Dipsacus cf *fullonum*																	
Fallopia dumetorum																	
Hyoscyamus niger																	
Lactuca serriola																	
Lamium album																	
Lapsana communis																	
cf *Marrubium vulgare*																	
Onopordum acanthium																	
Plantago major																	
Poa compressa																	
Polygonum aviculare																	
Potentilla anserina																	
Ranunculus repens																	
Reseda sp.																	
Rumex conglomeratus - perianth																	
Rumex crispus - perianth																	
Rumex obtusifolius - perianth																	
Rumex obtusifolius																	
Sambucus ebulus																	
Saponaria cf *officinalis*																	
Silene alba																	
Urtica dioica																	
MEADOWS AND PASTURES																	
Achillea millefolium																	
Agrostis sp.																	
Ajuga reptans																	
Anthriscus sp.																	
Bromus cf *commutatus*																	
Bromus hordeaceus																	
Centaurea cf *jacea*																	
Centaurea sp.																	
Cichorium intybus																	
Cirsium/Centaurea																	
cf *Cynosurus* sp.																	
Dactylis glomerata																	
Deschampsia caespitosa																	
Dianthus cf *armeria*																	
Festuca rubra/ovina																	
Festuca/Lolium																	
Holcus lanatus																	
Leontodon autumnalis																	
Leontodon sp.																	
Leucanthemum vulgare																	
Lolium perenne																	
Nardus stricta																	
Plantago lanceolata																	
Plantago cf *media*																	
Plantago media																	
Poa pratensis																	
Poa pratensis Type																	
Poa pratensis/trivialis																	
Potentilla erecta																	
Prunella vulgaris																	
Ranunculus acris																	
Rhinanthus sp.																	
Rumex acetosa - perianth																	
Rumex acetosella																	
Scabiosa sp.																	

Chronology	Phase 2-3			Phase 3													
Context				Brandopferplatz									Posthole belonging to Temple B1				Posthole
Structure	17	17	19	50	50	50	50	50	50	50	181	180	106	106	106	106	174
US	06	07	08	02	02	07	05	10	13	12	01	48	03	04	05	06	04
Sample N°	BK45018FA	BK45019FA	BK45017FA	BK45009PB	BK45011PB	BK45030PB	BK45034PB	BK45044PB	BK45059PB	BK45060PB	BK55006FA	BK55012FA	BK45052FA	BK45055FA	BK45056FA	BK45057FA	BK55008FA
Silene vulgaris																	
Taraxacum officinale																	
Thalictrum flavum																	
Trifolium pratense - capsule																	
Trifolium sp. - chalice																	
Trifolium sp.																	
Open swards																	
cf *Acinos arvensis*																	
Ajuga genevensis																	
Artemisia campestris																	
Centaurea scabiosa																	
Dianthus sp.																	
Euphorbia cf *seguieriana*																	
Euphrasia/Odontites																	
Gentiana cruciata																	
Medicago lupulina - pod																	
Medicago lupulina - pod with seeds																	
Medicago minima - pod																	
Odontites sp.																	
cf *Petrorhagia prolifera*																	
Prunella grandiflora																	
Scabiosa columbaria																	
Stachys recta																	
Teucrium botrys																	
Teucrium cf *chamaedrys*																	
Teucrium montanum																	
Trifolium cf *campestre* - chalice																	
Aquatic plants																	
Ceratophyllum cf *submersum*																	
Lemna sp.																	
Polygonum cf *amphibium*																	
Potamogeton sp.																	
Ranunculus aquatilis																	
Sparganium sp.																	
Zannichellia palustris																	
Reed fields																	
Alisma plantago-aquatica																	
Carex sp. - utriculus																	
Carex sp. bicarpellate																	
Carex sp. tricarpellate																	
Cicuta virosa																	
Eleocharis palustris																	
Eupatorium cannabinum																	
Galium cf *palustre*																	
Glyceria sp.																	
Hippuris vulgaris																	
Iris cf *pseudacorus*																	
Juncus sp.																	
Lycopus europaeus																	
Mentha arvensis/aquatica																	
Nasturtium officinale																	
Oenanthe fistulosa																	
Oenanthe sp.																	
Poa palustris																	
Rorippa amphibia																	
Rumex cf aquaticus/hydrolapathum???																	
Salix sp. - veg. part																	
Schoenoplectus lacustris																	
Schoenoplectus sp.																	
Riverbank plants (pioneer)																	
Alnus glutinosa - veg. part																	
Alnus sp. - veg part																	
Bidens tripartita																	
Bidens sp.																	
Cyperus flavescens																	

Chronology	Phase 2-3			Phase 3													
Context				Brandopferplatz									Posthole belonging to Temple B1				Posthole
Structure	17	17	19	50	50	50	50	50	50	50	181	180	106	106	106	106	174
US	06	07	08	02	02	07	05	10	13	12	01	48	03	04	05	06	04
Sample N°	BK45018FA	BK45019FA	BK45017FA	BK45009PB	BK45011PB	BK45030PB	BK45034PB	BK45044PB	BK45059PB	BK45060PB	BK55006FA	BK55012FA	BK45052FA	BK45055FA	BK45056FA	BK45057FA	BK55008FA
Cyperus fuscus																	
Cyperus sp.																	
Myosoton aquaticum																	
Polygonum hydropiper																	
Polygonum hydropiper/mite																	
Polygonum lapathifolium																	
Polygonum minus																	
Polygonum mite																	
Polygonum mite/minus																	
Ranunculus flammula																	
Ranunculus sardous																	
Ranunculus sceleratus																	
Teucrium cf *scordium*																	
Wet meadows																	
cf *Euphorbia palustris*																	
Filipendula ulmaria																	
Linum catharticum																	
Lychnis flos-cuculi																	
Scirpus sylvaticus																	
Stachys officinalis																	
Forests, forest edges and clearings, hedges																	
Abies alba - needle																	
Acer sp. - veg. part																	
Agrimonia eupatoria																	
Arctium cf *nemorosum*																	
Betula pendula - veg. part																	
Cornus sanguinea																	
Crataegus sp.																	
Humulus lupulus																	
Quercus sp.																	
Rosa sp.																	
Solanum cf *dulcamara*																	
Stellaria cf *nemorum*																	
Torilis cf *japonica*																	
Viburnum lantana																	
Viburnum opulus																	
Calamintha sylvatica																	
Galium verum																	
Hypericum perforatum																	
Saponaria cf *ocymoides*																	
Silene nutans																	
Thalictrum minus																	
VARIA																	
Ajuga sp.																	
Allium sp.																	
Apiaceae																	
Asteraceae																	
Boraginaceae																	
Brassicaceae																	
Bromus sp.																	
Campanula sp.																	
Cannabinaceae																	
Carduus sp.																	
Caryophyllaceae																	
Cerastium sp.																	
Chenopodiaceae																	
Chenopodiaceae/Amaranthaceae																	
Chenopodium sp.																	
Cichorium sp.																	
Crepis sp.																	
Cuscuta sp.																	
Cyperaceae																	

Chronology	Phase 2-3			Phase 3													
Context				Brandopferplatz									Posthole belonging to Temple B1				Posthole
Structure	17	17	19	50	50	50	50	50	50	50	181	180	106	106	106	106	174
US	06	07	08	02	02	07	05	10	13	12	01	48	03	04	05	06	04
Sample N°	BK45018FA	BK45019FA	BK45017FA	BK45009PB	BK45011PB	BK45030PB	BK45034PB	BK45044PB	BK45059PB	BK45060PB	BK55006FA	BK55012FA	BK45052FA	BK45055FA	BK45056FA	BK45057FA	BK55008FA
Epilobium sp.																	
Euphorbia sp.																	
Fallopia sp.																	
Filipendula sp.																	
Galium sp.																	
Hypericum sp.																	
Inula sp.																	
Lamiaceae																	
Lamium sp.																	
Liliaceae																	
Malva sp.																	
cf *Matricaria* sp.																	
Nasturtium sp.																	
Papaver sp.																	
Physalis/Solanum																	
Phyteuma sp.																	
Poa sp.																	
Poaceae																	
Poaceae																	
Polygonaceae																	
Polygonum sp.																	
Potentilla sp.																	
Primulaceae																	
Ranunculaceae																	
Ranunculus sp.																	
Rosaceae																	
Rumex sp. - perianth																	
Sambucus sp.	1															1	
Satureja sp.																	
Scrophulariaceae																	
Silene sp.																	
Sinapis sp.																	
Solanaceae																	
Solanum sp.																	
Sonchus sp.																	
Stachys sp.																	
Stellaria graminea/palustris																	
Stellaria sp.																	
Teucrium sp.																	
Tilia sp. - fruit																	
Torilis sp.																	
Veronica sp.																	
Vicia sp.																	
Viola sp.																	
Indeterminata																	
CHARRED																	
CEREALS _ grain																	
Avena sp.																	
Hordeum vulgare				1	2	4			4	9	2						
Hordeum sp.																	
Secale cereale																	
Triticum aestivum																	
Triticum cf *aestivum*																	
Triticum aestivum/durum/turgidum									2								
Triticum dicoccon																	
Triticum spelta																	
Triticum sp.						1											
Cerealia ohne Hirsen	1			6	4	4		1	12	16					1		
Panicum miliaceum					1					8							
Setaria italica				1													
Panicum/Setaria																	
CEREALS _ chaff																	
Hordeum vulgare - rachis		1															

Chronology	Phase 2-3			Phase 3													
Context				Brandopferplatz									Posthole belonging to Temple B1				Posthole
Structure	**17**	**17**	**19**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**181**	**180**	**106**	**106**	**106**	**106**	**174**
US	06	07	08	02	02	07	05	10	13	12	01	48	03	04	05	06	04
Sample N°	BK45018FA	BK45019FA	BK45017FA	BK45009PB	BK45011PB	BK45030PB	BK45034PB	BK45044PB	BK45059PB	BK45060PB	BK55006FA	BK55012FA	BK45052FA	BK45055FA	BK45056FA	BK45057FA	BK55008FA
Hordeum sp. - rachis																	
Secale cereale - rachis																	
Triticum aestivum - rachis																	
Triticum dicoccon - glume																	
Triticum monococcum - glume																	
Triticum spelta - glume																	
Triticum sp. - glume																	
NUTS																	
Corylus avellana		1		1	5	7	3		22	68	2					1	1
Juglans regia				3		1			28	91	4						
cf *Pinus pinea* - cone fragment																	
Pinus pinea - cone fragment																	
Pinus pinea																	
Pinus pinea - scale						1			2	2							
Pinus pinea - nut fragment																	
PULSES																	
Lathyrus sp.				2					2								
Lens culinaris				1	3				10	8							
Pisum sativum										1							
Vicia faba									1	1							
Vicia/Lathyrus																	
Fabaceae	1				1	4	2		2	24			1				
SPICES																	
Apium graveolens																	
Satureja hortensis																	
VEGETABLES AND SALADS																	
Allium sativum									1								
cf *Allium sativum*																	
Atriplex sp.																	
Brassica sp.																	
FRUITS																	
Ficus carica																	
Ficus carica - fruitflesh					1		2		3	17							
Phoenix dactylifera - fruit																	
Phoenix dactylifera - stone																	
Phoenix dactylifera - fruitflesh										2							
Phoenix dactylifera - stone fragment										3							
Prunus domestica/insititia																	
Prunus persica										1							
Sambucus nigra/racemosa																	
Vitis vinifera				2	2												
OIL AND FIBRE PLANTS																	
WEEDS OF WINTER CEREALS																	
Galium aparine																	
Veronica hederifolia									4	72	2						
Order Aperetalia_weeds of rather acidic/neutral soils																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Avena fatua																	
Caucalis platycarpos																	
Galium cf *spurium*				1	1				2								
Glaucium corniculatum																	
Myagrum perfoliatum																	
Vicia cf *angustifolia*																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Chenopodium album			1											1			
Chenopodium polyspermum																	
Galeospis ladanum/segetum																	
cf *Solanum nigrum*																	
Thlaspi arvense																	
PERENNIAL RUDERALS																	
Cruciata laevipes											2						
Rumex obtusifolius				1	1				4	8							

Chronology	Phase 2-3			Phase 3													
Context				**Brandopferplatz**									**Posthole belonging to Temple B1**				**Posthole**
Structure	**17**	**17**	**19**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**181**	**180**	**106**	**106**	**106**	**106**	**174**
US	06	07	08	02	02	07	05	10	13	12	01	48	03	04	05	06	04
Sample N°	BK45018FA	BK45019FA	BK45017FA	BK45009PB	BK45011PB	BK45030PB	BK45034PB	BK45044PB	BK45059PB	BK45060PB	BK55006FA	BK55012FA	BK45052FA	BK45055FA	BK45056FA	BK45057FA	BK55008FA
Silene alba										16							
MEADOWS AND PASTURES																	
Centaurea sp.																	
Festuca/Lolium																	
Galium boreale						2											
Plantago lanceolata																	
Plantago media																	
Trifolium sp.																	
Aquatic plants																	
Sparganium sp.					1				4								
Reed fields																	
cf *Alisma plantago-aquatica*																	
Carex sp. tricarpellate																	
Galium cf *palustre*																	
Riverbank plants (pioneer)																	
Teucrium scordium																	
Forests, forest edges and clearings, hedges																	
Abies alba - needle																	
Galium verum																	
cf *Humulus lupulus*																	
VARIA																	
Asperula sp.																	
Bromus sp.																	
Chenopodiaceae						1			2	24							
Chenopodium sp.																	
Galium sp.		2	1								2			1			
Poaceae		1							2								
Rumex sp.			1														
Sambucus sp.																	
Vicia sp.									2								
Indeterminata - pastry																	
Indeterminata - bud				2	4				3								
Indeterminata - amorphous object											1	5					
Indeterminata - fruitflesh				4	4	2	3	2	4	4							
Indeterminata - endocarp	1	1				7			5	13							
Indeterminata - seed/fruit				3	3			4	18	11							
MINERALISED																	
CEREALS _ grain																	
cf *Avena* sp.																	
Hordeum vulgare																	
Triticum spelta																	
Triticum sp.																	
Panicum miliaceum																	
Setaria italica																	
Panicum/Setaria																	
Cerealia ohne Hirsen																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
Triticum spelta - spikelet fork																	
Cerealia - ear																	
Cerealia - glume																	
Panicum miliaceum - glume																	
Setaria italica - glume																	
Panicum/Setaria - glume																	
PULSES																	
Lens culinaris																	
Pisum sativum																	
Vicia faba																	
Fabaceae - fruitflesh																	
Fabaceae																	
FRUITS																	
Cucumis melo																	

Chronology	Phase 2-3			Phase 3													
Context				Brandopferplatz									Posthole belonging to Temple B1				Posthole
Structure	17	17	19	50	50	50	50	50	50	50	181	180	106	106	106	106	174
US	06	07	08	02	02	07	05	10	13	12	01	48	03	04	05	06	04
Sample N°	BK45018FA	BK45019FA	BK45017FA	BK45009PB	BK45011PB	BK45030PB	BK45034PB	BK45044PB	BK45059PB	BK45060PB	BK55006FA	BK55012FA	BK45052FA	BK45055FA	BK45056FA	BK45057FA	BK55008FA
Cucumis melo/sativa																	
Ficus carica																	
Fragaria vesca																	
Malus domestica																	
Malus sylvestris/domestica																	
Pyrus sp.																	
Malus/Pyrus																	
Morus sp.																	
Physalis alkekengi																	
Prunus sp. - fragment																	
Rubus caesius																	
Rubus sp. - inner																	
Sambucus nigra/racemosa																	
Vitis vinifera - fruitflesh																	
Vitis vinifera - aborted seed																	
Vitis vinifera																	
SPICES																	
Anethum graveolens																	
Apium graveolens																	
Carum carvi																	
Coriandrum sativum																	
Foeniculum vulgare																	
Nigella cf *sativa*																	
VEGETABLES AND SALADS																	
Atriplex sp.																	
Beta vulgaris																	
Brassica sp.																	
Daucus carota																	
Lagenaria siceraria																	
OIL AND FIBRE PLANTS																	
Linum usitatissimum																	
Papaver somniferum																	
WEEDS OF WINTER CEREALS																	
Agrostemma githago																	
Buglossoides arvensis																	
Fallopia convolvulus																	
Galium aparine																	
cf *Veronica hederifolia*																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Camelina sativa																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Caucalis platycarpos																	
Galium spurium																	
Vaccaria pyramidata																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Galeopsis cf *speciosa*																	
Polygonum lapathifolium/persicaria																	
Solanum nigrum																	
Sonchus oleraceus																	
Stellaria media																	
Thlaspi arvense																	
PERENNIAL RUDERALS																	
Arctium sp.																	
Convolvulus arvensis																	
Hyoscyamus niger																	
Lapsana communis																	
MEADOWS AND PASTURES																	
Centaurea sp.																	
Rhinanthus sp.																	
Scabiosa sp.																	
Reed fields																	
Carex sp. tricarpellat																	

Chronology	Phase 2-3			Phase 3													
Context				**Brandopferplatz**									**Posthole belonging to Temple B1**				**Posthole**
Structure	**17**	**17**	**19**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**181**	**180**	**106**	**106**	**106**	**106**	**174**
US	06	07	08	02	02	07	05	10	13	12	01	48	03	04	05	06	04
Sample N°	BK45018FA	BK45019FA	BK45017FA	BK45009PB	BK45011PB	BK45030PB	BK45034PB	BK45044PB	BK45059PB	BK45060PB	BK55006FA	BK55012FA	BK45052FA	BK45055FA	BK45056FA	BK45057FA	BK55008FA
Galium palustre																	
Forests, forest edges and clearings, hedges																	
Rosa sp.																	
cf *Seseli libanotis*																	
VARIA																	
Apiaceae																	
Asteraceae																	
Brassicaceae																	
Bromus sp.																	
Cannabinaceae																	
Chenopodium sp.																	
Galium sp.																	
Lamiaceae																	
Lolium sp.																	
Papaver sp.																	
Poa sp.																	
Poaceae																	
Potentilla sp.																	
Rumex sp.																	
Indeterminata - endocarp																	
Indeterminata - fruitflesh																	
Indeterminata - coprolithes																	
Indeterminata - crusts																	
Indeterminata - seed/fruit																	

Temple complex																		
Chronology				**Phase 4**									**Phases 3 to 5**					
Context	**Ditch**	**Relocated alluvial clay**	**Layer in Porticus A3**	**Opfergrube**									**Ditch**					
Structure	**137**	**38**	**39**	**160**	**160**	**160**	**160**	**219**	**219**	**219**	**219**	**219**	**16**	**16**	**16**	**16**	**16**
US	01	05	11	06	07	08	09	04	05	06	07	07	03	07	10	09	08
Sample N°	BK45071FA	BK35004FA	BK35033FA	BK55001PB	BK55002PB	BK55003PB	BK55004PB	BK55009PB	BK55010PB	BK55011PB	BK55018PB	BK55019PB	BK35002FA	BK35005FA	BK35006FA	BK35009FA	BK35010FA
Analysis	RS	RS	RS	FU	FU	FU	FU	FU	FU	FU	FU	FU	RS	RS	RS	RS	RS
Volume sample	6000	8000	5000	26000	31500	8000	15000	13000	3000	22500	14000	7000	9000	9000	7000	8000	8000
Field	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
WATERLOGGED																	
CEREALS _ grain																	
Avena sativa/fatua																	
Cerealia - Testa																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
Hordeum sp. - rachis																	
Secale cereale - rachis																	
Triticum aestivum - rachis																	
Triticum cf aestivum/durum/turgidum - rachis																	
Triticum dicoccon - glume																	
Triticum cf *dicoccon* - glume																	
Triticum monococcum - glume																	
Triticum spelta - glume																	
Triticum sp. - rachis																	
Triticum sp. - glume																	
Cerealia - glume																	
Cerealia - rachis																	
Panicum miliaceum - glume																	
Setaria italica - glume																	
Panicum/Setaria - glume																	
NUTS																	
Corylus avellana		1															
Juglans regia																	
Pinus pinea																	
PULSES																	
Lens culinaris																	
Pisum sativum																	
Vicia faba																	
Fabaceae																	
SPICES																	
Anethum graveolens																	
Apium graveolens															1		
Carum carvi																	
Coriandrum sativum																	
Foeniculum vulgare																	
Origanum vulgare																	
cf *Petroselinum crispum*																	
Pimpinella anisum																	
Piper nigrum																	
cf *Ruta graveolens*																	
Satureja hortensis																	
cf *Thymus* sp. - stem																	
VEGETABLES AND SALADS																	
Amaranthus sp.					2												
Atriplex sp.																	
Beta vulgaris																	
Brassica cf *oleracea*																	
Brassica rapa/nigra																	
Brassica sp.																	
Brassica/Sinapis																	
Daucus carota														1			
Lagenaria siceraria																	
Pastinaca sativa																	
Portulaca oleracea																	
FRUITS																	
Cucumis melo																	
Cucumis sativus																	
Cucumis melo/sativa - fragment																	
Cucumis melo/sativa																	

Chronology				**Phase 4**									**Phases 3 to 5**					
Context	**Ditch**	**Relocated alluvial clay**	**Layer in Porticus A3**	**Opfergrube**									**Ditch**					
Structure	**137**	**38**	**39**	**160**	**160**	**160**	**160**	**219**	**219**	**219**	**219**	**219**	**16**	**16**	**16**	**16**	**16**
US	01	05	11	06	07	08	09	04	05	06	07	07	03	07	10	09	08
Sample N°	BK45071FA	BK35004FA	BK35033FA	BK55001PB	BK55002PB	BK55003PB	BK55004PB	BK55009PB	BK55010PB	BK55011PB	BK55018PB	BK55019PB	BK35002FA	BK35005FA	BK35006FA	BK35009FA	BK35010FA
Ficus carica			1														
Fragaria vesca																	
Malus domestica																	
Malus sylvestris/domestica																	
Pyrus sp. - stone cells																	
Pyrus sp. - flower																	
Malus/Pyrus - pericarp																	
Malus/Pyrus																	
Morus sp.																	
Olea europaea																	
Physalis alkekengi															1		
Prunus cf *avium*																	
Prunus avium/cerasus																	
Prunus domestica																	
Prunus domestica/insititia																	
Prunus insititia																	
Prunus persica																	
Prunus spinosa																	
Prunus sp.																	
Rubus caesius																	
Rubus fruticosus																	
Rubus idaeus																	
Rubus sp.																	
Sambucus nigra/racemosa		1											1	1	1	1	1
Vitis vinifera		1												1			
OIL, DYE AND FIBRE PLANTS																	
Cannabis sativa																	
Carthamus tinctorius																	
cf *Isatis tinctoria*																	
Linum usitatissimum																	
Papaver somniferum																	
WEEDS OF WINTER CEREALS																	
cf *Adonis* sp.																	
Agrostemma githago																	
Anthemis arvensis																	
Bromus arvensis Type																	
Buglossoides arvensis																	
Fallopia convolvulus					2												
Galium aparine																	
Silene gallica																	
Stachys annua/arvensis																	
Valerianella locusta																	
Valerianella cf *rimosa*																	
Valerianella rimosa																	
Valerianella sp.																	
Veronica hederifolia																	
Viola tricolor																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Aphanes arvensis																	
cf *Bromus secalinus*																	
Camelina sativa																	
Centaurea cf *cyanus*																	
Papaver argemone																	
Papaver dubium																	
Raphanus raphanistrum																	
Scleranthus sp. - capsule																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Ajuga chamaepitys															1		
Bupleurum rotundifolium																	
Caucalis platycarpos														1			
Euphorbia exigua																	
Galium spurium																	
Glaucium corniculatum																	

Chronology				Phase 4									Phases 3 to 5				
Context	**Ditch**	**Relocated alluvial clay**	**Layer in Porticus A3**	**Opfergrube**									**Ditch**				
Structure	**137**	**38**	**39**	**160**	**160**	**160**	**160**	**219**	**219**	**219**	**219**	**219**	**16**	**16**	**16**	**16**	**16**
US	01	05	11	06	07	08	09	04	05	06	07	07	03	07	10	09	08
Sample N°	BK45071FA	BK35004FA	BK35033FA	BK55001PB	BK55002PB	BK55003PB	BK55004PB	BK55009PB	BK55010PB	BK55011PB	BK55018PB	BK55019PB	BK35002FA	BK35005FA	BK35006FA	BK35009FA	BK35010FA
Myagrum perfoliatum		1												1	1		
Nigella arvensis																	
Orlaya grandiflora																	
Ranunculus arvensis																	
Scandix pecten-veneris																	
Silene cf *dichotoma*																	
Stachys annua																	
Thymelaea passerina																	
Torilis arvensis																	
cf *Vaccaria pyramidata*																	
Valerianella dentata																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Aethusa cynapium																	
Anagallis arvensis/foemina																	
Arenaria serpyllifolia																	
Capsella bursa-pastoris																	
Chenopodium album														1			
Chenopodium ficifolium																	
Chenopodium foliosum																	
Chenopodium hybridum			1											1	1		
Chenopodium murale																	
Chenopodium polyspermum																	
Echinochloa crus-galli																	
Euphorbia helioscopia																	
Euphorbia platyphyllos																	
Fumaria officinalis																	
Fumaria sp.		1												1			
Galeopsis cf *bifida*																	
Galeopsis bifida																	
Galeopsis ladanum																	
Galeopsis sp.																	
Galeopsis cf *speciosa*																	
Galeopsis tetrahit																	
Galeopsis ladanum/segetum																	
cf *Heliotropium europaeum*																	
Lamium amplexicaule/purpureum																	
Lamium cf *purpureum*																	
Malva sylvestris																	
Mercurialis annua													1			1	1
Poa annua																	
Polygonum lapathifolium/persicaria																	
Polygonum persicaria														1			
Portulaca sp.																	
Setaria verticillata/viridis																	
Setaria cf *viridis* - glume																	
Solanum nigrum														1	1		
Sonchus asper																	
Sonchus asper/oleraceus																	
Sonchus oleraceus																	
Stachys cf *arvensis*																	
Stellaria cf *media*																	
Stellaria media																	
Thlaspi arvense																	
Urtica urens																	
Verbena officinalis																	
Xanthium strumarium																	
PERENNIAL RUDERALS																	
Agropyron repens																	
Arctium lappa																	
Arctium minus																	
Arctium sp.																	
Bryonia dioica																	
Carduus crispus																	
Cerastium arvense																	

Chronology				Phase 4									Phases 3 to 5				
Context	**Ditch**	**Relocated alluvial clay**	**Layer in Porticus A3**	**Opfergrube**									**Ditch**				
Structure	**137**	**38**	**39**	**160**	**160**	**160**	**160**	**219**	**219**	**219**	**219**	**219**	**16**	**16**	**16**	**16**	**16**
US	01	05	11	06	07	08	09	04	05	06	07	07	03	07	10	09	08
Sample N°	BK45071FA	BK35004FA	BK35033FA	BK55001PB	BK55002PB	BK55003PB	BK55004PB	BK55009PB	BK55010PB	BK55011PB	BK55018PB	BK55019PB	BK35002FA	BK35005FA	BK35006FA	BK35009FA	BK35010FA
Chelidonium majus																	
cf *Chondrilla juncea*																	
Cirsium sp.																	
Cirsium/Carduus																	
Conium maculatum																	
Convolvulus arvensis																	
Cruciata laevipes																	
Dipsacus cf *fullonum*																	
Fallopia dumetorum																	
Hyoscyamus niger															1		
Lactuca serriola																	
Lamium album																	
Lapsana communis																	
cf *Marrubium vulgare*																	
Onopordum acanthium																	
Plantago major																	
Poa compressa																	
Polygonum aviculare																	
Potentilla anserina																	
Ranunculus repens			1											1	1		
Reseda sp.																	
Rumex conglomeratus - perianth																	
Rumex crispus - perianth																	
Rumex obtusifolius - perianth																	
Rumex obtusifolius																	
Sambucus ebulus		1											1	1	1	1	1
Saponaria cf *officinalis*																	
Silene alba																	
Urtica dioica																	
MEADOWS AND PASTURES																	
Achillea millefolium																	
Agrostis sp.																	
Ajuga reptans																	
Anthriscus sp.																	
Bromus cf *commutatus*																	
Bromus hordeaceus																	
Centaurea cf *jacea*																	
Centaurea sp.																	
Cichorium intybus																	
Cirsium/Centaurea																	
cf *Cynosurus* sp.																	
Dactylis glomerata																	
Deschampsia caespitosa																	
Dianthus cf *armeria*																	
Festuca rubra/ovina																	
Festuca/Lolium																	
Holcus lanatus																	
Leontodon autumnalis																	
Leontodon sp.																	
Leucanthemum vulgare																	
Lolium perenne																	
Nardus stricta																	
Plantago lanceolata																	
Plantago cf *media*																	
Plantago media																	
Poa pratensis																	
Poa pratensis Type																	
Poa pratensis/trivialis																	
Potentilla erecta																	
Prunella vulgaris																	
Ranunculus acris																	
Rhinanthus sp.																	
Rumex acetosa - perianth																	
Rumex acetosella																	
Scabiosa sp.																	

Chronology				Phase 4									Phases 3 to 5				
Context	**Ditch**	**Relocated alluvial clay**	**Layer in Porticus A3**	**Opfergrube**									**Ditch**				
Structure	**137**	**38**	**39**	**160**	**160**	**160**	**160**	**219**	**219**	**219**	**219**	**219**	**16**	**16**	**16**	**16**	**16**
US	01	05	11	06	07	08	09	04	05	06	07	07	03	07	10	09	08
Sample N°	BK45071FA	BK35004FA	BK35033FA	BK55001PB	BK55002PB	BK55003PB	BK55004PB	BK55009PB	BK55010PB	BK55011PB	BK55018PB	BK55019PB	BK35002FA	BK35005FA	BK35006FA	BK35009FA	BK35010FA
Silene vulgaris																	
Taraxacum officinale																	
Thalictrum flavum																	
Trifolium pratense - capsule																	
Trifolium sp. - chalice																	
Trifolium sp.																	
Open swards																	
cf *Acinos arvensis*																	
Ajuga genevensis																	
Artemisia campestris																	
Centaurea scabiosa																	
Dianthus sp.																	
Euphorbia cf *seguieriana*																	
Euphrasia/Odontites																	
Gentiana cruciata																	
Medicago lupulina - pod																	
Medicago lupulina - pod with seeds																	
Medicago minima - pod																	
Odontites sp.																	
cf *Petrorhagia prolifera*																	
Prunella grandiflora																	
Scabiosa columbaria																	
Stachys recta																	
Teucrium botrys																	
Teucrium cf *chamaedrys*																	
Teucrium montanum																	
Trifolium cf *campestre* - chalice																	
Aquatic plants																	
Ceratophyllum cf *submersum*																	
Lemna sp.																	
Polygonum cf *amphibium*																	
Potamogeton sp.													1				
Ranunculus aquatilis																	
Sparganium sp.		1														1	1
Zannichellia palustris																	
Reed fields																	
Alisma plantago-aquatica																	
Carex sp. - utriculus																	
Carex sp. bicarpellate															1		
Carex sp. tricarpellate		2	1														
Cicuta virosa																	
Eleocharis palustris		1	1														
Eupatorium cannabinum																	
Galium cf *palustre*																	
Glyceria sp.																	
Hippuris vulgaris																	
Iris cf *pseudacorus*																	
Juncus sp.																	
Lycopus europaeus																	
Mentha arvensis/aquatica																	
Nasturtium officinale																	
Oenanthe fistulosa																	
Oenanthe sp.																	
Poa palustris																	
Rorippa amphibia																	
Rumex cf aquaticus/hydrolapathum???																	
Salix sp. - veg. part																	
Schoenoplectus lacustris																	
Schoenoplectus sp.													3		1	2	1
Riverbank plants (pioneer)																	
Alnus glutinosa - veg. part																	
Alnus sp. - veg part																	
Bidens tripartita																	
Bidens sp.																	
Cyperus flavescens																	

Chronology				Phase 4									Phases 3 to 5				
Context	Ditch	Relocated alluvial clay	Layer in Porticus A3	Opfergrube									Ditch				
Structure	137	38	39	160	160	160	160	219	219	219	219	219	16	16	16	16	16
US	01	05	11	06	07	08	09	04	05	06	07	07	03	07	10	09	08
Sample N°	BK45071FA	BK35004FA	BK35033FA	BK55001PB	BK55002PB	BK55003PB	BK55004PB	BK55009PB	BK55010PB	BK55011PB	BK55018PB	BK55019PB	BK35002FA	BK35005FA	BK35006FA	BK35009FA	BK35010FA
Cyperus fuscus																	
Cyperus sp.																	
Myosoton aquaticum																	
Polygonum hydropiper			1														
Polygonum hydropiper/mite															1		
Polygonum lapathifolium															1		
Polygonum minus																	
Polygonum mite																	
Polygonum mite/minus																	
Ranunculus flammula																	
Ranunculus sardous																	
Ranunculus sceleratus		1															
Teucrium cf *scordium*																	
Wet meadows																	
cf *Euphorbia palustris*																	
Filipendula ulmaria																	
Linum catharticum																	
Lychnis flos-cuculi																	
Scirpus sylvaticus																	
Stachys officinalis																	
Forests, forest edges and clearings, hedges																	
Abies alba - needle																	
Acer sp. - veg. part																	
Agrimonia eupatoria																	
Arctium cf *nemorosum*																	
Betula pendula - veg. part																	
Cornus sanguinea																	
Crataegus sp.																	
Humulus lupulus																	
Quercus sp.																	
Rosa sp.																	
Solanum cf *dulcamara*																	
Stellaria cf *nemorum*																	
Torilis cf *japonica*																	
Viburnum lantana																	
Viburnum opulus																	
Calamintha sylvatica																	
Galium verum																	
Hypericum perforatum																	
Saponaria cf *ocymoides*																	
Silene nutans																	
Thalictrum minus																	
VARIA																	
Ajuga sp.													1				
Allium sp.																	
Apiaceae																	
Asteraceae																	
Boraginaceae																	
Brassicaceae																	
Bromus sp.																	
Campanula sp.																	
Cannabinaceae																	
Carduus sp.																	
Caryophyllaceae																	
Cerastium sp.																	
Chenopodiaceae																	
Chenopodiaceae/Amaranthaceae																	
Chenopodium sp.		1													1		
Cichorium sp.																	
Crepis sp.																	
Cuscuta sp.																	
Cyperaceae														1	1	1	

Chronology				Phase 4									Phases 3 to 5				
Context	**Ditch**	**Relocated alluvial clay**	**Layer in Porticus A3**	**Opfergrube**									**Ditch**				
Structure	**137**	**38**	**39**	**160**	**160**	**160**	**160**	**219**	**219**	**219**	**219**	**219**	**16**	**16**	**16**	**16**	**16**
US	01	05	11	06	07	08	09	04	05	06	07	07	03	07	10	09	08
Sample N°	BK45071FA	BK35004FA	BK35033FA	BK55001PB	BK55002PB	BK55003PB	BK55004PB	BK55009PB	BK55010PB	BK55011PB	BK55018PB	BK55019PB	BK35002FA	BK35005FA	BK35006FA	BK35009FA	BK35010FA
Epilobium sp.																	
Euphorbia sp.																	
Fallopia sp.																	
Filipendula sp.																	
Galium sp.																	
Hypericum sp.																	
Inula sp.																	
Lamiaceae														1			
Lamium sp.																	
Liliaceae																	
Malva sp.																	
cf *Matricaria* sp.																	
Nasturtium sp.																	
Papaver sp.																	
Physalis/Solanum																	
Phyteuma sp.																	
Poa sp.																	
Poaceae																	
Poaceae																	
Polygonaceae																	
Polygonum sp.																	
Potentilla sp.																	
Primulaceae																	
Ranunculaceae																	
Ranunculus sp.																	
Rosaceae																	
Rumex sp. - perianth																	
Sambucus sp.			1														
Satureja sp.																	
Scrophulariaceae																	
Silene sp.																	
Sinapis sp.																	
Solanaceae																	
Solanum sp.			1														
Sonchus sp.																	
Stachys sp.		1	1												1		
Stellaria graminea/palustris																	
Stellaria sp.																	
Teucrium sp.																	
Tilia sp. - fruit																	
Torilis sp.																	
Veronica sp.																	
Vicia sp.																	
Viola sp.			1											1	1		
Indeterminata																	
CHARRED																	
CEREALS _ grain																	
Avena sp.																	
Hordeum vulgare					2		10		1	4	1	2			1		
Hordeum sp.			1														
Secale cereale								4			1						
Triticum aestivum																	
Triticum cf *aestivum*																	
Triticum aestivum/durum/turgidum				12	2		30	25	12	2	54	8					
Triticum dicoccon																	
Triticum spelta																	
Triticum sp.			1				17		1		1	12					
Cerealia ohne Hirsen				16	3	1	52	40	10	32	68	26		1			
Panicum miliaceum							32			16	29	6					
Setaria italica											2						
Panicum/Setaria																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	

Chronology				Phase 4									Phases 3 to 5				
Context	**Ditch**	**Relocated alluvial clay**	**Layer in Porticus A3**	**Opfergrube**									**Ditch**				
Structure	**137**	**38**	**39**	**160**	**160**	**160**	**160**	**219**	**219**	**219**	**219**	**219**	**16**	**16**	**16**	**16**	**16**
US	01	05	11	06	07	08	09	04	05	06	07	07	03	07	10	09	08
Sample N°	BK45071FA	BK35004FA	BK35033FA	BK55001PB	BK55002PB	BK55003PB	BK55004PB	BK55009PB	BK55010PB	BK55011PB	BK55018PB	BK55019PB	BK35002FA	BK35005FA	BK35006FA	BK35009FA	BK35010FA
Hordeum sp. - rachis																	
Secale cereale - rachis																	
Triticum aestivum - rachis																	
Triticum dicoccon - glume																	
Triticum monococcum - glume																	
Triticum spelta - glume																	
Triticum sp. - glume																	
NUTS																	
Corylus avellana										4	8						
Juglans regia										5	1						
cf *Pinus pinea* - cone fragment																	
Pinus pinea - cone fragment								1									
Pinus pinea											4	1					
Pinus pinea - scale							11	2		6	8	7					
Pinus pinea - nut fragment				21	37		80	12	18	55	124	249					
PULSES																	
Lathyrus sp.																	
Lens culinaris				16			8										
Pisum sativum																	
Vicia faba																	
Vicia/Lathyrus																	
Fabaceae					2		12	4	1						1		
SPICES																	
Apium graveolens																	
Satureja hortensis																	
VEGETABLES AND SALADS																	
Allium sativum																	
cf *Allium sativum*												2					
Atriplex sp.																	
Brassica sp.																	
FRUITS																	
Ficus carica										12	104	4					
Ficus carica - fruitflesh				21	7		5	43	1	6	62	3					
Phoenix dactylifera - fruit											1						
Phoenix dactylifera - stone				1													
Phoenix dactylifera - fruitflesh					3						2	3					
Phoenix dactylifera - stone fragment					4		2			1	3						
Prunus domestica/insititia																	
Prunus persica																	
Sambucus nigra/racemosa										4							
Vitis vinifera							13			8		6					
OIL AND FIBRE PLANTS																	
WEEDS OF WINTER CEREALS																	
Galium aparine															1		
Veronica hederifolia						1						2					
Order Aperetalia_weeds of rather acidic/neutral soils																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Avena fatua																	
Caucalis platycarpos																	
Galium cf *spurium*																	
Glaucium corniculatum																	
Myagrum perfoliatum																	
Vicia cf *angustifolia*																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Chenopodium album																	
Chenopodium polyspermum																	
Galeospis ladanum/segetum																	
cf *Solanum nigrum*																	
Thlaspi arvense																	
PERENNIAL RUDERALS																	
Cruciata laevipes																	
Rumex obtusifolius			1				2	4							1		

Chronology				Phase 4									Phases 3 to 5				
Context	**Ditch**	**Relocated alluvial clay**	**Layer in Porticus A3**	**Opfergrube**									**Ditch**				
Structure	**137**	**38**	**39**	**160**	**160**	**160**	**160**	**219**	**219**	**219**	**219**	**219**	**16**	**16**	**16**	**16**	**16**
US	01	05	11	06	07	08	09	04	05	06	07	07	03	07	10	09	08
Sample N°	BK45071FA	BK35004FA	BK35033FA	BK55001PB	BK55002PB	BK55003PB	BK55004PB	BK55009PB	BK55010PB	BK55011PB	BK55018PB	BK55019PB	BK35002FA	BK35005FA	BK35006FA	BK35009FA	BK35010FA
Silene alba																	
MEADOWS AND PASTURES																	
Centaurea sp.																	
Festuca/Lolium																	
Galium boreale																	
Plantago lanceolata																	
Plantago media														1			
Trifolium sp.																	
Aquatic plants																	
Sparganium sp.						1											
Reed fields																	
cf *Alisma plantago-aquatica*																	
Carex sp. tricarpellate																	
Galium cf *palustre*																	
Riverbank plants (pioneer)																	
Teucrium scordium																	
Forests, forest edges and clearings, hedges																	
Abies alba - needle																	
Galium verum																	
cf *Humulus lupulus*																	
VARIA																	
Asperula sp.																	
Bromus sp.																	
Chenopodiaceae																	
Chenopodium sp.																	
Galium sp.	1																
Poaceae															1		
Rumex sp.																	
Sambucus sp.																	
Vicia sp.									1								
Indeterminata - pastry																	
Indeterminata - bud																	
Indeterminata - amorphous object																	
Indeterminata - fruitflesh				3	5		2	4	1	3	3	3					
Indeterminata - endocarp				4	6		51	4	8	3	15						
Indeterminata - seed/fruit				3	10		55	11	19	6	29	17					
MINERALISED																	
CEREALS _ grain																	
cf *Avena* sp.																	
Hordeum vulgare																	
Triticum spelta																	
Triticum sp.																	
Panicum miliaceum																	
Setaria italica																	
Panicum/Setaria																	
Cerealia ohne Hirsen																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
Triticum spelta - spikelet fork																	
Cerealia - ear																	
Cerealia - glume																	
Panicum miliaceum - glume																	
Setaria italica - glume																	
Panicum/Setaria - glume																	
PULSES																	
Lens culinaris																	
Pisum sativum																	
Vicia faba																	
Fabaceae - fruitflesh																	
Fabaceae																	
FRUITS																	
Cucumis melo																	

Chronology				Phase 4									Phases 3 to 5				
Context	**Ditch**	**Relocated alluvial clay**	**Layer in Porticus A3**	**Opfergrube**									**Ditch**				
Structure	**137**	**38**	**39**	**160**	**160**	**160**	**160**	**219**	**219**	**219**	**219**	**219**	**16**	**16**	**16**	**16**	**16**
US	01	05	11	06	07	08	09	04	05	06	07	07	03	07	10	09	08
Sample N°	BK45071FA	BK35004FA	BK35033FA	BK55001PB	BK55002PB	BK55003PB	BK55004PB	BK55009PB	BK55010PB	BK55011PB	BK55018PB	BK55019PB	BK35002FA	BK35005FA	BK35006FA	BK35009FA	BK35010FA
Cucumis melo/sativa																	
Ficus carica																	
Fragaria vesca																	
Malus domestica																	
Malus sylvestris/domestica																	
Pyrus sp.																	
Malus/Pyrus																	
Morus sp.																	
Physalis alkekengi																	
Prunus sp. - fragment																	
Rubus caesius																	
Rubus sp. - inner																	
Sambucus nigra/racemosa																	
Vitis vinifera - fruitflesh																	
Vitis vinifera - aborted seed																	
Vitis vinifera																	
SPICES																	
Anethum graveolens																	
Apium graveolens																	
Carum carvi																	
Coriandrum sativum																	
Foeniculum vulgare																	
Nigella cf *sativa*																	
VEGETABLES AND SALADS																	
Atriplex sp.																	
Beta vulgaris																	
Brassica sp.																	
Daucus carota																	
Lagenaria siceraria																	
OIL AND FIBRE PLANTS																	
Linum usitatissimum																	
Papaver somniferum																	
WEEDS OF WINTER CEREALS																	
Agrostemma githago																	
Buglossoides arvensis																	
Fallopia convolvulus																	
Galium aparine																	
cf *Veronica hederifolia*																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Camelina sativa																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Caucalis platycarpos																	
Galium spurium																	
Vaccaria pyramidata																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Galeopsis cf *speciosa*																	
Polygonum lapathifolium/persicaria																	
Solanum nigrum																	
Sonchus oleraceus																	
Stellaria media																	
Thlaspi arvense																	
PERENNIAL RUDERALS																	
Arctium sp.																	
Convolvulus arvensis																	
Hyoscyamus niger																	
Lapsana communis																	
MEADOWS AND PASTURES																	
Centaurea sp.																	
Rhinanthus sp.																	
Scabiosa sp.																	
Reed fields																	
Carex sp. tricarpellat																	

Chronology				Phase 4									Phases 3 to 5				
Context	**Ditch**	**Relocated alluvial clay**	**Layer in Porticus A3**	**Opfergrube**									**Ditch**				
Structure	**137**	**38**	**39**	**160**	**160**	**160**	**160**	**219**	**219**	**219**	**219**	**219**	**16**	**16**	**16**	**16**	**16**
US	01	05	11	06	07	08	09	04	05	06	07	07	03	07	10	09	08
Sample N°	BK45071FA	BK35004FA	BK35033FA	BK55001PB	BK55002PB	BK55003PB	BK55004PB	BK55009PB	BK55010PB	BK55011PB	BK55018PB	BK55019PB	BK35002FA	BK35005FA	BK35006FA	BK35009FA	BK35010FA
Galium palustre																	
Forests, forest edges and clearings, hedges																	
Rosa sp.																	
cf *Seseli libanotis*																	
VARIA																	
Apiaceae																	
Asteraceae																	
Brassicaceae																	
Bromus sp.																	
Cannabinaceae																	
Chenopodium sp.																	
Galium sp.																	
Lamiaceae																	
Lolium sp.																	
Papaver sp.																	
Poa sp.																	
Poaceae																	
Potentilla sp.																	
Rumex sp.																	
Indeterminata - endocarp																	
Indeterminata - fruitflesh																	
Indeterminata - coprolithes																	
Indeterminata - crusts																	
Indeterminata - seed/fruit																	

Temple complex															
Chronology											**Phases 1 to 5**				
Context											**Ditch**	**Ditch**	**Deconstruction**	**Deconstruction**	
Structure	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**92**	**12**	**66**	**70**	
US	14	12	11	13	15	16	17	18	20	21	01	04	02	02	
Sample N°	BK35019FA	BK35020FA	BK35021FA	BK35022FA	BK35023FA	BK35024FA	BK35025FA	BK35026FA	BK35032FA	BK35037FA	BK45036FA	BK45022FA	BK45021FA	BK45023FA	
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	
Volume sample	6000	5000	5000	8000	7500	5000	6000	7000	16000	18000	4000	6000	4000	4000	
Field	05	05	05	05	05	05	05	05	05	05	05	05	05	05	
WATERLOGGED															
CEREALS _ grain															
Avena sativa/fatua															
Cerealia - Testa															
CEREALS _ chaff															
Hordeum vulgare - rachis															
Hordeum sp. - rachis															
Secale cereale - rachis															
Triticum aestivum - rachis															
Triticum cf aestivum/durum/turgidum - rachis															
Triticum dicoccon - glume															
Triticum cf *dicoccon* - glume															
Triticum monococcum - glume															
Triticum spelta - glume															
Triticum sp. - rachis															
Triticum sp. - glume															
Cerealia - glume															
Cerealia - rachis															
Panicum miliaceum - glume	1														
Setaria italica - glume															
Panicum/Setaria - glume															
NUTS															
Corylus avellana							1								
Juglans regia															
Pinus pinea															
PULSES															
Lens culinaris															
Pisum sativum															
Vicia faba															
Fabaceae															
SPICES															
Anethum graveolens															
Apium graveolens															
Carum carvi															
Coriandrum sativum										1					
Foeniculum vulgare															
Origanum vulgare															
cf *Petroselinum crispum*															
Pimpinella anisum															
Piper nigrum															
cf *Ruta graveolens*															
Satureja hortensis															
cf *Thymus* sp. - stem															
VEGETABLES AND SALADS															
Amaranthus sp.						1		1							
Atriplex sp.															
Beta vulgaris															
Brassica cf *oleracea*															
Brassica rapa/nigra															
Brassica sp.															
Brassica/Sinapis															
Daucus carota															
Lagenaria siceraria															
Pastinaca sativa															
Portulaca oleracea															
FRUITS															
Cucumis melo															
Cucumis sativus															
Cucumis melo/sativa - fragment															
Cucumis melo/sativa															

Chronology											Phases 1 to 5				
Context											**Ditch**	**Ditch**	**Deconstruction**	**Deconstruction**	
Structure	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**92**	**12**	**66**	**70**	
US	14	12	11	13	15	16	17	18	20	21	01	04	02	02	
Sample N°	BK35019FA	BK35020FA	BK35021FA	BK35022FA	BK35023FA	BK35024FA	BK35025FA	BK35026FA	BK35032FA	BK35037FA	BK45036FA	BK45022FA	BK45021FA	BK45023FA	
Ficus carica															
Fragaria vesca															
Malus domestica															
Malus sylvestris/domestica															
Pyrus sp. - stone cells															
Pyrus sp. - flower															
Malus/Pyrus - pericarp															
Malus/Pyrus															
Morus sp.															
Olea europaea															
Physalis alkekengi	1					1	1								
Prunus cf *avium*															
Prunus avium/cerasus															
Prunus domestica															
Prunus domestica/insititia															
Prunus insititia															
Prunus persica															
Prunus spinosa															
Prunus sp.															
Rubus caesius															
Rubus fruticosus					1										
Rubus idaeus															
Rubus sp.															
Sambucus nigra/racemosa	1	1	1	2	2	2	1	1	2	1					
Vitis vinifera						1	1								
OIL, DYE AND FIBRE PLANTS															
Cannabis sativa															
Carthamus tinctorius															
cf *Isatis tinctoria*															
Linum usitatissimum															
Papaver somniferum															
WEEDS OF WINTER CEREALS															
cf *Adonis* sp.															
Agrostemma githago															
Anthemis arvensis															
Bromus arvensis Type															
Buglossoides arvensis															
Fallopia convolvulus															
Galium aparine	1														
Silene gallica															
Stachys annua/arvensis															
Valerianella locusta															
Valerianella cf *rimosa*															
Valerianella rimosa															
Valerianella sp.															
Veronica hederifolia															
Viola tricolor															
Order Aperetalia_weeds of rather acidic/neutral soils															
Aphanes arvensis															
cf *Bromus secalinus*															
Camelina sativa															
Centaurea cf *cyanus*															
Papaver argemone															
Papaver dubium															
Raphanus raphanistrum															
Scleranthus sp. - capsule															
Order Secalietalia, Caucalion alliance_weeds of calcareous soils															
Ajuga chamaepitys															
Bupleurum rotundifolium															
Caucalis platycarpos															
Euphorbia exigua															
Galium spurium															
Glaucium corniculatum															

Chronology											**Phases 1 to 5**				
Context											**Ditch**	**Ditch**	**Deconstruction**	**Deconstruction**	
Structure	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**92**	**12**	**66**	**70**	
US	14	12	11	13	15	16	17	18	20	21	01	04	02	02	
Sample N°	BK35019FA	BK35020FA	BK35021FA	BK35022FA	BK35023FA	BK35024FA	BK35025FA	BK35026FA	BK35032FA	BK35037FA	BK45036FA	BK45022FA	BK45021FA	BK45023FA	
Myagrum perfoliatum								1							
Nigella arvensis															
Orlaya grandiflora															
Ranunculus arvensis															
Scandix pecten-veneris															
Silene cf *dichotoma*															
Stachys annua															
Thymelaea passerina															
Torilis arvensis															
cf *Vaccaria pyramidata*															
Valerianella dentata						1									
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS															
Aethusa cynapium															
Anagallis arvensis/foemina															
Arenaria serpyllifolia															
Capsella bursa-pastoris															
Chenopodium album							1								
Chenopodium ficifolium															
Chenopodium foliosum															
Chenopodium hybridum								1							
Chenopodium murale															
Chenopodium polyspermum															
Echinochloa crus-galli															
Euphorbia helioscopia															
Euphorbia platyphyllos															
Fumaria officinalis															
Fumaria sp.						1	1	1	1						
Galeopsis cf *bifida*															
Galeopsis bifida															
Galeopsis ladanum															
Galeopsis sp.															
Galeopsis cf *speciosa*															
Galeopsis tetrahit						1									
Galeopsis ladanum/segetum															
cf *Heliotropium europaeum*															
Lamium amplexicaule/purpureum															
Lamium cf *purpureum*															
Malva sylvestris															
Mercurialis annua	1		1		1		1		1			1			
Poa annua															
Polygonum lapathifolium/persicaria										1					
Polygonum persicaria															
Portulaca sp.															
Setaria verticillata/viridis															
Setaria cf *viridis* - glume															
Solanum nigrum						1									
Sonchus asper															
Sonchus asper/oleraceus															
Sonchus oleraceus															
Stachys cf *arvensis*															
Stellaria cf *media*															
Stellaria media						1									
Thlaspi arvense															
Urtica urens															
Verbena officinalis															
Xanthium strumarium															
PERENNIAL RUDERALS															
Agropyron repens															
Arctium lappa															
Arctium minus															
Arctium sp.															
Bryonia dioica															
Carduus crispus															
Cerastium arvense															

Chronology											Phases 1 to 5				
Context											**Ditch**	**Ditch**	**Deconstruction**	**Deconstruction**	
Structure	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**92**	**12**	**66**	**70**	
US	14	12	11	13	15	16	17	18	20	21	01	04	02	02	
Sample N°	BK35019FA	BK35020FA	BK35021FA	BK35022FA	BK35023FA	BK35024FA	BK35025FA	BK35026FA	BK35032FA	BK35037FA	BK45036FA	BK45022FA	BK45021FA	BK45023FA	
Chelidonium majus															
cf *Chondrilla juncea*															
Cirsium sp.															
Cirsium/Carduus															
Conium maculatum															
Convolvulus arvensis															
Cruciata laevipes															
Dipsacus cf *fullonum*															
Fallopia dumetorum															
Hyoscyamus niger									1						
Lactuca serriola															
Lamium album															
Lapsana communis															
cf *Marrubium vulgare*															
Onopordum acanthium															
Plantago major															
Poa compressa															
Polygonum aviculare							1								
Potentilla anserina															
Ranunculus repens	1				1	2	1	1	1	1					
Reseda sp.															
Rumex conglomeratus - perianth															
Rumex crispus - perianth															
Rumex obtusifolius - perianth															
Rumex obtusifolius	1					1			1						
Sambucus ebulus	1		1	2	2	1	1		1						
Saponaria cf *officinalis*															
Silene alba															
Urtica dioica										1					
MEADOWS AND PASTURES															
Achillea millefolium															
Agrostis sp.															
Ajuga reptans															
Anthriscus sp.															
Bromus cf *commutatus*															
Bromus hordeaceus															
Centaurea cf *jacea*															
Centaurea sp.															
Cichorium intybus															
Cirsium/Centaurea															
cf *Cynosurus* sp.															
Dactylis glomerata															
Deschampsia caespitosa															
Dianthus cf *armeria*															
Festuca rubra/ovina															
Festuca/Lolium															
Holcus lanatus															
Leontodon autumnalis															
Leontodon sp.															
Leucanthemum vulgare															
Lolium perenne															
Nardus stricta															
Plantago lanceolata															
Plantago cf *media*															
Plantago media															
Poa pratensis															
Poa pratensis Type															
Poa pratensis/trivialis															
Potentilla erecta															
Prunella vulgaris															
Ranunculus acris															
Rhinanthus sp.															
Rumex acetosa - perianth															
Rumex acetosella															
Scabiosa sp.															

Chronology											**Phases 1 to 5**				
Context											**Ditch**	**Ditch**	**Deconstruction**	**Deconstruction**	
Structure	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**92**	**12**	**66**	**70**	
US	14	12	11	13	15	16	17	18	20	21	01	04	02	02	
Sample N°	BK35019FA	BK35020FA	BK35021FA	BK35022FA	BK35023FA	BK35024FA	BK35025FA	BK35026FA	BK35032FA	BK35037FA	BK45036FA	BK45022FA	BK45021FA	BK45023FA	
Silene vulgaris															
Taraxacum officinale															
Thalictrum flavum															
Trifolium pratense - capsule															
Trifolium sp. - chalice															
Trifolium sp.															
Open swards															
cf *Acinos arvensis*															
Ajuga genevensis															
Artemisia campestris															
Centaurea scabiosa															
Dianthus sp.															
Euphorbia cf *seguieriana*															
Euphrasia/Odontites															
Gentiana cruciata															
Medicago lupulina - pod															
Medicago lupulina - pod with seeds															
Medicago minima - pod															
Odontites sp.															
cf *Petrorhagia prolifera*															
Prunella grandiflora															
Scabiosa columbaria															
Stachys recta															
Teucrium botrys															
Teucrium cf *chamaedrys*															
Teucrium montanum															
Trifolium cf *campestre* - chalice															
Aquatic plants															
Ceratophyllum cf *submersum*															
Lemna sp.															
Polygonum cf *amphibium*															
Potamogeton sp.		1			1	2			1	1					
Ranunculus aquatilis															
Sparganium sp.	1	1	1	1	1	2			2						
Zannichellia palustris															
Reed fields															
Alisma plantago-aquatica															
Carex sp. - utriculus															
Carex sp. bicarpellate															
Carex sp. tricarpellate	1					1	1	1							
Cicuta virosa															
Eleocharis palustris															
Eupatorium cannabinum															
Galium cf *palustre*															
Glyceria sp.															
Hippuris vulgaris															
Iris cf *pseudacorus*															
Juncus sp.															
Lycopus europaeus								1		1					
Mentha arvensis/aquatica															
Nasturtium officinale															
Oenanthe fistulosa															
Oenanthe sp.															
Poa palustris															
Rorippa amphibia															
Rumex cf aquaticus/hydrolapathum???															
Salix sp. - veg. part															
Schoenoplectus lacustris	1														
Schoenoplectus sp.		1	1	2	1	1	1		2	1					
Riverbank plants (pioneer)															
Alnus glutinosa - veg. part															
Alnus sp. - veg part															
Bidens tripartita															
Bidens sp.															
Cyperus flavescens															

Chronology											Phases 1 to 5				
Context											**Ditch**	**Ditch**	**Deconstruction**	**Deconstruction**	
Structure	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**92**	**12**	**66**	**70**	
US	14	12	11	13	15	16	17	18	20	21	01	04	02	02	
Sample N°	BK35019FA	BK35020FA	BK35021FA	BK35022FA	BK35023FA	BK35024FA	BK35025FA	BK35026FA	BK35032FA	BK35037FA	BK45036FA	BK45022FA	BK45021FA	BK45023FA	
Cyperus fuscus															
Cyperus sp.															
Myosoton aquaticum															
Polygonum hydropiper															
Polygonum hydropiper/mite					1	1			1	1					
Polygonum lapathifolium															
Polygonum minus															
Polygonum mite															
Polygonum mite/minus								1							
Ranunculus flammula															
Ranunculus sardous															
Ranunculus sceleratus						1	1		1						
Teucrium cf *scordium*															
Wet meadows															
cf *Euphorbia palustris*															
Filipendula ulmaria															
Linum catharticum															
Lychnis flos-cuculi															
Scirpus sylvaticus															
Stachys officinalis															
Forests, forest edges and clearings, hedges															
Abies alba - needle															
Acer sp. - veg. part															
Agrimonia eupatoria															
Arctium cf *nemorosum*															
Betula pendula - veg. part															
Cornus sanguinea															
Crataegus sp.															
Humulus lupulus															
Quercus sp.															
Rosa sp.															
Solanum cf *dulcamara*															
Stellaria cf *nemorum*															
Torilis cf *japonica*															
Viburnum lantana															
Viburnum opulus															
Calamintha sylvatica										1					
Galium verum															
Hypericum perforatum															
Saponaria cf *ocymoides*															
Silene nutans															
Thalictrum minus															
VARIA															
Ajuga sp.															
Allium sp.															
Apiaceae															
Asteraceae															
Boraginaceae															
Brassicaceae															
Bromus sp.															
Campanula sp.															
Cannabinaceae															
Carduus sp.					1										
Caryophyllaceae															
Cerastium sp.															
Chenopodiaceae															
Chenopodiaceae/Amaranthaceae															
Chenopodium sp.															
Cichorium sp.															
Crepis sp.															
Cuscuta sp.															
Cyperaceae	1	1		1	2	1	1	1	1						

Chronology											Phases 1 to 5				
Context											**Ditch**	**Ditch**	**Deconstruction**	**Deconstruction**	
Structure	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**92**	**12**	**66**	**70**	
US	14	12	11	13	15	16	17	18	20	21	01	04	02	02	
Sample N°	BK35019FA	BK35020FA	BK35021FA	BK35022FA	BK35023FA	BK35024FA	BK35025FA	BK35026FA	BK35032FA	BK35037FA	BK45036FA	BK45022FA	BK45021FA	BK45023FA	
Epilobium sp.															
Euphorbia sp.								1							
Fallopia sp.															
Filipendula sp.															
Galium sp.															
Hypericum sp.															
Inula sp.															
Lamiaceae															
Lamium sp.															
Liliaceae															
Malva sp.															
cf *Matricaria* sp.															
Nasturtium sp.															
Papaver sp.															
Physalis/Solanum		1								1					
Phyteuma sp.															
Poa sp.															
Poaceae															
Poaceae															
Polygonaceae										1					
Polygonum sp.															
Potentilla sp.									1						
Primulaceae															
Ranunculaceae															
Ranunculus sp.															
Rosaceae															
Rumex sp. - perianth															
Sambucus sp.	1											1		1	
Satureja sp.															
Scrophulariaceae															
Silene sp.															
Sinapis sp.															
Solanaceae															
Solanum sp.			1					1							
Sonchus sp.															
Stachys sp.					1		1		1						
Stellaria graminea/palustris															
Stellaria sp.															
Teucrium sp.															
Tilia sp. - fruit															
Torilis sp.															
Veronica sp.															
Vicia sp.															
Viola sp.							1			1					
Indeterminata															
CHARRED															
CEREALS _ grain															
Avena sp.															
Hordeum vulgare												1			
Hordeum sp.															
Secale cereale															
Triticum aestivum															
Triticum cf *aestivum*															
Triticum aestivum/durum/turgidum															
Triticum dicoccon															
Triticum spelta															
Triticum sp.															
Cerealia ohne Hirsen											1		1	1	
Panicum miliaceum															
Setaria italica															
Panicum/Setaria															
CEREALS _ chaff															
Hordeum vulgare - rachis															

Chronology											Phases 1 to 5				
Context											Ditch	Ditch	Deconstruction	Deconstruction	
Structure	16	16	16	16	16	16	16	16	16	16	92	12	66	70	
US	14	12	11	13	15	16	17	18	20	21	01	04	02	02	
Sample N°	BK35019FA	BK35020FA	BK35021FA	BK35022FA	BK35023FA	BK35024FA	BK35025FA	BK35026FA	BK35032FA	BK35037FA	BK45036FA	BK45022FA	BK45021FA	BK45023FA	
Hordeum sp. - rachis															
Secale cereale - rachis															
Triticum aestivum - rachis															
Triticum dicoccon - glume															
Triticum monococcum - glume															
Triticum spelta - glume															
Triticum sp. - glume															
NUTS															
Corylus avellana													1	1	
Juglans regia															
cf *Pinus pinea* - cone fragment															
Pinus pinea - cone fragment															
Pinus pinea															
Pinus pinea - scale															
Pinus pinea - nut fragment															
PULSES															
Lathyrus sp.															
Lens culinaris															
Pisum sativum															
Vicia faba															
Vicia/Lathyrus															
Fabaceae													1		
SPICES															
Apium graveolens															
Satureja hortensis															
VEGETABLES AND SALADS															
Allium sativum															
cf *Allium sativum*															
Atriplex sp.														1	
Brassica sp.															
FRUITS															
Ficus carica															
Ficus carica - fruitflesh															
Phoenix dactylifera - fruit															
Phoenix dactylifera - stone															
Phoenix dactylifera - fruitflesh															
Phoenix dactylifera - stone fragment															
Prunus domestica/insititia															
Prunus persica															
Sambucus nigra/racemosa															
Vitis vinifera															
OIL AND FIBRE PLANTS															
WEEDS OF WINTER CEREALS															
Galium aparine															
Veronica hederifolia															
Order Aperetalia_weeds of rather acidic/neutral soils															
Order Secalietalia, Caucalion alliance_weeds of calcareous soils															
Avena fatua															
Caucalis platycarpos															
Galium cf *spurium*															
Glaucium corniculatum															
Myagrum perfoliatum															
Vicia cf *angustifolia*															
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS															
Chenopodium album															
Chenopodium polyspermum															
Galeospis ladanum/segetum															
cf *Solanum nigrum*															
Thlaspi arvense															
PERENNIAL RUDERALS															
Cruciata laevipes															
Rumex obtusifolius															

Chronology											Phases 1 to 5				
Context											**Ditch**	**Ditch**	**Deconstruction**	**Deconstruction**	
Structure	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**92**	**12**	**66**	**70**	
US	14	12	11	13	15	16	17	18	20	21	01	04	02	02	
Sample N°	BK35019FA	BK35020FA	BK35021FA	BK35022FA	BK35023FA	BK35024FA	BK35025FA	BK35026FA	BK35032FA	BK35037FA	BK45036FA	BK45022FA	BK45021FA	BK45023FA	
Silene alba															
MEADOWS AND PASTURES															
Centaurea sp.															
Festuca/Lolium															
Galium boreale															
Plantago lanceolata															
Plantago media															
Trifolium sp.															
Aquatic plants															
Sparganium sp.															
Reed fields															
cf *Alisma plantago-aquatica*															
Carex sp. tricarpellate															
Galium cf *palustre*															
Riverbank plants (pioneer)															
Teucrium scordium															
Forests, forest edges and clearings, hedges															
Abies alba - needle															
Galium verum															
cf *Humulus lupulus*															
VARIA															
Asperula sp.															
Bromus sp.															
Chenopodiaceae															
Chenopodium sp.															
Galium sp.	1													1	
Poaceae							1								
Rumex sp.															
Sambucus sp.															
Vicia sp.															
Indeterminata - pastry															
Indeterminata - bud															
Indeterminata - amorphous object															
Indeterminata - fruitflesh															
Indeterminata - endocarp															
Indeterminata - seed/fruit															
MINERALISED															
CEREALS _ grain															
cf *Avena* sp.															
Hordeum vulgare															
Triticum spelta															
Triticum sp.															
Panicum miliaceum															
Setaria italica															
Panicum/Setaria															
Cerealia ohne Hirsen															
CEREALS _ chaff															
Hordeum vulgare - rachis															
Triticum spelta - spikelet fork															
Cerealia - ear															
Cerealia - glume															
Panicum miliaceum - glume															
Setaria italica - glume															
Panicum/Setaria - glume															
PULSES															
Lens culinaris															
Pisum sativum															
Vicia faba															
Fabaceae - fruitflesh															
Fabaceae															
FRUITS															
Cucumis melo															

Chronology											Phases 1 to 5				
Context											Ditch	Ditch	Deconstruction	Deconstruction	
Structure	16	16	16	16	16	16	16	16	16	16	92	12	66	70	
US	14	12	11	13	15	16	17	18	20	21	01	04	02	02	
Sample N°	BK35019FA	BK35020FA	BK35021FA	BK35022FA	BK35023FA	BK35024FA	BK35025FA	BK35026FA	BK35032FA	BK35037FA	BK45036FA	BK45022FA	BK45021FA	BK45023FA	
Cucumis melo/sativa															
Ficus carica															
Fragaria vesca															
Malus domestica															
Malus sylvestris/domestica															
Pyrus sp.															
Malus/Pyrus															
Morus sp.															
Physalis alkekengi															
Prunus sp. - fragment															
Rubus caesius															
Rubus sp. - inner															
Sambucus nigra/racemosa															
Vitis vinifera - fruitflesh															
Vitis vinifera - aborted seed															
Vitis vinifera															
SPICES															
Anethum graveolens															
Apium graveolens															
Carum carvi															
Coriandrum sativum															
Foeniculum vulgare															
Nigella cf *sativa*															
VEGETABLES AND SALADS															
Atriplex sp.															
Beta vulgaris															
Brassica sp.															
Daucus carota															
Lagenaria siceraria															
OIL AND FIBRE PLANTS															
Linum usitatissimum															
Papaver somniferum															
WEEDS OF WINTER CEREALS															
Agrostemma githago															
Buglossoides arvensis															
Fallopia convolvulus															
Galium aparine															
cf *Veronica hederifolia*															
Order Aperetalia_weeds of rather acidic/neutral soils															
Camelina sativa															
Order Secalietalia, Caucalion alliance_weeds of calcareous soils															
Caucalis platycarpos															
Galium spurium															
Vaccaria pyramidata															
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS															
Galeopsis cf *speciosa*															
Polygonum lapathifolium/persicaria															
Solanum nigrum															
Sonchus oleraceus															
Stellaria media															
Thlaspi arvense															
PERENNIAL RUDERALS															
Arctium sp.															
Convolvulus arvensis															
Hyoscyamus niger															
Lapsana communis															
MEADOWS AND PASTURES															
Centaurea sp.															
Rhinanthus sp.															
Scabiosa sp.															
Reed fields															
Carex sp. tricarpellat															

Chronology											Phases 1 to 5				
Context											**Ditch**	**Ditch**	**Deconstruction**	**Deconstruction**	
Structure	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**92**	**12**	**66**	**70**	
US	14	12	11	13	15	16	17	18	20	21	01	04	02	02	
Sample N°	BK35019FA	BK35020FA	BK35021FA	BK35022FA	BK35023FA	BK35024FA	BK35025FA	BK35026FA	BK35032FA	BK35037FA	BK45036FA	BK45022FA	BK45021FA	BK45023FA	
Galium palustre															
Forests, forest edges and clearings, hedges															
Rosa sp.															
cf *Seseli libanotis*															
VARIA															
Apiaceae															
Asteraceae															
Brassicaceae															
Bromus sp.															
Cannabinaceae															
Chenopodium sp.															
Galium sp.															
Lamiaceae															
Lolium sp.															
Papaver sp.															
Poa sp.															
Poaceae															
Potentilla sp.															
Rumex sp.															
Indeterminata - endocarp															
Indeterminata - fruitflesh															
Indeterminata - coprolithes															
Indeterminata - crusts															
Indeterminata - seed/fruit															

Table 1.c Raw data of the main archaeobotanical analysis of the Roman civil agglomeration Oedenburg/Biesheim-Kunheim. Surroundings of the temple complex.

Surroundings of the temple complex																					
Chronology	**1st Cent. A.D.**											**Roman not specified**									
Context	**Pit**	**Pit**	**Pit**	**Pit**	**layer**	**layer**	**drain**	**floor**	**floor**	**floor**	**floor**	**pit**	**pit**	**pit**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**
Structure	**29**	**193**	**194**	**194**	**168**	**212**	**310**	**163**	**166**	**166**	**166**	**89**	**90**	**129**	**67**	**74**	**74**	**74**	**74**	**74**	**74**
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	02	03 1	03 2	03 3	03 4	03 5	03
Sample N°	BK39005	BK39053	BK39054	BK39056	BK510010	BK39059	BK510038	BK39048	BK39057A	BK39057D	BK39057I	BK39009	BK39010	BK39047	BK39032	BK39011	BK39012	BK39013	BK39014	BK39030	BK39030
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	FU
Volume sample	8000	6000	6000	6000	10000	5000	8000	20500	9000	8000	10000	22500	4500	5000	3000	6000	7000	8000	7000	5000	5000
Field	09	09	09	09	01	09	01	09	09	09	09	09	09	09	09	09	09	09	09	09	09
WATERLOGGED																					
CEREALS _ grain																					
Avena sativa/fatua																					
Cerealia - Testa																					
CEREALS _ chaff																					
Hordeum vulgare - rachis																					
Hordeum sp. - rachis						1		2	1	1	3										
Secale cereale - rachis											2										
Triticum aestivum - rachis																					
Triticum cf aestivum/durum/turgidum - rachis																				1	
Triticum dicoccon - glume								1													
Triticum cf *dicoccon* - glume										1											
Triticum monococcum - glume																					
Triticum spelta - glume														1			1			1	
Triticum sp. - rachis																					
Triticum sp. - glume						1															45
Cerealia - glume								1									1				
Cerealia - rachis								1		1											5
Panicum miliaceum - glume						1		3	3	3	3			1						1	46
Setaria italica - glume									1												
Panicum/Setaria - glume																					
NUTS																					
Corylus avellana		1	1	1		2	3	1		1				1	2	2	1	3	2	2	6
Juglans regia																1	1			1	6
Pinus pinea																					
PULSES																					
Lens culinaris																					
Pisum sativum																					
Vicia faba																					
Fabaceae															1						
SPICES																					
Anethum graveolens			1	1				1								1	1	1		1	35
Apium graveolens			1				1	1								1	1	1		1	2015
Carum carvi																					
Coriandrum sativum			1	1	1	1										1		1		2	57
Foeniculum vulgare																					1
Origanum vulgare																					
cf *Petroselinum crispum*																					
Pimpinella anisum																					
Piper nigrum																					
cf *Ruta graveolens*																					
Satureja hortensis																					155
cf *Thymus* sp. - stem																					
VEGETABLES AND SALADS																					
Amaranthus sp.							1							1			1			1	100
Atriplex sp.							1												1	1	5
Beta vulgaris																					
Brassica cf *oleracea*																					
Brassica rapa/nigra																					
Brassica sp.							1											1			120
Brassica/Sinapis																					
Daucus carota						1	2									1		1			5
Lagenaria siceraria																2				1	5
Pastinaca sativa																					

Chronology	1st Cent. A.D.											Roman not specified									
Context	**Pit**	**Pit**	**Pit**	**Pit**	**layer**	**layer**	**drain**	**floor**	**floor**	**floor**	**floor**	**pit**	**pit**	**pit**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**
Structure	**29**	**193**	**194**	**194**	**168**	**212**	**310**	**163**	**166**	**166**	**166**	**89**	**90**	**129**	**67**	**74**	**74**	**74**	**74**	**74**	**74**
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	02	03 1	03 2	03 3	03 4	03 5	03
Sample N°	BK39005	BK39053	BK39054	BK39056	BK510010	BK39059	BK510038	BK39048	BK39057A	BK39057D	BK39057I	BK39009	BK39010	BK39047	BK39032	BK39011	BK39012	BK39013	BK39014	BK39030	BK39030
Portulaca oleracea																					30
FRUITS																					
Cucumis melo																					2
Cucumis sativus																					
Cucumis melo/sativa - fragment																					
Cucumis melo/sativa						1											1			2	1
Ficus carica						1					1			1		1	1	1	1	2	403
Fragaria vesca																					35
Malus domestica																					
Malus sylvestris/domestica																					
Pyrus sp. - stone cells																					
Pyrus sp. - flower																1				1	4
Malus/Pyrus - pericarp																				1	
Malus/Pyrus														1		2					11
Morus sp.														1							
Olea europaea																				1	1
Physalis alkekengi						1								1							
Prunus cf *avium*																					
Prunus avium/cerasus						1											1				
Prunus domestica														1		1	1				
Prunus domestica/insititia																					
Prunus insititia																					
Prunus persica																				1	1
Prunus spinosa							1														
Prunus sp.						1															
Rubus caesius														1							
Rubus fruticosus																					
Rubus idaeus																					
Rubus sp.														1							
Sambucus nigra/racemosa				1	1		1					1		1		1	1		1		
Vitis vinifera														1	1	2				1	11
OIL, DYE AND FIBRE PLANTS																					
Cannabis sativa									1							1					
Carthamus tinctorius																					178
cf *Isatis tinctoria*																					
Linum usitatissimum																					
Papaver somniferum																					
WEEDS OF WINTER CEREALS																					
cf *Adonis* sp.																					16
Agrostemma githago				1		1	2	2	1	1	3						1			1	5
Anthemis arvensis					1		2	1	1	1	2					1	1				180
Bromus arvensis Type																					
Buglossoides arvensis																					
Fallopia convolvulus						1		1	1	1	1					1	1	1		2	36
Galium aparine											1									1	16
Silene gallica																					
Stachys annua/arvensis																					
Valerianella locusta																					
Valerianella cf *rimosa*																					
Valerianella rimosa																					
Valerianella sp.														1							
Veronica hederifolia																					
Viola tricolor																					
Order Aperetalia_weeds of rather acidic/neutral soils																					
Aphanes arvensis																					
cf *Bromus secalinus*																					
Camelina sativa				1				1		1											

Chronology	1st Cent. A.D.											Roman not specified									
Context	**Pit**	**Pit**	**Pit**	**Pit**	**layer**	**layer**	**drain**	**floor**	**floor**	**floor**	**floor**	**pit**	**pit**	**pit**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**
Structure	**29**	**193**	**194**	**194**	**168**	**212**	**310**	**163**	**166**	**166**	**166**	**89**	**90**	**129**	**67**	**74**	**74**	**74**	**74**	**74**	**74**
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	02	03 1	03 2	03 3	03 4	03 5	03
Sample N°	BK39005	BK39053	BK39054	BK39056	BK510010	BK39059	BK510038	BK39048	BK39057A	BK39057D	BK39057I	BK39009	BK39010	BK39047	BK39032	BK39011	BK39012	BK39013	BK39014	BK39030	BK39030
Centaurea cf *cyanus*																					
Papaver argemone							1				2										130
Papaver dubium											2										
Raphanus raphanistrum																					
Scleranthus sp. - capsule																					
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																					
Ajuga chamaepitys			1		1									1				1	1		
Bupleurum rotundifolium																					
Caucalis platycarpos				1		1			1	1	2					2				3	245
Euphorbia exigua																					5
Galium spurium																					15
Glaucium corniculatum																			1		5
Myagrum perfoliatum		1	1	1		1	1		1			1	1			2	1	1	1	2	72
Nigella arvensis							1														
Orlaya grandiflora											1										
Ranunculus arvensis																					
Scandix pecten-veneris																					
Silene cf *dichotoma*																					5
Stachys annua							2														67
Thymelaea passerina															1						
Torilis arvensis																					
cf *Vaccaria pyramidata*																					
Valerianella dentata								1									1	1			
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																					
Aethusa cynapium																	1				
Anagallis arvensis/foemina						1			1	1								1		1	55
Arenaria serpyllifolia							1														60
Capsella bursa-pastoris																					
Chenopodium album			1	1	1		3	2	1	1	1			1		1			1	1	907
Chenopodium ficifolium																					
Chenopodium foliosum																					
Chenopodium hybridum		1	1	1		2	1	1	1	1	2		1	1	1	1		1		1	26
Chenopodium murale																					
Chenopodium polyspermum																					
Echinochloa crus-galli																					
Euphorbia helioscopia																1	1				
Euphorbia platyphyllos																		1			
Fumaria officinalis																					
Fumaria sp.				1		1			1						1	1	1				
Galeopsis cf *bifida*																					
Galeopsis bifida																					
Galeopsis ladanum																					
Galeopsis sp.							1	1	1		2					1				1	1
Galeopsis cf *speciosa*							1														
Galeopsis tetrahit																					
Galeopsis ladanum/segetum																					65
cf *Heliotropium europaeum*																					
Lamium amplexicaule/purpureum																					
Lamium cf *purpureum*																					5
Malva sylvestris																					
Mercurialis annua																					
Poa annua																					
Polygonum lapathifolium/persicaria						1	1			1	1			1							25
Polygonum persicaria																1					
Portulaca sp.																					
Setaria verticillata/viridis							1				2						1				

Chronology	1st Cent. A.D.											Roman not specified									
Context	**Pit**	**Pit**	**Pit**	**Pit**	**layer**	**layer**	**drain**	**floor**	**floor**	**floor**	**floor**	**pit**	**pit**	**pit**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**
Structure	**29**	**193**	**194**	**194**	**168**	**212**	**310**	**163**	**166**	**166**	**166**	**89**	**90**	**129**	**67**	**74**	**74**	**74**	**74**	**74**	**74**
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	02	03 1	03 2	03 3	03 4	03 5	03
Sample N°	BK39005	BK39053	BK39054	BK39056	BK510010	BK39059	BK510038	BK39048	BK39057A	BK39057D	BK39057I	BK39009	BK39010	BK39047	BK39032	BK39011	BK39012	BK39013	BK39014	BK39030	BK39030
Setaria cf *viridis* - glume																					
Solanum nigrum					2	1	3	1		1	2					1	1	1	1	1	71
Sonchus asper																					20
Sonchus asper/oleraceus											1										
Sonchus oleraceus																					5
Stachys cf *arvensis*																					
Stellaria cf *media*																					
Stellaria media					1		3	1						1		1	1			1	466
Thlaspi arvense		1		1	1	2	1			1	1					1	1	1		2	6
Urtica urens						1										1	1			1	435
Verbena officinalis							2													1	70
Xanthium strumarium											1										
PERENNIAL RUDERALS																					
Agropyron repens																					
Arctium lappa																					
Arctium minus																					
Arctium sp.																					
Bryonia dioica																					
Carduus crispus																					
Cerastium arvense																					
Chelidonium majus													1	1							
cf *Chondrilla juncea*																					
Cirsium sp.																	1	1		1	40
Cirsium/Carduus						1	1														
Conium maculatum					2											1					
Convolvulus arvensis																					
Cruciata laevipes																					
Dipsacus cf *fullonum*																					
Fallopia dumetorum																					
Hyoscyamus niger			1	1				1							1			1	1	1	15
Lactuca serriola																					10
Lamium album																					
Lapsana communis						1	1													1	10
cf *Marrubium vulgare*																					
Onopordum acanthium						1												1			
Plantago major							1														10
Poa compressa																					
Polygonum aviculare					1		2		1					1				1		1	15
Potentilla anserina																					
Ranunculus repens					1	1	3							1			1	1		1	
Reseda sp.																					
Rumex conglomeratus - perianth																					
Rumex crispus - perianth											1										
Rumex obtusifolius - perianth																					
Rumex obtusifolius			1		1	1	2	1	1	1	2			1		1	1	1	1	1	141
Sambucus ebulus	1				1								1			1		1	1	2	32
Saponaria cf *officinalis*																					
Silene alba																					
Urtica dioica					1	1		1									1			1	350
MEADOWS AND PASTURES																					
Achillea millefolium																					
Agrostis sp.																					
Ajuga reptans																		1			
Anthriscus sp.																					
Bromus cf *commutatus*																					
Bromus hordeaceus																					
Centaurea cf *jacea*																					
Centaurea sp.							2														5

Chronology	1st Cent. A.D.											Roman not specified									
Context	**Pit**	**Pit**	**Pit**	**Pit**	**layer**	**layer**	**drain**	**floor**	**floor**	**floor**	**floor**	**pit**	**pit**	**pit**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**
Structure	**29**	**193**	**194**	**194**	**168**	**212**	**310**	**163**	**166**	**166**	**166**	**89**	**90**	**129**	**67**	**74**	**74**	**74**	**74**	**74**	**74**
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	02	03 1	03 2	03 3	03 4	03 5	03
Sample N°	BK39005	BK39053	BK39054	BK39056	BK510010	BK39059	BK510038	BK39048	BK39057A	BK39057D	BK39057I	BK39009	BK39010	BK39047	BK39032	BK39011	BK39012	BK39013	BK39014	BK39030	BK39030
Cichorium intybus							1														
Cirsium/Centaurea								1													
cf *Cynosurus* sp.																					
Dactylis glomerata																					
Deschampsia caespitosa																					
Dianthus cf *armeria*																					
Festuca rubra/ovina																					
Festuca/Lolium																					
Holcus lanatus																					
Leontodon autumnalis							1														
Leontodon sp.																					
Leucanthemum vulgare								1		1											5
Lolium perenne																					
Nardus stricta																					
Plantago lanceolata																					10
Plantago cf *media*																					
Plantago media																					5
Poa pratensis																					
Poa pratensis Type																					
Poa pratensis/trivialis																					
Potentilla erecta																				1	
Prunella vulgaris							2	1	1	1	1									1	60
Ranunculus acris														1		1					
Rhinanthus sp.							2														
Rumex acetosa - perianth																					
Rumex acetosella																					
Scabiosa sp.																					10
Silene vulgaris																					
Taraxacum officinale																					
Thalictrum flavum																					
Trifolium pratense - capsule																					
Trifolium sp. - chalice																					
Trifolium sp.										1											
Open swards																					
cf *Acinos arvensis*																					
Ajuga genevensis							1														
Artemisia campestris																					
Centaurea scabiosa																					
Dianthus sp.																					
Euphorbia cf *seguieriana*																					
Euphrasia/Odontites																					
Gentiana cruciata																					
Medicago lupulina - pod							1														
Medicago lupulina - pod with seeds																					
Medicago minima - pod							1													1	
Odontites sp.																					
cf *Petrorhagia prolifera*																					
Prunella grandiflora																					
Scabiosa columbaria																					
Stachys recta																					
Teucrium botrys																				1	
Teucrium cf *chamaedrys*																					
Teucrium montanum																					
Trifolium cf *campestre* - chalice																					
Aquatic plants																					
Ceratophyllum cf *submersum*																					
Lemna sp.																					
Polygonum cf *amphibium*																					

Chronology	1st Cent. A.D.											Roman not specified									
Context	**Pit**	**Pit**	**Pit**	**Pit**	**layer**	**layer**	**drain**	**floor**	**floor**	**floor**	**floor**	**pit**	**pit**	**pit**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**
Structure	**29**	**193**	**194**	**194**	**168**	**212**	**310**	**163**	**166**	**166**	**166**	**89**	**90**	**129**	**67**	**74**	**74**	**74**	**74**	**74**	**74**
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	02	03 1	03 2	03 3	03 4	03 5	03
Sample N°	BK39005	BK39053	BK39054	BK39056	BK510010	BK39059	BK510038	BK39048	BK39057A	BK39057D	BK39057I	BK39009	BK39010	BK39047	BK39032	BK39011	BK39012	BK39013	BK39014	BK39030	BK39030
Potamogeton sp.																					
Ranunculus aquatilis																					
Sparganium sp.														1							
Zannichellia palustris					2																
Reed fields																					
Alisma plantago-aquatica							1	1													65
Carex sp. - utriculus									1									1			1
Carex sp. bicarpellate				1		1	2	1			1			1							70
Carex sp. tricarpellate		1	1	1	2	1	2	1			1			1	1	1	1	1	1	1	86
Cicuta virosa																					
Eleocharis palustris				1	1	1	2	1	1		1							1		1	15
Eupatorium cannabinum																					
Galium cf *palustre*																					
Glyceria sp.					1																
Hippuris vulgaris																					
Iris cf *pseudacorus*																					
Juncus sp.																					60
Lycopus europaeus						1	2	1													60
Mentha arvensis/aquatica							1				1										300
Nasturtium officinale					1		1														
Oenanthe fistulosa			1	1			2						1								
Oenanthe sp.																					
Poa palustris																					
Rorippa amphibia																					
Rumex cf aquaticus/hydrolapathum???																					
Salix sp. - veg. part																					
Schoenoplectus lacustris																					
Schoenoplectus sp.					1														1		
Riverbank plants (pioneer)																					
Alnus glutinosa - veg. part																					
Alnus sp. - veg part																					
Bidens tripartita								2													
Bidens sp.																					
Cyperus flavescens																					
Cyperus fuscus							1														30
Cyperus sp.										1											
Myosoton aquaticum																					
Polygonum hydropiper					2																
Polygonum hydropiper/mite						1			1											1	
Polygonum lapathifolium																	1				
Polygonum minus							1														
Polygonum mite																					
Polygonum mite/minus																					
Ranunculus flammula																					
Ranunculus sardous																		1			
Ranunculus sceleratus					1			1									1				150
Teucrium cf *scordium*																					
Wet meadows																					
cf *Euphorbia palustris*																					
Filipendula ulmaria																					
Linum catharticum																					30
Lychnis flos-cuculi								1	1												
Scirpus sylvaticus																					
Stachys officinalis																					
Forests, forest edges and clearings, hedges																					
Abies alba - needle																1				1	
Acer sp. - veg. part														1							

Chronology	**1st Cent. A.D.**											**Roman not specified**									
Context	**Pit**	**Pit**	**Pit**	**Pit**	**layer**	**layer**	**drain**	**floor**	**floor**	**floor**	**floor**	**pit**	**pit**	**pit**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**
Structure	**29**	**193**	**194**	**194**	**168**	**212**	**310**	**163**	**166**	**166**	**166**	**89**	**90**	**129**	**67**	**74**	**74**	**74**	**74**	**74**	**74**
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	02	03 1	03 2	03 3	03 4	03 5	03
Sample N°	BK39005	BK39053	BK39054	BK39056	BK510010	BK39059	BK510038	BK39048	BK39057A	BK39057D	BK39057I	BK39009	BK39010	BK39047	BK39032	BK39011	BK39012	BK39013	BK39014	BK39030	BK39030
Agrimonia eupatoria																					
Arctium cf *nemorosum*																					
Betula pendula - veg. part																					
Cornus sanguinea																					
Crataegus sp.																					
Humulus lupulus																				1	
Quercus sp.								1	1	1	2										
Rosa sp.																1				1	
Solanum cf *dulcamara*																					
Stellaria cf *nemorum*																					
Torilis cf *japonica*																					
Viburnum lantana																					
Viburnum opulus																					
Calamintha sylvatica																					
Galium verum																					
Hypericum perforatum																					
Saponaria cf *ocymoides*																					
Silene nutans																					
Thalictrum minus																					
VARIA																					
Ajuga sp.																					
Allium sp.																					
Apiaceae			1																		46
Asteraceae										1											
Boraginaceae																					
Brassicaceae																					10
Bromus sp.																					
Campanula sp.																					30
Cannabinaceae																					
Carduus sp.																					
Caryophyllaceae																					
Cerastium sp.																					30
Chenopodiaceae																					
Chenopodiaceae/Amaranthaceae																					
Chenopodium sp.						2									1		1	1			165
Cichorium sp.																					
Crepis sp.																					
Cuscuta sp.							1														
Cyperaceae	1			1		1								1			1	1	1		
Epilobium sp.																					
Euphorbia sp.														1							5
Fallopia sp.																					
Filipendula sp.																					30
Galium sp.													1			1					5
Hypericum sp.																					
Inula sp.																					
Lamiaceae							1														45
Lamium sp.			1						1	1				1		1		1			30
Liliaceae																					
Malva sp.																				1	
cf *Matricaria* sp.																					
Nasturtium sp.																					
Papaver sp.									1												120
Physalis/Solanum													1								
Phyteuma sp.																					
Poa sp.																					

Chronology	1st Cent. A.D.											Roman not specified									
Context	**Pit**	**Pit**	**Pit**	**Pit**	**layer**	**layer**	**drain**	**floor**	**floor**	**floor**	**floor**	**pit**	**pit**	**pit**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**
Structure	**29**	**193**	**194**	**194**	**168**	**212**	**310**	**163**	**166**	**166**	**166**	**89**	**90**	**129**	**67**	**74**	**74**	**74**	**74**	**74**	**74**
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	02	03 1	03 2	03 3	03 4	03 5	03
Sample N°	BK39005	BK39053	BK39054	BK39056	BK510010	BK39059	BK510038	BK39048	BK39057A	BK39057D	BK39057I	BK39009	BK39010	BK39047	BK39032	BK39011	BK39012	BK39013	BK39014	BK39030	BK39030
Poaceae																					
Poaceae							1			1	2			1						1	30
Polygonaceae	1		1																		
Polygonum sp.						1															30
Potentilla sp.							2														30
Primulaceae																					
Ranunculaceae																					
Ranunculus sp.																					
Rosaceae																1		1			
Rumex sp. - perianth					1	1	1	1	1	1				1						1	10
Sambucus sp.		1	1			1															
Satureja sp.																					
Scrophulariaceae																					
Silene sp.			1		1	1					1					1				1	
Sinapis sp.																					
Solanaceae																					
Solanum sp.			1											1							
Sonchus sp.																					
Stachys sp.				1		1		1	1	1		1		1	1	1	1	1	1	2	
Stellaria graminea/palustris																					5
Stellaria sp.																					60
Teucrium sp.						1															
Tilia sp. - fruit																					
Torilis sp.							1														
Veronica sp.																					30
Vicia sp.																					
Viola sp.		1	1		1														1		
Indeterminata																					1
CHARRED																					
CEREALS _ grain																					
Avena sp.			1													1					6
Hordeum vulgare																1					66
Hordeum sp.	1	1		1								1		1			1				
Secale cereale																					
Triticum aestivum	1													1							
Triticum cf *aestivum*										1											
Triticum aestivum/durum/turgidum											1										8
Triticum dicoccon			1																		
Triticum spelta																					
Triticum sp.				1								1			1	2		1		1	
Cerealia ohne Hirsen			1			1							1	1	1	1	1			2	11
Panicum miliaceum				1						1						1			1		
Setaria italica																1					5
Panicum/Setaria																					
CEREALS _ chaff																					
Hordeum vulgare - rachis																					5
Hordeum sp. - rachis			1	1		1															
Secale cereale - rachis																					
Triticum aestivum - rachis																					
Triticum dicoccon - glume																					
Triticum monococcum - glume																					
Triticum spelta - glume			1	1															1		
Triticum sp. - glume														1							
NUTS																					
Corylus avellana																					
Juglans regia																					

Chronology	1st Cent. A.D.											Roman not specified									
Context	**Pit**	**Pit**	**Pit**	**Pit**	**layer**	**layer**	**drain**	**floor**	**floor**	**floor**	**floor**	**pit**	**pit**	**pit**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**
Structure	**29**	**193**	**194**	**194**	**168**	**212**	**310**	**163**	**166**	**166**	**166**	**89**	**90**	**129**	**67**	**74**	**74**	**74**	**74**	**74**	**74**
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	02	03 1	03 2	03 3	03 4	03 5	03
Sample N°	BK39005	BK39053	BK39054	BK39056	BK510010	BK39059	BK510038	BK39048	BK39057A	BK39057D	BK39057I	BK39009	BK39010	BK39047	BK39032	BK39011	BK39012	BK39013	BK39014	BK39030	BK39030
cf *Pinus pinea* - cone fragment																					
Pinus pinea - cone fragment																					
Pinus pinea																					
Pinus pinea - scale																					
Pinus pinea - nut fragment																					
PULSES																					
Lathyrus sp.																					
Lens culinaris																					
Pisum sativum																					
Vicia faba																				1	2
Vicia/Lathyrus																					
Fabaceae			1																1		7
SPICES																					
Apium graveolens																					5
Satureja hortensis																					
VEGETABLES AND SALADS																					
Allium sativum																					
cf *Allium sativum*																					
Atriplex sp.																					
Brassica sp.																					2
FRUITS																					
Ficus carica																				1	
Ficus carica - fruitflesh																					
Phoenix dactylifera - fruit																					
Phoenix dactylifera - stone																					
Phoenix dactylifera - fruitflesh																					
Phoenix dactylifera - stone fragment																					
Prunus domestica/insititia																					1
Prunus persica																					
Sambucus nigra/racemosa																					
Vitis vinifera																					
OIL AND FIBRE PLANTS																					
WEEDS OF WINTER CEREALS																					
Galium aparine		1	1	1																	6
Veronica hederifolia																					
Order Aperetalia_weeds of rather acidic/neutral soils																					
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																					
Avena fatua																					
Caucalis platycarpos																					1
Galium cf *spurium*																					
Glaucium corniculatum																			1		
Myagrum perfoliatum																					1
Vicia cf *angustifolia*																					
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																					
Chenopodium album																					
Chenopodium polyspermum																					
Galeospis ladanum/segetum																					5
cf *Solanum nigrum*																					5
Thlaspi arvense																					
PERENNIAL RUDERALS																					
Cruciata laevipes																					
Rumex obtusifolius			1													1					35
Silene alba																					
MEADOWS AND PASTURES																					
Centaurea sp.																					

Chronology	1st Cent. A.D.											Roman not specified									
Context	**Pit**	**Pit**	**Pit**	**Pit**	**layer**	**layer**	**drain**	**floor**	**floor**	**floor**	**floor**	**pit**	**pit**	**pit**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**
Structure	**29**	**193**	**194**	**194**	**168**	**212**	**310**	**163**	**166**	**166**	**166**	**89**	**90**	**129**	**67**	**74**	**74**	**74**	**74**	**74**	**74**
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	02	03 1	03 2	03 3	03 4	03 5	03
Sample N°	BK39005	BK39053	BK39054	BK39056	BK510010	BK39059	BK510038	BK39048	BK39057A	BK39057D	BK39057I	BK39009	BK39010	BK39047	BK39032	BK39011	BK39012	BK39013	BK39014	BK39030	BK39030
Festuca/Lolium																					
Galium boreale																					
Plantago lanceolata																				1	
Plantago media																					
Trifolium sp.																					
Aquatic plants																					
Sparganium sp.																					
Reed fields																					
cf *Alisma plantago-aquatica*																					
Carex sp. tricarpellate		1																			
Galium cf *palustre*																					
Riverbank plants (pioneer)																					
Teucrium scordium																					
Forests, forest edges and clearings, hedges																					
Abies alba - needle																					
Galium verum																					
cf *Humulus lupulus*																					1
VARIA																					
Asperula sp.																					
Bromus sp.																1					
Chenopodiaceae																					
Chenopodium sp.																					
Galium sp.		1		1												1				1	15
Poaceae	1																			1	40
Rumex sp.																					
Sambucus sp.																					
Vicia sp.																					
Indeterminata - pastry																					
Indeterminata - bud																					
Indeterminata - amorphous object																					
Indeterminata - fruitflesh																					
Indeterminata - endocarp																					
Indeterminata - seed/fruit																					
MINERALISED																					
CEREALS _ grain																					
cf *Avena* sp.																					
Hordeum vulgare																					
Triticum spelta																					
Triticum sp.																					
Panicum miliaceum																					
Setaria italica																					
Panicum/Setaria																					
Cerealia ohne Hirsen																					
CEREALS _ chaff																					
Hordeum vulgare - rachis																					
Triticum spelta - spikelet fork																					
Cerealia - ear																					
Cerealia - glume																					
Panicum miliaceum - glume																					
Setaria italica - glume																					
Panicum/Setaria - glume																					
PULSES																					
Lens culinaris																					
Pisum sativum																					
Vicia faba																					

Chronology	1st Cent. A.D.											Roman not specified									
Context	Pit	Pit	Pit	Pit	layer	layer	drain	floor	floor	floor	floor	pit	pit	pit	layer	layer	layer	layer	layer	layer	layer
Structure	29	193	194	194	168	212	310	163	166	166	166	89	90	129	67	74	74	74	74	74	74
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	02	03 1	03 2	03 3	03 4	03 5	03
Sample N°	BK39005	BK39053	BK39054	BK39056	BK510010	BK39059	BK510038	BK39048	BK39057A	BK39057D	BK39057I	BK39009	BK39010	BK39047	BK39032	BK39011	BK39012	BK39013	BK39014	BK39030	BK39030
Fabaceae - fruitflesh																					
Fabaceae																					
FRUITS																					
Cucumis melo																					
Cucumis melo/sativa																					
Ficus carica																					
Fragaria vesca																					
Malus domestica																					
Malus sylvestris/domestica																					
Pyrus sp.																					
Malus/Pyrus																					
Morus sp.																					
Physalis alkekengi																					
Prunus sp. - fragment																					
Rubus caesius																					
Rubus sp. - inner																					
Sambucus nigra/racemosa																					
Vitis vinifera - fruitflesh																					
Vitis vinifera - aborted seed																					
Vitis vinifera																					
SPICES																					
Anethum graveolens																					
Apium graveolens																					
Carum carvi																					
Coriandrum sativum																					
Foeniculum vulgare																					
Nigella cf *sativa*																					
VEGETABLES AND SALADS																					
Atriplex sp.																					
Beta vulgaris																					
Brassica sp.																					
Daucus carota																					
Lagenaria siceraria																					
OIL AND FIBRE PLANTS																					
Linum usitatissimum																					
Papaver somniferum																					
WEEDS OF WINTER CEREALS																					
Agrostemma githago																					
Buglossoides arvensis																					
Fallopia convolvulus																					
Galium aparine																					
cf *Veronica hederifolia*																					
Order Aperetalia_weeds of rather acidic/neutral soils																					
Camelina sativa																					
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																					
Caucalis platycarpos																					
Galium spurium																					
Vaccaria pyramidata																					
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																					
Galeopsis cf *speciosa*																					
Polygonum lapathifolium/persicaria																					
Solanum nigrum																					
Sonchus oleraceus																					
Stellaria media																					
Thlaspi arvense																					

Chronology	1st Cent. A.D.											Roman not specified									
Context	Pit	Pit	Pit	Pit	layer	layer	drain	floor	floor	floor	floor	pit	pit	pit	layer	layer	layer	layer	layer	layer	layer
Structure	29	193	194	194	168	212	310	163	166	166	166	89	90	129	67	74	74	74	74	74	74
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	02	03 1	03 2	03 3	03 4	03 5	03
Sample N°	BK39005	BK39053	BK39054	BK39056	BK510010	BK39059	BK510038	BK39048	BK39057A	BK39057D	BK39057I	BK39009	BK39010	BK39047	BK39032	BK39011	BK39012	BK39013	BK39014	BK39030	BK39030
PERENNIAL RUDERALS																					
Arctium sp.																					
Convolvulus arvensis																					
Hyoscyamus niger																					
Lapsana communis																					
MEADOWS AND PASTURES																					
Centaurea sp.																					
Rhinanthus sp.																					
Scabiosa sp.																					
Reed fields																					
Carex sp. tricarpellat																					
Galium palustre																					
Forests, forest edges and clearings, hedges																					
Rosa sp.																					
cf *Seseli libanotis*																					
VARIA																					
Apiaceae																1					
Asteraceae																					
Brassicaceae																					
Bromus sp.																					
Cannabinaceae																					
Chenopodium sp.																					
Galium sp.																					
Lamiaceae																					
Lolium sp.																					
Papaver sp.																					
Poa sp.																					
Poaceae																					
Potentilla sp.																					
Rumex sp.																					
Indeterminata - endocarp																					
Indeterminata - fruitflesh																					
Indeterminata - coprolithes																					
Indeterminata - crusts																					
Indeterminata - seed/fruit																					

Surroundings of the temple complex																				
Chronology																				
Context	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**
Structure	**74**	**151**	**151**	**151**	**151**	**151**	**215**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**
US	03	01 1	01 2	01 3	11	10		A	B	C	D	E	F	G	H	I	J	K	L	M
Sample N°	BK39034	BK39041	BK39042	BK39043	BK39060	BK39061	BK39058	BK510001	BK510002	BK510003	BK510004	BK510005	BK510006	BK510007	BK510008	BK510009	BK510044	BK510045	BK510046	BK510047
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS
Volume sample	2000	5000	5500	5500	7000	9000	0	6000	6000	8000	7200	6000	7000	6000	3000	2000	3000	1600	6000	4000
Field	09	09	09	09	09	09	09	01	01	01	01	01	01	01	01	01	01	01	01	01
WATERLOGGED																				
CEREALS _ grain																				
Avena sativa/fatua																				
Cerealia - Testa					4	2	1													
CEREALS _ chaff																				
Hordeum vulgare - rachis																				
Hordeum sp. - rachis																				
Secale cereale - rachis																				
Triticum aestivum - rachis																				
Triticum cf aestivum/durum/turgidum - rachis																				
Triticum dicoccon - glume																				
Triticum cf *dicoccon* - glume																				
Triticum monococcum - glume																				
Triticum spelta - glume					1		1													
Triticum sp. - rachis																				
Triticum sp. - glume																				
Cerealia - glume	1																			
Cerealia - rachis																				
Panicum miliaceum - glume	1	2				1										1			1	
Setaria italica - glume																				
Panicum/Setaria - glume																	1			
NUTS																				
Corylus avellana	1			1			1										2		1	
Juglans regia	1					1					1						1	2	1	1
Pinus pinea																				
PULSES																				
Lens culinaris																				
Pisum sativum																				
Vicia faba																				
Fabaceae																				
SPICES																				
Anethum graveolens							1													
Apium graveolens	1				1	1	1													
Carum carvi																				
Coriandrum sativum	1			1	1															
Foeniculum vulgare						1														
Origanum vulgare																				
cf *Petroselinum crispum*																				
Pimpinella anisum																				
Piper nigrum																				
cf *Ruta graveolens*																				
Satureja hortensis					1	1														
cf *Thymus* sp. - stem																				
VEGETABLES AND SALADS																				
Amaranthus sp.	1			1		1			2	1								2		
Atriplex sp.																				
Beta vulgaris																				
Brassica cf *oleracea*																				
Brassica rapa/nigra																				
Brassica sp.																				
Brassica/Sinapis																				
Daucus carota																		1		
Lagenaria siceraria	1																			
Pastinaca sativa																				

Chronology																				
Context	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**
Structure	**74**	**151**	**151**	**151**	**151**	**151**	**215**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**
US	03	01 1	01 2	01 3	11	10		A	B	C	D	E	F	G	H	I	J	K	L	M
Sample N°	BK39034	BK39041	BK39042	BK39043	BK39060	BK39061	BK39058	BK510001	BK510002	BK510003	BK510004	BK510005	BK510006	BK510007	BK510008	BK510009	BK510044	BK510045	BK510046	BK510047
Portulaca oleracea						1														
FRUITS																				
Cucumis melo																				
Cucumis sativus																				
Cucumis melo/sativa - fragment																				
Cucumis melo/sativa	1																			
Ficus carica	2	2	3	3	2	2	1													
Fragaria vesca																			1	1
Malus domestica																				
Malus sylvestris/domestica																				
Pyrus sp. - stone cells			1	1		1											1			
Pyrus sp. - flower				1													2	1		2
Malus/Pyrus - pericarp					4	2	4													
Malus/Pyrus	1	2	2	2	4	3	3													1
Morus sp.																				
Olea europaea																				
Physalis alkekengi				1	1			1												
Prunus cf *avium*																				
Prunus avium/cerasus		1	1	2																
Prunus domestica	1	1	1	1																
Prunus domestica/insititia																		1		1
Prunus insititia																				
Prunus persica																				
Prunus spinosa																				
Prunus sp.	1	2	2	2																
Rubus caesius	1			1										1				1		
Rubus fruticosus	1	1	1																	
Rubus idaeus																				
Rubus sp.		1																		
Sambucus nigra/racemosa	1	2		1				2	1						1	1	1	1	2	2
Vitis vinifera			3															1	1	
OIL, DYE AND FIBRE PLANTS																				
Cannabis sativa																				
Carthamus tinctorius																				
cf *Isatis tinctoria*																				
Linum usitatissimum																				
Papaver somniferum																				
WEEDS OF WINTER CEREALS																				
cf *Adonis* sp.																				
Agrostemma githago	1			1	1	1	1									1			1	
Anthemis arvensis	1					1														
Bromus arvensis Type																				
Buglossoides arvensis																				
Fallopia convolvulus	1			1		1	1													
Galium aparine	1		1		1	1														
Silene gallica																				
Stachys annua/arvensis																				
Valerianella locusta																				
Valerianella cf *rimosa*																				
Valerianella rimosa																				
Valerianella sp.																				
Veronica hederifolia																				
Viola tricolor																				
Order Aperetalia_weeds of rather acidic/neutral soils																				
Aphanes arvensis																				
cf *Bromus secalinus*																				
Camelina sativa																				

Chronology																				
Context	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**
Structure	**74**	**151**	**151**	**151**	**151**	**151**	**215**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**
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Centaurea cf *cyanus*																				
Papaver argemone																				
Papaver dubium																				
Raphanus raphanistrum																				
Scleranthus sp. - capsule																				
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																				
Ajuga chamaepitys	1																			1
Bupleurum rotundifolium																				
Caucalis platycarpos	3																			
Euphorbia exigua																				
Galium spurium																				
Glaucium corniculatum																				
Myagrum perfoliatum	2																	1		
Nigella arvensis	1																			
Orlaya grandiflora						1														
Ranunculus arvensis	1																			
Scandix pecten-veneris																				
Silene cf *dichotoma*																				
Stachys annua								1										1		
Thymelaea passerina																				
Torilis arvensis																				
cf *Vaccaria pyramidata*																				
Valerianella dentata								1												
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																				
Aethusa cynapium			1																	
Anagallis arvensis/foemina	1																			
Arenaria serpyllifolia																				
Capsella bursa-pastoris															1					
Chenopodium album	2	1	1		1	1		1	1						1	1	1	1	2	2
Chenopodium ficifolium																				
Chenopodium foliosum																				
Chenopodium hybridum	1	1	1	1		1		1												1
Chenopodium murale			1	1																
Chenopodium polyspermum																				
Echinochloa crus-galli																				
Euphorbia helioscopia								1												1
Euphorbia platyphyllos																				
Fumaria officinalis																				
Fumaria sp.																				
Galeopsis cf *bifida*																				
Galeopsis bifida																				
Galeopsis ladanum																				
Galeopsis sp.														1						
Galeopsis cf *speciosa*																				
Galeopsis tetrahit																				
Galeopsis ladanum/segetum																				
cf *Heliotropium europaeum*																				
Lamium amplexicaule/purpureum																				
Lamium cf *purpureum*																				
Malva sylvestris																				
Mercurialis annua								1												
Poa annua																				
Polygonum lapathifolium/persicaria	1			1		1									2	1	1		1	
Polygonum persicaria																				
Portulaca sp.																				
Setaria verticillata/viridis																1				

Chronology																				
Context	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**
Structure	**74**	**151**	**151**	**151**	**151**	**151**	**215**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**
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Setaria cf *viridis* - glume																				
Solanum nigrum		1	1	1												1	2	2	3	3
Sonchus asper																				
Sonchus asper/oleraceus																				
Sonchus oleraceus																				
Stachys cf *arvensis*																				
Stellaria cf *media*																				
Stellaria media	1		1		1	2										1	2	2	2	2
Thlaspi arvense																		1		
Urtica urens	1																1	1		1
Verbena officinalis	1					1								1						1
Xanthium strumarium																				
PERENNIAL RUDERALS																				
Agropyron repens																				
Arctium lappa																				
Arctium minus																				
Arctium sp.																	1	2	1	
Bryonia dioica																				
Carduus crispus																				
Cerastium arvense																				
Chelidonium majus			1																	
cf *Chondrilla juncea*																				
Cirsium sp.																				
Cirsium/Carduus	1																			1
Conium maculatum								2	1		2	2		1	2	2	2	2	2	2
Convolvulus arvensis																				
Cruciata laevipes																				
Dipsacus cf *fullonum*																				
Fallopia dumetorum																				
Hyoscyamus niger	1																			
Lactuca serriola																				
Lamium album																				
Lapsana communis						1														
cf *Marrubium vulgare*																				
Onopordum acanthium																				
Plantago major						1									2	2	2		2	2
Poa compressa																				
Polygonum aviculare	1			1							1			2	2	1	2	1	2	2
Potentilla anserina																				
Ranunculus repens							1	1			1				1	3	3	3	4	4
Reseda sp.																				
Rumex conglomeratus - perianth																			1	1
Rumex crispus - perianth																				
Rumex obtusifolius - perianth																				
Rumex obtusifolius	1	1		1	1	1	1									1		3	3	3
Sambucus ebulus								3	2											
Saponaria cf *officinalis*																				
Silene alba																				
Urtica dioica						1										2	2	2	2	1
MEADOWS AND PASTURES																				
Achillea millefolium																				
Agrostis sp.																				
Ajuga reptans																				
Anthriscus sp.																				
Bromus cf *commutatus*																				
Bromus hordeaceus																				
Centaurea cf *jacea*																				
Centaurea sp.	1					1													1	

Chronology																				
Context	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**
Structure	**74**	**151**	**151**	**151**	**151**	**151**	**215**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**
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Cichorium intybus																			1	
Cirsium/Centaurea																				
cf *Cynosurus* sp.																				
Dactylis glomerata																				
Deschampsia caespitosa																				
Dianthus cf *armeria*																				
Festuca rubra/ovina																				
Festuca/Lolium																				
Holcus lanatus																				
Leontodon autumnalis																				
Leontodon sp.																				
Leucanthemum vulgare																				
Lolium perenne																				
Nardus stricta																				
Plantago lanceolata																				
Plantago cf *media*	1																			
Plantago media																				
Poa pratensis																				
Poa pratensis Type																				
Poa pratensis/trivialis																				
Potentilla erecta																				
Prunella vulgaris	1				1	2									1	1				1
Ranunculus acris													1							
Rhinanthus sp.													1							
Rumex acetosa - perianth																				
Rumex acetosella																				
Scabiosa sp.								1												
Silene vulgaris																				
Taraxacum officinale																1				
Thalictrum flavum																				
Trifolium pratense - capsule																				
Trifolium sp. - chalice																				
Trifolium sp.																				
Open swards																				
cf *Acinos arvensis*																				
Ajuga genevensis																				
Artemisia campestris																				
Centaurea scabiosa																				
Dianthus sp.																				
Euphorbia cf *seguieriana*																				
Euphrasia/Odontites																				
Gentiana cruciata																				
Medicago lupulina - pod																				
Medicago lupulina - pod with seeds																				
Medicago minima - pod																	1			
Odontites sp.																				
cf *Petrorhagia prolifera*																				
Prunella grandiflora																				
Scabiosa columbaria																				
Stachys recta																				
Teucrium botrys																				
Teucrium cf *chamaedrys*																				
Teucrium montanum																				
Trifolium cf *campestre* - chalice																				
Aquatic plants																				
Ceratophyllum cf *submersum*								2					3	2	2	2	2	1		
Lemna sp.														1						
Polygonum cf *amphibium*																				

Chronology																				
Context	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**
Structure	**74**	**151**	**151**	**151**	**151**	**151**	**215**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**
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Potamogeton sp.													2	3	3	3		1		
Ranunculus aquatilis																				
Sparganium sp.								4	3	2	2	1	2	3	2	2			1	
Zannichellia palustris																				
Reed fields																				
Alisma plantago-aquatica									2		1			2	3	3	2	1	2	1
Carex sp. - utriculus																				
Carex sp. bicarpellate						1		1	1	2	2	1	2						2	
Carex sp. tricarpellate	1				1	1		3	1	2	2		2				1	2		1
Cicuta virosa									2											
Eleocharis palustris																				
Eupatorium cannabinum																				
Galium cf *palustre*																				
Glyceria sp.																	2	2	2	1
Hippuris vulgaris																				
Iris cf *pseudacorus*																				
Juncus sp.																				
Lycopus europaeus														2	3	3	3	2	2	2
Mentha arvensis/aquatica																			1	
Nasturtium officinale									1	1	3	3	3	2	2	2	2	2	3	3
Oenanthe fistulosa								2											1	1
Oenanthe sp.																				
Poa palustris																				
Rorippa amphibia																				
Rumex cf aquaticus/hydrolapathum???																				
Salix sp. - veg. part																				
Schoenoplectus lacustris																				
Schoenoplectus sp.								3				1	2	3	2	2				
Riverbank plants (pioneer)																				
Alnus glutinosa - veg. part																				
Alnus sp. - veg part																				
Bidens tripartita						1											1	1		
Bidens sp.																				
Cyperus flavescens																				
Cyperus fuscus																				
Cyperus sp.																				
Myosoton aquaticum																				
Polygonum hydropiper						1			2			2					3	3		
Polygonum hydropiper/mite			1			1		1			1	2			2	2	1		2	3
Polygonum lapathifolium																				
Polygonum minus													1							
Polygonum mite																				
Polygonum mite/minus																				
Ranunculus flammula																				
Ranunculus sardous																				
Ranunculus sceleratus									2	2	1	1	1			1		1	1	1
Teucrium cf *scordium*																				
Wet meadows																				
cf *Euphorbia palustris*																				
Filipendula ulmaria																				
Linum catharticum																				
Lychnis flos-cuculi						1														
Scirpus sylvaticus																				
Stachys officinalis																				
Forests, forest edges and clearings, hedges																				
Abies alba - needle	1																			
Acer sp. - veg. part																				

Chronology																				
Context	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**
Structure	**74**	**151**	**151**	**151**	**151**	**151**	**215**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**
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Agrimonia eupatoria																				
Arctium cf *nemorosum*																				
Betula pendula - veg. part																				
Cornus sanguinea																				
Crataegus sp.	1		1	2																
Humulus lupulus																				
Quercus sp.																				
Rosa sp.																				
Solanum cf *dulcamara*																				
Stellaria cf *nemorum*																				
Torilis cf *japonica*																				
Viburnum lantana																				
Viburnum opulus																				
Calamintha sylvatica																				
Galium verum																				
Hypericum perforatum																				
Saponaria cf *ocymoides*																				
Silene nutans																				
Thalictrum minus																				
VARIA																				
Ajuga sp.																				
Allium sp.																				
Apiaceae																				
Asteraceae																				
Boraginaceae																				
Brassicaceae																				
Bromus sp.																				
Campanula sp.																				
Cannabinaceae																				
Carduus sp.																				
Caryophyllaceae																				
Cerastium sp.																				
Chenopodiaceae																				
Chenopodiaceae/Amaranthaceae																				
Chenopodium sp.				1		1														
Cichorium sp.																				
Crepis sp.																				
Cuscuta sp.																				
Cyperaceae		1			1															
Epilobium sp.																				
Euphorbia sp.	1			1																
Fallopia sp.																				
Filipendula sp.																				
Galium sp.	1			1			1							1						
Hypericum sp.																				
Inula sp.																				
Lamiaceae																				
Lamium sp.	1					1		1									1	1		
Liliaceae																				
Malva sp.																				
cf *Matricaria* sp.																				
Nasturtium sp.																				
Papaver sp.																				
Physalis/Solanum																				
Phyteuma sp.																				
Poa sp.																				

Chronology																				
Context	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**
Structure	**74**	**151**	**151**	**151**	**151**	**151**	**215**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**
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Poaceae																				
Poaceae	1					1												1	2	
Polygonaceae					1															
Polygonum sp.								1												
Potentilla sp.						1								1	1	2				
Primulaceae		1																		
Ranunculaceae																				
Ranunculus sp.																				
Rosaceae																				
Rumex sp. - perianth	1					1										1	2	3		
Sambucus sp.			1			1														
Satureja sp.																				
Scrophulariaceae																				
Silene sp.	1							1												
Sinapis sp.																				
Solanaceae																				
Solanum sp.	1																			
Sonchus sp.																				
Stachys sp.	1			1					1											
Stellaria graminea/palustris																				
Stellaria sp.																1				
Teucrium sp.																				
Tilia sp. - fruit																				
Torilis sp.																				
Veronica sp.																				
Vicia sp.																				
Viola sp.																				1
Indeterminata																				
CHARRED																				
CEREALS _ grain																				
Avena sp.																				
Hordeum vulgare																				
Hordeum sp.																				
Secale cereale																				
Triticum aestivum																				
Triticum cf *aestivum*																				
Triticum aestivum/durum/turgidum																		1		
Triticum dicoccon																				
Triticum spelta		1																		
Triticum sp.																				
Cerealia ohne Hirsen		1	1																	
Panicum miliaceum																				
Setaria italica																				
Panicum/Setaria																				
CEREALS _ chaff																				
Hordeum vulgare - rachis																				
Hordeum sp. - rachis																				
Secale cereale - rachis																				
Triticum aestivum - rachis																				
Triticum dicoccon - glume																				
Triticum monococcum - glume																				
Triticum spelta - glume																				
Triticum sp. - glume																				
NUTS																				
Corylus avellana																				
Juglans regia																				

Chronology																				
Context	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**
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cf *Pinus pinea* - cone fragment																				
Pinus pinea - cone fragment																				
Pinus pinea																				
Pinus pinea - scale																				
Pinus pinea - nut fragment																				
PULSES																				
Lathyrus sp.																				
Lens culinaris																				
Pisum sativum																				
Vicia faba																				
Vicia/Lathyrus																				
Fabaceae																				
SPICES																				
Apium graveolens																				
Satureja hortensis							1													
VEGETABLES AND SALADS																				
Allium sativum																				
cf *Allium sativum*																				
Atriplex sp.																				
Brassica sp.	1					1														
FRUITS																				
Ficus carica																				
Ficus carica - fruitflesh																				
Phoenix dactylifera - fruit																				
Phoenix dactylifera - stone																				
Phoenix dactylifera - fruitflesh																				
Phoenix dactylifera - stone fragment																				
Prunus domestica/insititia																				
Prunus persica																				
Sambucus nigra/racemosa																				
Vitis vinifera																				
OIL AND FIBRE PLANTS																				
WEEDS OF WINTER CEREALS																				
Galium aparine	1																			
Veronica hederifolia																				
Order Aperetalia_weeds of rather acidic/neutral soils																				
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																				
Avena fatua																				
Caucalis platycarpos																				
Galium cf *spurium*																				
Glaucium corniculatum																				
Myagrum perfoliatum																				
Vicia cf *angustifolia*																				
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																				
Chenopodium album																				
Chenopodium polyspermum																				
Galeospis ladanum/segetum																				
cf *Solanum nigrum*																				
Thlaspi arvense																				
PERENNIAL RUDERALS																				
Cruciata laevipes																				
Rumex obtusifolius			1																	
Silene alba																				
MEADOWS AND PASTURES																				
Centaurea sp.																				

Chronology																				
Context	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**
Structure	**74**	**151**	**151**	**151**	**151**	**151**	**215**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**
US	03	01 1	01 2	01 3	11	10		A	B	C	D	E	F	G	H	I	J	K	L	M
Sample N°	BK39034	BK39041	BK39042	BK39043	BK39060	BK39061	BK39058	BK510001	BK510002	BK510003	BK510004	BK510005	BK510006	BK510007	BK510008	BK510009	BK510044	BK510045	BK510046	BK510047
Festuca/Lolium																				
Galium boreale																				
Plantago lanceolata																				
Plantago media																				
Trifolium sp.																				
Aquatic plants																				
Sparganium sp.																				
Reed fields																				
cf *Alisma plantago-aquatica*																				
Carex sp. tricarpellate																				
Galium cf *palustre*																				
Riverbank plants (pioneer)																				
Teucrium scordium																				
Forests, forest edges and clearings, hedges																				
Abies alba - needle																				
Galium verum																				
cf *Humulus lupulus*																				
VARIA																				
Asperula sp.																				
Bromus sp.																				
Chenopodiaceae																				
Chenopodium sp.																				
Galium sp.																				
Poaceae	1																			
Rumex sp.																				
Sambucus sp.																				
Vicia sp.																				
Indeterminata - pastry																				
Indeterminata - bud																				
Indeterminata - amorphous object																				
Indeterminata - fruitflesh																				
Indeterminata - endocarp																				
Indeterminata - seed/fruit	1																			
MINERALISED																				
CEREALS _ grain																				
cf *Avena* sp.		1																		
Hordeum vulgare																				
Triticum spelta																				
Triticum sp.																				
Panicum miliaceum			2	2																
Setaria italica																				
Panicum/Setaria																				
Cerealia ohne Hirsen																				
CEREALS _ chaff																				
Hordeum vulgare - rachis																				
Triticum spelta - spikelet fork																				
Cerealia - ear																				
Cerealia - glume																				
Panicum miliaceum - glume																				
Setaria italica - glume																				
Panicum/Setaria - glume																				
PULSES																				
Lens culinaris		3	1	3																
Pisum sativum																				
Vicia faba		1	2	2																

Chronology																				
Context	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**
Structure	**74**	**151**	**151**	**151**	**151**	**151**	**215**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**
US	03	01 1	01 2	01 3	11	10		A	B	C	D	E	F	G	H	I	J	K	L	M
Sample N°	BK39034	BK39041	BK39042	BK39043	BK39060	BK39061	BK39058	BK510001	BK510002	BK510003	BK510004	BK510005	BK510006	BK510007	BK510008	BK510009	BK510044	BK510045	BK510046	BK510047
Fabaceae - fruitflesh																				
Fabaceae																				
FRUITS																				
Cucumis melo																				
Cucumis melo/sativa			1	1																
Ficus carica				1																
Fragaria vesca																				
Malus domestica																				
Malus sylvestris/domestica																				
Pyrus sp.																				
Malus/Pyrus			1	1																
Morus sp.																				
Physalis alkekengi																				
Prunus sp. - fragment					1															
Rubus caesius																				
Rubus sp. - inner																				
Sambucus nigra/racemosa																				
Vitis vinifera - fruitflesh																				
Vitis vinifera - aborted seed																				
Vitis vinifera		3		3																
SPICES																				
Anethum graveolens				1	1															
Apium graveolens																				
Carum carvi																				
Coriandrum sativum																				
Foeniculum vulgare																				
Nigella cf *sativa*																				
VEGETABLES AND SALADS																				
Atriplex sp.																				
Beta vulgaris																				
Brassica sp.																				
Daucus carota																				
Lagenaria siceraria																				
OIL AND FIBRE PLANTS																				
Linum usitatissimum																				
Papaver somniferum																				
WEEDS OF WINTER CEREALS																				
Agrostemma githago																				
Buglossoides arvensis																				
Fallopia convolvulus																				
Galium aparine																				
cf *Veronica hederifolia*																				
Order Aperetalia_weeds of rather acidic/neutral soils																				
Camelina sativa																				
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																				
Caucalis platycarpos																				
Galium spurium																				
Vaccaria pyramidata																				
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																				
Galeopsis cf *speciosa*																				
Polygonum lapathifolium/persicaria																				
Solanum nigrum																				
Sonchus oleraceus																				
Stellaria media																				
Thlaspi arvense																				

Chronology																				
Context	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**layer**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**	**basin**
Structure	**74**	**151**	**151**	**151**	**151**	**151**	**215**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**
US	03	01 1	01 2	01 3	11	10		A	B	C	D	E	F	G	H	I	J	K	L	M
Sample N°	BK39034	BK39041	BK39042	BK39043	BK39060	BK39061	BK39058	BK510001	BK510002	BK510003	BK510004	BK510005	BK510006	BK510007	BK510008	BK510009	BK510044	BK510045	BK510046	BK510047
PERENNIAL RUDERALS																				
Arctium sp.																				
Convolvulus arvensis																				
Hyoscyamus niger																				
Lapsana communis																				
MEADOWS AND PASTURES																				
Centaurea sp.																				
Rhinanthus sp.																				
Scabiosa sp.																				
Reed fields																				
Carex sp. tricarpellat																				
Galium palustre																				
Forests, forest edges and clearings, hedges																				
Rosa sp.																				
cf *Seseli libanotis*																				
VARIA																				
Apiaceae		1																		
Asteraceae																				
Brassicaceae																				
Bromus sp.																				
Cannabinaceae																				
Chenopodium sp.			1																	
Galium sp.																				
Lamiaceae																				
Lolium sp.																				
Papaver sp.			1																	
Poa sp.																				
Poaceae																				
Potentilla sp.																				
Rumex sp.																				
Indeterminata - endocarp																				
Indeterminata - fruitflesh																				
Indeterminata - coprolithes																				
Indeterminata - crusts																				
Indeterminata - seed/fruit																				

Surroundings of the temple complex																				
Chronology																				
Context	**drain**	**drain**	**well**	**palaeochannel**	**pot content**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**
Structure	**149**	**149**	**161**	**308**	**400**	**Son 2**	**Son 5**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**
US	04	02 C	10	01 A	Gefässinhalt		20	C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 20	40	41
Sample N°	BK510012	BK510039	BK510035	BK510041	BK510040	BK39001	BK39008	BK39015	BK39018	BK39019	BK39022	BK39023	BK39024	BK39026	BK39027	BK39033B	BK39033H	BK39036	BK39039	BK39044
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS
Volume sample	30000	10000	30000	12000	14000	5000	19000	4000	4000	3000	8000	3500	1500	6000	4000	9000	7000	7000	5000	13000
Field	01	01	01	01	01	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09
WATERLOGGED																				
CEREALS _ grain																				
Avena sativa/fatua																				
Cerealia - Testa												1				1				
CEREALS _ chaff																				
Hordeum vulgare - rachis																				
Hordeum sp. - rachis						1							3	3	1	3	3		1	1
Secale cereale - rachis														2	1		2			
Triticum aestivum - rachis																				
Triticum cf aestivum/durum/turgidum - rachis																				
Triticum dicoccon - glume														2	1	1	2			
Triticum cf *dicoccon* - glume																				
Triticum monococcum - glume																				
Triticum spelta - glume											1		1	3	1	1	3	1		
Triticum sp. - rachis															1					
Triticum sp. - glume													1			1			1	
Cerealia - glume												1			3					
Cerealia - rachis																3		1	3	1
Panicum miliaceum - glume	1					2		1				1	3	4	1	1	4	1	1	3
Setaria italica - glume																1	2			
Panicum/Setaria - glume																				
NUTS																				
Corylus avellana	3	1	4	2		1	1	2				1			1			1		1
Juglans regia	3		2			1														
Pinus pinea	1																			
PULSES																				
Lens culinaris																				
Pisum sativum																				
Vicia faba																				
Fabaceae																				
SPICES																				
Anethum graveolens												1			1					
Apium graveolens	1																			
Carum carvi																				
Coriandrum sativum				1											1			1		1
Foeniculum vulgare																				
Origanum vulgare																				
cf *Petroselinum crispum*																				
Pimpinella anisum																				
Piper nigrum																				
cf *Ruta graveolens*																				
Satureja hortensis	1																			
cf *Thymus* sp. - stem																				
VEGETABLES AND SALADS																				
Amaranthus sp.	2	2				1	1				1	1						1		
Atriplex sp.														1		1	1	1		
Beta vulgaris	1		1																	
Brassica cf *oleracea*																				
Brassica rapa/nigra																				
Brassica sp.																				
Brassica/Sinapis																				
Daucus carota			1															1		
Lagenaria siceraria	2																			
Pastinaca sativa																				

Chronology																				
Context	**drain**	**drain**	**well**	**palaeochannel**	**pot content**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**
Structure	**149**	**149**	**161**	**308**	**400**	**Son 2**	**Son 5**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**
US	04	02 C	10	01 A	Gefässinhalt		20	C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 20	40	41
Sample N°	BK510012	BK510039	BK510035	BK510041	BK510040	BK39001	BK39008	BK39015	BK39018	BK39019	BK39022	BK39023	BK39024	BK39026	BK39027	BK39033B	BK39033H	BK39036	BK39039	BK39044
Portulaca oleracea																				
FRUITS																				
Cucumis melo																				
Cucumis sativus																				
Cucumis melo/sativa - fragment	1																			
Cucumis melo/sativa																				
Ficus carica					2								1							1
Fragaria vesca																				
Malus domestica																				
Malus sylvestris/domestica																				
Pyrus sp. - stone cells																				
Pyrus sp. - flower	2																			
Malus/Pyrus - pericarp																				
Malus/Pyrus	1																			
Morus sp.																				
Olea europaea																				
Physalis alkekengi	1																			
Prunus cf *avium*																				
Prunus avium/cerasus	2																			
Prunus domestica																				
Prunus domestica/insititia	2		1																	
Prunus insititia																				
Prunus persica	2		2																	
Prunus spinosa	1																			
Prunus sp.															2					
Rubus caesius			1																	
Rubus fruticosus																				
Rubus idaeus																				
Rubus sp.			1				1								1					
Sambucus nigra/racemosa	3	3	3	1	3			1												
Vitis vinifera	1	1	1															1		
OIL, DYE AND FIBRE PLANTS																				
Cannabis sativa											1									
Carthamus tinctorius																				
cf *Isatis tinctoria*																				
Linum usitatissimum																				
Papaver somniferum																				
WEEDS OF WINTER CEREALS																				
cf *Adonis* sp.																				
Agrostemma githago	1					1						1	3	3	3	1	4	1	2	1
Anthemis arvensis													2	2	1	1	2	1		1
Bromus arvensis Type																				
Buglossoides arvensis																	1			
Fallopia convolvulus	2	2	1			1	1				1	1		1	1	1	1	1		
Galium aparine												1		1	1	1		1		
Silene gallica																				
Stachys annua/arvensis																				
Valerianella locusta																				
Valerianella cf *rimosa*																				
Valerianella rimosa														2						
Valerianella sp.																				
Veronica hederifolia																				
Viola tricolor																				
Order Aperetalia_weeds of rather acidic/neutral soils																				
Aphanes arvensis																				
cf *Bromus secalinus*																				
Camelina sativa														2		1				

Chronology																				
Context	**drain**	**drain**	**well**	**palaeochannel**	**pot content**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**
Structure	**149**	**149**	**161**	**308**	**400**	**Son 2**	**Son 5**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**
US	04	02 C	10	01 A	Gefässinhalt		20	C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 20	40	41
Sample N°	BK510012	BK510039	BK510035	BK510041	BK510040	BK39001	BK39008	BK39015	BK39018	BK39019	BK39022	BK39023	BK39024	BK39026	BK39027	BK39033B	BK39033H	BK39036	BK39039	BK39044
Centaurea cf *cyanus*																				
Papaver argemone													1	2			2			
Papaver dubium														1			2			
Raphanus raphanistrum																				
Scleranthus sp. - capsule																				
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																				
Ajuga chamaepitys							1				1	1			1	1	1			
Bupleurum rotundifolium																				
Caucalis platycarpos													2	2	1		3	1	1	1
Euphorbia exigua																				
Galium spurium																	1			
Glaucium corniculatum							1													
Myagrum perfoliatum			1		1	2	1	1		1	1							2		
Nigella arvensis																				
Orlaya grandiflora															1		2			
Ranunculus arvensis						2														
Scandix pecten-veneris																				
Silene cf *dichotoma*																				
Stachys annua	2													2			2			
Thymelaea passerina							1													
Torilis arvensis																				
cf *Vaccaria pyramidata*			1																	
Valerianella dentata												1	2	2	1	1		1		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																				
Aethusa cynapium										1										
Anagallis arvensis/foemina	1						1					1					2			1
Arenaria serpyllifolia																	1			
Capsella bursa-pastoris																				
Chenopodium album	2	1	3	2							2	1	2	3	1	1	2	1	1	1
Chenopodium ficifolium																				
Chenopodium foliosum																				
Chenopodium hybridum	1	1				1	1	1		1	2	1	1	2	1	1	2			1
Chenopodium murale																				
Chenopodium polyspermum																				
Echinochloa crus-galli																				
Euphorbia helioscopia							1										1			
Euphorbia platyphyllos																				
Fumaria officinalis																				
Fumaria sp.		1	1			1					1				1	1				
Galeopsis cf *bifida*			1																	
Galeopsis bifida													1	1						
Galeopsis ladanum																				
Galeopsis sp.	1			1		1							1			1	1	1		
Galeopsis cf *speciosa*																				
Galeopsis tetrahit																				
Galeopsis ladanum/segetum																				
cf *Heliotropium europaeum*		1																		
Lamium amplexicaule/purpureum																				
Lamium cf *purpureum*																				
Malva sylvestris														1						
Mercurialis annua		1			1		1													
Poa annua																				
Polygonum lapathifolium/persicaria	2		2											2		1		1	1	1
Polygonum persicaria																				
Portulaca sp.	1																			
Setaria verticillata/viridis			1											1						

Chronology																				
Context	**drain**	**drain**	**well**	**palaeochannel**	**pot content**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**
Structure	**149**	**149**	**161**	**308**	**400**	**Son 2**	**Son 5**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**
US	04	02 C	10	01 A	Gefässinhalt		20	C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 20	40	41
Sample N°	BK510012	BK510039	BK510035	BK510041	BK510040	BK39001	BK39008	BK39015	BK39018	BK39019	BK39022	BK39023	BK39024	BK39026	BK39027	BK39033B	BK39033H	BK39036	BK39039	BK39044
Setaria cf *viridis* - glume																				1
Solanum nigrum	3	2	2			1							2	3	1	1	3		1	
Sonchus asper																				
Sonchus asper/oleraceus																				
Sonchus oleraceus																				
Stachys cf *arvensis*																				
Stellaria cf *media*																				1
Stellaria media	2											1	2			1	1	1		
Thlaspi arvense	1										2			2		1	2			1
Urtica urens	1																	1		
Verbena officinalis			3											2			2	1		
Xanthium strumarium																	1	1	1	
PERENNIAL RUDERALS																				
Agropyron repens																				
Arctium lappa																				
Arctium minus																				
Arctium sp.																				
Bryonia dioica																		1		
Carduus crispus																				
Cerastium arvense																				
Chelidonium majus					4															
cf *Chondrilla juncea*																				
Cirsium sp.												1	1	1			1			
Cirsium/Carduus			1															1		
Conium maculatum				2																
Convolvulus arvensis																				
Cruciata laevipes																				
Dipsacus cf *fullonum*																				
Fallopia dumetorum																				
Hyoscyamus niger	1	2					1	1			1			2	1		1			
Lactuca serriola																				
Lamium album																				
Lapsana communis															1					
cf *Marrubium vulgare*																				
Onopordum acanthium																				
Plantago major			1																	
Poa compressa																				
Polygonum aviculare	2		2			1							2	1		1	1	1		
Potentilla anserina			1	1									1							
Ranunculus repens	3	2	2	2		1						1	2					1		1
Reseda sp.																				
Rumex conglomeratus - perianth													1							
Rumex crispus - perianth						1														
Rumex obtusifolius - perianth														2			1			
Rumex obtusifolius	3	1	3	2		1						1	1	2	1	1	2	1		1
Sambucus ebulus		2	3				1	1									1			
Saponaria cf *officinalis*																				
Silene alba																				
Urtica dioica	2																	1	1	
MEADOWS AND PASTURES																				
Achillea millefolium																				
Agrostis sp.																				
Ajuga reptans							1													
Anthriscus sp.																				
Bromus cf *commutatus*																				
Bromus hordeaceus																				
Centaurea cf *jacea*																				
Centaurea sp.				1									1							

Chronology																				
Context	**drain**	**drain**	**well**	**palaeochannel**	**pot content**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**
Structure	**149**	**149**	**161**	**308**	**400**	**Son 2**	**Son 5**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**
US	04	02 C	10	01 A	Gefässinhalt		20	C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 20	40	41
Sample N°	BK510012	BK510039	BK510035	BK510041	BK510040	BK39001	BK39008	BK39015	BK39018	BK39019	BK39022	BK39023	BK39024	BK39026	BK39027	BK39033B	BK39033H	BK39036	BK39039	BK39044
Cichorium intybus																		1		
Cirsium/Centaurea																				
cf *Cynosurus* sp.																				
Dactylis glomerata																				
Deschampsia caespitosa																				
Dianthus cf *armeria*																				
Festuca rubra/ovina																				
Festuca/Lolium																				
Holcus lanatus																				
Leontodon autumnalis																				
Leontodon sp.																				
Leucanthemum vulgare																1		1		
Lolium perenne																				
Nardus stricta																				
Plantago lanceolata																				
Plantago cf *media*																				
Plantago media																				
Poa pratensis																				
Poa pratensis Type																				
Poa pratensis/trivialis																				
Potentilla erecta																				
Prunella vulgaris				1		1						1	1					1	1	1
Ranunculus acris																				
Rhinanthus sp.															1			1		
Rumex acetosa - perianth																				
Rumex acetosella																				
Scabiosa sp.																				
Silene vulgaris																				
Taraxacum officinale																				
Thalictrum flavum																				
Trifolium pratense - capsule																				
Trifolium sp. - chalice																	1			
Trifolium sp.												1				1		1		1
Open swards																				
cf *Acinos arvensis*																	1			
Ajuga genevensis																				
Artemisia campestris																				
Centaurea scabiosa																				
Dianthus sp.																				
Euphorbia cf *seguieriana*																				
Euphrasia/Odontites																				
Gentiana cruciata																				
Medicago lupulina - pod																				
Medicago lupulina - pod with seeds						1												2		
Medicago minima - pod																				
Odontites sp.																				
cf *Petrorhagia prolifera*																	1			
Prunella grandiflora																				
Scabiosa columbaria																				
Stachys recta																				
Teucrium botrys																				
Teucrium cf *chamaedrys*			1														1	1		
Teucrium montanum																				
Trifolium cf *campestre* - chalice																				
Aquatic plants																				
Ceratophyllum cf *submersum*			2																	
Lemna sp.																				
Polygonum cf *amphibium*																				

Chronology																				
Context	**drain**	**drain**	**well**	**palaeochannel**	**pot content**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**
Structure	**149**	**149**	**161**	**308**	**400**	**Son 2**	**Son 5**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**
US	04	02 C	10	01 A	Gefässinhalt		20	C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 20	40	41
Sample N°	BK510012	BK510039	BK510035	BK510041	BK510040	BK39001	BK39008	BK39015	BK39018	BK39019	BK39022	BK39023	BK39024	BK39026	BK39027	BK39033B	BK39033H	BK39036	BK39039	BK39044
Potamogeton sp.	2		1										1							
Ranunculus aquatilis																				
Sparganium sp.	2		3																	
Zannichellia palustris				1																
Reed fields																				
Alisma plantago-aquatica	1		2	2																
Carex sp. - utriculus																		1		
Carex sp. bicarpellate				1			1						2				1	1	1	
Carex sp. tricarpellate	1	1	3	3		1	1		1			1	2	1	1			1	1	1
Cicuta virosa																				
Eleocharis palustris		1		2	1	1						1	1					1	1	1
Eupatorium cannabinum																				
Galium cf *palustre*																				
Glyceria sp.	2		2	3																
Hippuris vulgaris																				
Iris cf *pseudacorus*																				
Juncus sp.																				
Lycopus europaeus	3		2	2								1								
Mentha arvensis/aquatica																				
Nasturtium officinale	2		1																	
Oenanthe fistulosa																				
Oenanthe sp.																				
Poa palustris																				
Rorippa amphibia																				
Rumex cf aquaticus/hydrolapathum???																				
Salix sp. - veg. part																				
Schoenoplectus lacustris																				
Schoenoplectus sp.	1	1	2										1							
Riverbank plants (pioneer)																				
Alnus glutinosa - veg. part																				
Alnus sp. - veg part																				
Bidens tripartita																				
Bidens sp.																				
Cyperus flavescens																				
Cyperus fuscus																				
Cyperus sp.																				
Myosoton aquaticum																				
Polygonum hydropiper	2			3													1			
Polygonum hydropiper/mite	3		3										1					1		
Polygonum lapathifolium																		1		
Polygonum minus																	1			
Polygonum mite																				
Polygonum mite/minus																				
Ranunculus flammula																				
Ranunculus sardous													1							
Ranunculus sceleratus				1														1	1	
Teucrium cf *scordium*																				
Wet meadows																				
cf *Euphorbia palustris*																				
Filipendula ulmaria																				
Linum catharticum																				
Lychnis flos-cuculi			1															1	1	
Scirpus sylvaticus																				
Stachys officinalis																				
Forests, forest edges and clearings, hedges																				
Abies alba - needle															1				1	
Acer sp. - veg. part																				

Chronology																				
Context	**drain**	**drain**	**well**	**palaeochannel**	**pot content**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**
Structure	**149**	**149**	**161**	**308**	**400**	**Son 2**	**Son 5**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**
US	04	02 C	10	01 A	Gefässinhalt		20	C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 20	40	41
Sample N°	BK510012	BK510039	BK510035	BK510041	BK510040	BK39001	BK39008	BK39015	BK39018	BK39019	BK39022	BK39023	BK39024	BK39026	BK39027	BK39033B	BK39033H	BK39036	BK39039	BK39044
Agrimonia eupatoria																				
Arctium cf *nemorosum*																				
Betula pendula - veg. part						1														
Cornus sanguinea			2																	
Crataegus sp.																				
Humulus lupulus	1		1																	
Quercus sp.																			1	3
Rosa sp.																				
Solanum cf *dulcamara*												1								
Stellaria cf *nemorum*																				
Torilis cf *japonica*														2						
Viburnum lantana			1																	
Viburnum opulus																				
Calamintha sylvatica																				
Galium verum																				
Hypericum perforatum																	1			
Saponaria cf *ocymoides*																				
Silene nutans																				
Thalictrum minus													1							
VARIA																				
Ajuga sp.																				
Allium sp.																				
Apiaceae																				
Asteraceae																				
Boraginaceae																				
Brassicaceae																				
Bromus sp.																				
Campanula sp.																				
Cannabinaceae														1						
Carduus sp.													1							
Caryophyllaceae																				
Cerastium sp.																				
Chenopodiaceae																				
Chenopodiaceae/Amaranthaceae																				
Chenopodium sp.						2		1	1		2				1					
Cichorium sp.																				
Crepis sp.																	1			
Cuscuta sp.																				
Cyperaceae							1	1			1	1				1				
Epilobium sp.																				
Euphorbia sp.															1					
Fallopia sp.																				
Filipendula sp.																				
Galium sp.							1					1						1		
Hypericum sp.																				
Inula sp.																				
Lamiaceae																				1
Lamium sp.	1		1	1		2							1		1		1	1		
Liliaceae																				
Malva sp.																				
cf *Matricaria* sp.																				
Nasturtium sp.																				
Papaver sp.															1	1				1
Physalis/Solanum																				
Phyteuma sp.																				
Poa sp.																				

Chronology																				
Context	**drain**	**drain**	**well**	**palaeochannel**	**pot content**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**
Structure	**149**	**149**	**161**	**308**	**400**	**Son 2**	**Son 5**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**
US	04	02 C	10	01 A	Gefässinhalt		20	C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 20	40	41
Sample N°	BK510012	BK510039	BK510035	BK510041	BK510040	BK39001	BK39008	BK39015	BK39018	BK39019	BK39022	BK39023	BK39024	BK39026	BK39027	BK39033B	BK39033H	BK39036	BK39039	BK39044
Poaceae																				
Poaceae													2	2	1		3	1	1	1
Polygonaceae																				
Polygonum sp.																				
Potentilla sp.	1					1						1	1			1		1		
Primulaceae																				
Ranunculaceae																				
Ranunculus sp.																				
Rosaceae																				
Rumex sp. - perianth			2	1								1			1		2	1	1	1
Sambucus sp.										1	1									
Satureja sp.																				
Scrophulariaceae																				
Silene sp.			1								1					1	1			
Sinapis sp.																				
Solanaceae			1																	
Solanum sp.							1					1						1		
Sonchus sp.																				
Stachys sp.				1		1	1	1	1	1	2	2			1	1				
Stellaria graminea/palustris												1		1				1		
Stellaria sp.	1		1														1			
Teucrium sp.																				
Tilia sp. - fruit	1																			
Torilis sp.															1					
Veronica sp.																				
Vicia sp.																				
Viola sp.		1					1					1	1							
Indeterminata																				
CHARRED																				
CEREALS _ grain																				
Avena sp.																				
Hordeum vulgare			2				1													
Hordeum sp.																	1			
Secale cereale																				
Triticum aestivum																				
Triticum cf *aestivum*																				
Triticum aestivum/durum/turgidum		1	3																	
Triticum dicoccon																				
Triticum spelta																				
Triticum sp.	1	1																		
Cerealia ohne Hirsen													1							
Panicum miliaceum		1	2																	
Setaria italica																				
Panicum/Setaria																				
CEREALS _ chaff																				
Hordeum vulgare - rachis																				
Hordeum sp. - rachis																				
Secale cereale - rachis			1																	
Triticum aestivum - rachis			3																	
Triticum dicoccon - glume																				
Triticum monococcum - glume																				
Triticum spelta - glume																				
Triticum sp. - glume																				
NUTS																				
Corylus avellana																				
Juglans regia																				

Chronology																				
Context	**drain**	**drain**	**well**	**palaeochannel**	**pot content**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**
Structure	**149**	**149**	**161**	**308**	**400**	**Son 2**	**Son 5**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**
US	04	02 C	10	01 A	Gefässinhalt		20	C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 20	40	41
Sample N°	BK510012	BK510039	BK510035	BK510041	BK510040	BK39001	BK39008	BK39015	BK39018	BK39019	BK39022	BK39023	BK39024	BK39026	BK39027	BK39033B	BK39033H	BK39036	BK39039	BK39044
cf *Pinus pinea* - cone fragment																				
Pinus pinea - cone fragment																				
Pinus pinea																				
Pinus pinea - scale																				
Pinus pinea - nut fragment																				
PULSES																				
Lathyrus sp.																				
Lens culinaris			1																	
Pisum sativum																				
Vicia faba			1																	
Vicia/Lathyrus																				
Fabaceae																				
SPICES																				
Apium graveolens																				
Satureja hortensis																				
VEGETABLES AND SALADS																				
Allium sativum																				
cf *Allium sativum*																				
Atriplex sp.																				
Brassica sp.																				
FRUITS																				
Ficus carica																				
Ficus carica - fruitflesh																				
Phoenix dactylifera - fruit																				
Phoenix dactylifera - stone																				
Phoenix dactylifera - fruitflesh																				
Phoenix dactylifera - stone fragment																				
Prunus domestica/insititia																				
Prunus persica																				
Sambucus nigra/racemosa																				
Vitis vinifera																				
OIL AND FIBRE PLANTS																				
WEEDS OF WINTER CEREALS																				
Galium aparine											1							1		
Veronica hederifolia																				
Order Aperetalia_weeds of rather acidic/neutral soils																				
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																				
Avena fatua																				
Caucalis platycarpos																				
Galium cf *spurium*																				
Glaucium corniculatum																				
Myagrum perfoliatum																				
Vicia cf *angustifolia*																				
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																				
Chenopodium album																				
Chenopodium polyspermum																				
Galeospis ladanum/segetum																				
cf *Solanum nigrum*																				
Thlaspi arvense																				
PERENNIAL RUDERALS																				
Cruciata laevipes																				
Rumex obtusifolius			2																	
Silene alba																				
MEADOWS AND PASTURES																				
Centaurea sp.																				

Chronology																				
Context	**drain**	**drain**	**well**	**palaeochannel**	**pot content**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**
Structure	**149**	**149**	**161**	**308**	**400**	**Son 2**	**Son 5**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**
US	04	02 C	10	01 A	Gefässinhalt		20	C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 20	40	41
Sample N°	BK510012	BK510039	BK510035	BK510041	BK510040	BK39001	BK39008	BK39015	BK39018	BK39019	BK39022	BK39023	BK39024	BK39026	BK39027	BK39033B	BK39033H	BK39036	BK39039	BK39044
Festuca/Lolium																				
Galium boreale																				
Plantago lanceolata																				
Plantago media																				
Trifolium sp.																				
Aquatic plants																				
Sparganium sp.																				
Reed fields																				
cf *Alisma plantago-aquatica*																				
Carex sp. tricarpellate																				
Galium cf *palustre*																				
Riverbank plants (pioneer)																				
Teucrium scordium																				
Forests, forest edges and clearings, hedges																				
Abies alba - needle																				
Galium verum																				
cf *Humulus lupulus*																				
VARIA																				
Asperula sp.																				
Bromus sp.																				
Chenopodiaceae																				
Chenopodium sp.																				
Galium sp.																				
Poaceae																				
Rumex sp.																				
Sambucus sp.																				
Vicia sp.																				
Indeterminata - pastry																				
Indeterminata - bud																				
Indeterminata - amorphous object																				
Indeterminata - fruitflesh																				
Indeterminata - endocarp																				
Indeterminata - seed/fruit																				
MINERALISED																				
CEREALS _ grain																				
cf *Avena* sp.								1												
Hordeum vulgare																				
Triticum spelta																				
Triticum sp.																				
Panicum miliaceum																				
Setaria italica																				
Panicum/Setaria																				
Cerealia ohne Hirsen																				
CEREALS _ chaff																				
Hordeum vulgare - rachis																				
Triticum spelta - spikelet fork																				
Cerealia - ear																				
Cerealia - glume																				
Panicum miliaceum - glume																				
Setaria italica - glume																				
Panicum/Setaria - glume																				
PULSES																				
Lens culinaris																				
Pisum sativum																				
Vicia faba																				

Chronology																				
Context	**drain**	**drain**	**well**	**palaeochannel**	**pot content**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**
Structure	**149**	**149**	**161**	**308**	**400**	**Son 2**	**Son 5**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**
US	04	02 C	10	01 A	Gefässinhalt		20	C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 20	40	41
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Fabaceae - fruitflesh																				
Fabaceae																				
FRUITS																				
Cucumis melo																				
Cucumis melo/sativa																				
Ficus carica								1				1			1					
Fragaria vesca																				
Malus domestica																				
Malus sylvestris/domestica																				
Pyrus sp.																				
Malus/Pyrus																				
Morus sp.																				
Physalis alkekengi																				
Prunus sp. - fragment																				
Rubus caesius																				
Rubus sp. - inner																				
Sambucus nigra/racemosa																				
Vitis vinifera - fruitflesh																				
Vitis vinifera - aborted seed																				
Vitis vinifera																				
SPICES																				
Anethum graveolens																				
Apium graveolens																				
Carum carvi																				
Coriandrum sativum																				
Foeniculum vulgare																				
Nigella cf *sativa*																				
VEGETABLES AND SALADS																				
Atriplex sp.																				
Beta vulgaris																				
Brassica sp.																				
Daucus carota																				
Lagenaria siceraria																				
OIL AND FIBRE PLANTS																				
Linum usitatissimum																				
Papaver somniferum																				
WEEDS OF WINTER CEREALS																				
Agrostemma githago																				
Buglossoides arvensis																				
Fallopia convolvulus																				
Galium aparine																				
cf *Veronica hederifolia*																				
Order Aperetalia_weeds of rather acidic/neutral soils																				
Camelina sativa																				
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																				
Caucalis platycarpos																				
Galium spurium																				
Vaccaria pyramidata																				
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																				
Galeopsis cf *speciosa*																				
Polygonum lapathifolium/persicaria																				
Solanum nigrum																				
Sonchus oleraceus																				
Stellaria media																				
Thlaspi arvense																				

Chronology																				
Context	**drain**	**drain**	**well**	**palaeochannel**	**pot content**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**	**trench**
Structure	**149**	**149**	**161**	**308**	**400**	**Son 2**	**Son 5**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**
US	04	02 C	10	01 A	Gefässinhalt		20	C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 20	40	41
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PERENNIAL RUDERALS																				
Arctium sp.																				
Convolvulus arvensis																				
Hyoscyamus niger																				
Lapsana communis																				
MEADOWS AND PASTURES																				
Centaurea sp.																				
Rhinanthus sp.																				
Scabiosa sp.																				
Reed fields																				
Carex sp. tricarpellat																				
Galium palustre																				
Forests, forest edges and clearings, hedges																				
Rosa sp.																				
cf *Seseli libanotis*																				
VARIA																				
Apiaceae							1													
Asteraceae																				
Brassicaceae																				
Bromus sp.																				
Cannabinaceae																				
Chenopodium sp.																				
Galium sp.																				
Lamiaceae																				
Lolium sp.																				
Papaver sp.																				
Poa sp.																				
Poaceae																				
Potentilla sp.																				
Rumex sp.																				
Indeterminata - endocarp																				
Indeterminata - fruitflesh																				
Indeterminata - coprolithes																				
Indeterminata - crusts																				
Indeterminata - seed/fruit																				

Surroundings of the temple complex		
Chronology		
Context	**trench**	**trench**
Structure	**Son 27**	**Son 27**
US	C26	C27-28
Sample N°	BK39035	BK39037
Analysis	RS	RS
Volume sample	7000	6000
Field	09	09
WATERLOGGED		
CEREALS _ grain		
Avena sativa/fatua		
Cerealia - Testa		
CEREALS _ chaff		
Hordeum vulgare - rachis		
Hordeum sp. - rachis	1	2
Secale cereale - rachis		
Triticum aestivum - rachis		
Triticum cf aestivum/durum/turgidum - rachis		
Triticum dicoccon - glume		
Triticum cf *dicoccon* - glume		1
Triticum monococcum - glume		
Triticum spelta - glume	1	1
Triticum sp. - rachis		
Triticum sp. - glume		
Cerealia - glume		
Cerealia - rachis		1
Panicum miliaceum - glume	1	2
Setaria italica - glume		
Panicum/Setaria - glume		
NUTS		
Corylus avellana		
Juglans regia		
Pinus pinea		
PULSES		
Lens culinaris		
Pisum sativum		
Vicia faba		
Fabaceae		
SPICES		
Anethum graveolens		
Apium graveolens		
Carum carvi		
Coriandrum sativum		
Foeniculum vulgare		
Origanum vulgare		
cf *Petroselinum crispum*		
Pimpinella anisum		
Piper nigrum		
cf *Ruta graveolens*		
Satureja hortensis		
cf *Thymus* sp. - stem		
VEGETABLES AND SALADS		
Amaranthus sp.		1
Atriplex sp.		
Beta vulgaris		
Brassica cf *oleracea*		
Brassica rapa/nigra		
Brassica sp.		
Brassica/Sinapis		
Daucus carota		
Lagenaria siceraria		
Pastinaca sativa		

Chronology		
Context	**trench**	**trench**
Structure	**Son 27**	**Son 27**
US	C26	C27-28
Sample N°	BK39035	BK39037
Portulaca oleracea		
FRUITS		
Cucumis melo		
Cucumis sativus		
Cucumis melo/sativa - fragment		
Cucumis melo/sativa		
Ficus carica		
Fragaria vesca		
Malus domestica		
Malus sylvestris/domestica		
Pyrus sp. - stone cells		
Pyrus sp. - flower		
Malus/Pyrus - pericarp		
Malus/Pyrus		
Morus sp.		
Olea europaea		
Physalis alkekengi		
Prunus cf *avium*		
Prunus avium/cerasus		
Prunus domestica		
Prunus domestica/insititia		
Prunus insititia		
Prunus persica		
Prunus spinosa		
Prunus sp.		
Rubus caesius		1
Rubus fruticosus		
Rubus idaeus		
Rubus sp.		
Sambucus nigra/racemosa		
Vitis vinifera		
OIL, DYE AND FIBRE PLANTS		
Cannabis sativa		
Carthamus tinctorius		
cf *Isatis tinctoria*		
Linum usitatissimum		
Papaver somniferum		
WEEDS OF WINTER CEREALS		
cf *Adonis* sp.		
Agrostemma githago	1	3
Anthemis arvensis		1
Bromus arvensis Type		
Buglossoides arvensis		
Fallopia convolvulus	1	
Galium aparine		1
Silene gallica		
Stachys annua/arvensis		
Valerianella locusta		
Valerianella cf *rimosa*		1
Valerianella rimosa		
Valerianella sp.		
Veronica hederifolia		
Viola tricolor		
Order Aperetalia_weeds of rather acidic/neutral soils		
Aphanes arvensis		
cf *Bromus secalinus*		
Camelina sativa		

Chronology		
Context	trench	trench
Structure	Son 27	Son 27
US	C26	C27-28
Sample N°	BK39035	BK39037
Centaurea cf *cyanus*		
Papaver argemone		
Papaver dubium		
Raphanus raphanistrum		
Scleranthus sp. - capsule		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils		
Ajuga chamaepitys		
Bupleurum rotundifolium		
Caucalis platycarpos	2	1
Euphorbia exigua		
Galium spurium		
Glaucium corniculatum		
Myagrum perfoliatum		
Nigella arvensis		
Orlaya grandiflora		
Ranunculus arvensis		1
Scandix pecten-veneris		
Silene cf *dichotoma*		
Stachys annua		
Thymelaea passerina		
Torilis arvensis		
cf *Vaccaria pyramidata*		
Valerianella dentata		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS		
Aethusa cynapium		
Anagallis arvensis/foemina		
Arenaria serpyllifolia		
Capsella bursa-pastoris		
Chenopodium album	1	1
Chenopodium ficifolium		
Chenopodium foliosum		
Chenopodium hybridum	1	
Chenopodium murale		
Chenopodium polyspermum		
Echinochloa crus-galli		
Euphorbia helioscopia		
Euphorbia platyphyllos		
Fumaria officinalis		
Fumaria sp.		1
Galeopsis cf *bifida*		
Galeopsis bifida		
Galeopsis ladanum		
Galeopsis sp.		1
Galeopsis cf *speciosa*		
Galeopsis tetrahit		
Galeopsis ladanum/segetum		
cf *Heliotropium europaeum*		
Lamium amplexicaule/purpureum		
Lamium cf *purpureum*		
Malva sylvestris		
Mercurialis annua		
Poa annua		
Polygonum lapathifolium/persicaria	1	1
Polygonum persicaria		
Portulaca sp.		
Setaria verticillata/viridis		

Chronology		
Context	**trench**	**trench**
Structure	**Son 27**	**Son 27**
US	C26	C27-28
Sample N°	BK39035	BK39037
Setaria cf *viridis* - glume		
Solanum nigrum		1
Sonchus asper		
Sonchus asper/oleraceus		
Sonchus oleraceus		
Stachys cf *arvensis*		
Stellaria cf *media*		
Stellaria media	1	
Thlaspi arvense		
Urtica urens	1	
Verbena officinalis	1	
Xanthium strumarium		
PERENNIAL RUDERALS		
Agropyron repens		
Arctium lappa		
Arctium minus		
Arctium sp.		
Bryonia dioica		
Carduus crispus		
Cerastium arvense		
Chelidonium majus		
cf *Chondrilla juncea*		
Cirsium sp.		
Cirsium/Carduus	1	
Conium maculatum		
Convolvulus arvensis		
Cruciata laevipes		
Dipsacus cf *fullonum*		
Fallopia dumetorum		
Hyoscyamus niger		
Lactuca serriola		
Lamium album		
Lapsana communis		1
cf *Marrubium vulgare*		
Onopordum acanthium		
Plantago major		
Poa compressa		
Polygonum aviculare		1
Potentilla anserina		
Ranunculus repens	1	1
Reseda sp.		
Rumex conglomeratus - perianth		
Rumex crispus - perianth		
Rumex obtusifolius - perianth		
Rumex obtusifolius	1	2
Sambucus ebulus		
Saponaria cf *officinalis*		
Silene alba		
Urtica dioica		
MEADOWS AND PASTURES		
Achillea millefolium		
Agrostis sp.		
Ajuga reptans		
Anthriscus sp.		
Bromus cf *commutatus*		
Bromus hordeaceus		
Centaurea cf *jacea*		
Centaurea sp.		

Chronology		
Context	**trench**	**trench**
Structure	**Son 27**	**Son 27**
US	C26	C27-28
Sample N°	BK39035	BK39037
Cichorium intybus		
Cirsium/Centaurea		
cf *Cynosurus* sp.		
Dactylis glomerata		
Deschampsia caespitosa		
Dianthus cf *armeria*		
Festuca rubra/ovina		
Festuca/Lolium		
Holcus lanatus		
Leontodon autumnalis		
Leontodon sp.		
Leucanthemum vulgare		
Lolium perenne		
Nardus stricta		
Plantago lanceolata		
Plantago cf *media*		
Plantago media		
Poa pratensis		
Poa pratensis Type		
Poa pratensis/trivialis		
Potentilla erecta		
Prunella vulgaris	1	
Ranunculus acris		
Rhinanthus sp.		
Rumex acetosa - perianth		
Rumex acetosella		
Scabiosa sp.		
Silene vulgaris		
Taraxacum officinale		1
Thalictrum flavum		
Trifolium pratense - capsule		
Trifolium sp. - chalice		
Trifolium sp.		
Open swards		
cf *Acinos arvensis*		
Ajuga genevensis		
Artemisia campestris		
Centaurea scabiosa		
Dianthus sp.		
Euphorbia cf *seguieriana*		
Euphrasia/Odontites		
Gentiana cruciata		
Medicago lupulina - pod		
Medicago lupulina - pod with seeds		
Medicago minima - pod		
Odontites sp.		
cf *Petrorhagia prolifera*		
Prunella grandiflora		
Scabiosa columbaria		
Stachys recta		
Teucrium botrys		
Teucrium cf *chamaedrys*		
Teucrium montanum		
Trifolium cf *campestre* - chalice		
Aquatic plants		
Ceratophyllum cf *submersum*		
Lemna sp.		
Polygonum cf *amphibium*		

Chronology		
Context	**trench**	**trench**
Structure	**Son 27**	**Son 27**
US	C26	C27-28
Sample N°	BK39035	BK39037
Potamogeton sp.		
Ranunculus aquatilis		
Sparganium sp.		
Zannichellia palustris		
Reed fields		
Alisma plantago-aquatica		
Carex sp. - utriculus		1
Carex sp. bicarpellate		
Carex sp. tricarpellate	1	
Cicuta virosa		
Eleocharis palustris		1
Eupatorium cannabinum		
Galium cf *palustre*		
Glyceria sp.		
Hippuris vulgaris		
Iris cf *pseudacorus*		
Juncus sp.		
Lycopus europaeus		
Mentha arvensis/aquatica		
Nasturtium officinale		
Oenanthe fistulosa		
Oenanthe sp.		
Poa palustris		
Rorippa amphibia		
Rumex cf aquaticus/hydrolapathum???		
Salix sp. - veg. part		
Schoenoplectus lacustris		
Schoenoplectus sp.		1
Riverbank plants (pioneer)		
Alnus glutinosa - veg. part		
Alnus sp. - veg part		
Bidens tripartita		
Bidens sp.		
Cyperus flavescens		
Cyperus fuscus		
Cyperus sp.		
Myosoton aquaticum		
Polygonum hydropiper		
Polygonum hydropiper/mite	1	
Polygonum lapathifolium		
Polygonum minus	1	
Polygonum mite		
Polygonum mite/minus		
Ranunculus flammula		
Ranunculus sardous		
Ranunculus sceleratus		
Teucrium cf *scordium*		
Wet meadows		
cf *Euphorbia palustris*		
Filipendula ulmaria		
Linum catharticum		
Lychnis flos-cuculi		
Scirpus sylvaticus		
Stachys officinalis		
Forests, forest edges and clearings, hedges		
Abies alba - needle		
Acer sp. - veg. part		

Chronology		
Context	trench	trench
Structure	Son 27	Son 27
US	C26	C27-28
Sample N°	BK39035	BK39037
Agrimonia eupatoria		
Arctium cf *nemorosum*		
Betula pendula - veg. part		
Cornus sanguinea		
Crataegus sp.		
Humulus lupulus		
Quercus sp.		
Rosa sp.		
Solanum cf *dulcamara*		
Stellaria cf *nemorum*		
Torilis cf *japonica*		
Viburnum lantana		
Viburnum opulus		
Calamintha sylvatica		
Galium verum		
Hypericum perforatum		
Saponaria cf *ocymoides*		
Silene nutans		
Thalictrum minus		
VARIA		
Ajuga sp.		
Allium sp.		
Apiaceae		
Asteraceae		
Boraginaceae		
Brassicaceae		
Bromus sp.		
Campanula sp.		
Cannabinaceae		
Carduus sp.	1	
Caryophyllaceae		
Cerastium sp.		
Chenopodiaceae		
Chenopodiaceae/Amaranthaceae		
Chenopodium sp.		
Cichorium sp.		
Crepis sp.		
Cuscuta sp.		
Cyperaceae		1
Epilobium sp.		
Euphorbia sp.		
Fallopia sp.		
Filipendula sp.		
Galium sp.		1
Hypericum sp.		
Inula sp.		
Lamiaceae		
Lamium sp.		
Liliaceae		
Malva sp.	1	
cf *Matricaria* sp.		
Nasturtium sp.		
Papaver sp.		
Physalis/Solanum		
Phyteuma sp.		
Poa sp.		

Chronology		
Context	trench	trench
Structure	Son 27	Son 27
US	C26	C27-28
Sample N°	BK39035	BK39037
Poaceae		
Poaceae	1	1
Polygonaceae		
Polygonum sp.		
Potentilla sp.		
Primulaceae		
Ranunculaceae		
Ranunculus sp.		
Rosaceae		
Rumex sp. - perianth		1
Sambucus sp.		
Satureja sp.		
Scrophulariaceae		
Silene sp.		
Sinapis sp.		
Solanaceae		
Solanum sp.	1	
Sonchus sp.		
Stachys sp.		
Stellaria graminea/palustris		
Stellaria sp.		
Teucrium sp.		
Tilia sp. - fruit		
Torilis sp.		
Veronica sp.		
Vicia sp.		
Viola sp.	1	
Indeterminata		
CHARRED		
CEREALS _ grain		
Avena sp.		
Hordeum vulgare		
Hordeum sp.		
Secale cereale		
Triticum aestivum		
Triticum cf *aestivum*		
Triticum aestivum/durum/turgidum		
Triticum dicoccon		
Triticum spelta		
Triticum sp.		
Cerealia ohne Hirsen		
Panicum miliaceum		
Setaria italica		
Panicum/Setaria		
CEREALS _ chaff		
Hordeum vulgare - rachis		
Hordeum sp. - rachis		
Secale cereale - rachis		
Triticum aestivum - rachis		
Triticum dicoccon - glume		
Triticum monococcum - glume		
Triticum spelta - glume		
Triticum sp. - glume		
NUTS		
Corylus avellana		
Juglans regia		

Chronology		
Context	**trench**	**trench**
Structure	**Son 27**	**Son 27**
US	C26	C27-28
Sample N°	BK39035	BK39037
cf *Pinus pinea* - cone fragment		
Pinus pinea - cone fragment		
Pinus pinea		
Pinus pinea - scale		
Pinus pinea - nut fragment		
PULSES		
Lathyrus sp.		
Lens culinaris		
Pisum sativum		
Vicia faba		
Vicia/Lathyrus		
Fabaceae		
SPICES		
Apium graveolens		
Satureja hortensis		
VEGETABLES AND SALADS		
Allium sativum		
cf *Allium sativum*		
Atriplex sp.		
Brassica sp.		
FRUITS		
Ficus carica		
Ficus carica - fruitflesh		
Phoenix dactylifera - fruit		
Phoenix dactylifera - stone		
Phoenix dactylifera - fruitflesh		
Phoenix dactylifera - stone fragment		
Prunus domestica/insititia		
Prunus persica		
Sambucus nigra/racemosa		
Vitis vinifera		
OIL AND FIBRE PLANTS		
WEEDS OF WINTER CEREALS		
Galium aparine		
Veronica hederifolia		
Order Aperetalia_weeds of rather acidic/neutral soils		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils		
Avena fatua		
Caucalis platycarpos		
Galium cf *spurium*		
Glaucium corniculatum		
Myagrum perfoliatum		
Vicia cf *angustifolia*		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS		
Chenopodium album		
Chenopodium polyspermum		
Galeospis ladanum/segetum		
cf *Solanum nigrum*		
Thlaspi arvense		
PERENNIAL RUDERALS		
Cruciata laevipes		
Rumex obtusifolius		
Silene alba		
MEADOWS AND PASTURES		
Centaurea sp.		

Chronology		
Context	**trench**	**trench**
Structure	**Son 27**	**Son 27**
US	C26	C27-28
Sample N°	BK39035	BK39037
Festuca/Lolium		
Galium boreale		
Plantago lanceolata		
Plantago media		
Trifolium sp.		
Aquatic plants		
Sparganium sp.		
Reed fields		
cf *Alisma plantago-aquatica*		
Carex sp. tricarpellate		
Galium cf *palustre*		
Riverbank plants (pioneer)		
Teucrium scordium		
Forests, forest edges and clearings, hedges		
Abies alba - needle		
Galium verum		
cf *Humulus lupulus*		
VARIA		
Asperula sp.		
Bromus sp.		
Chenopodiaceae		
Chenopodium sp.		
Galium sp.		
Poaceae		
Rumex sp.		
Sambucus sp.		
Vicia sp.		
Indeterminata - pastry		
Indeterminata - bud		
Indeterminata - amorphous object		
Indeterminata - fruitflesh		
Indeterminata - endocarp		
Indeterminata - seed/fruit		
MINERALISED		
CEREALS _ grain		
cf *Avena* sp.		
Hordeum vulgare		
Triticum spelta		
Triticum sp.		
Panicum miliaceum		
Setaria italica		
Panicum/Setaria		
Cerealia ohne Hirsen		
CEREALS _ chaff		
Hordeum vulgare - rachis		
Triticum spelta - spikelet fork		
Cerealia - ear		
Cerealia - glume		
Panicum miliaceum - glume		
Setaria italica - glume		
Panicum/Setaria - glume		
PULSES		
Lens culinaris		
Pisum sativum		
Vicia faba		

Chronology		
Context	**trench**	**trench**
Structure	**Son 27**	**Son 27**
US	C26	C27-28
Sample N°	BK39035	BK39037
Fabaceae - fruitflesh		
Fabaceae		
FRUITS		
Cucumis melo		
Cucumis melo/sativa		
Ficus carica		
Fragaria vesca		
Malus domestica		
Malus sylvestris/domestica		
Pyrus sp.		
Malus/Pyrus		
Morus sp.		
Physalis alkekengi		
Prunus sp. - fragment		
Rubus caesius		
Rubus sp. - inner		
Sambucus nigra/racemosa		
Vitis vinifera - fruitflesh		
Vitis vinifera - aborted seed		
Vitis vinifera		
SPICES		
Anethum graveolens		
Apium graveolens		
Carum carvi		
Coriandrum sativum		
Foeniculum vulgare		
Nigella cf *sativa*		
VEGETABLES AND SALADS		
Atriplex sp.		
Beta vulgaris		
Brassica sp.		
Daucus carota		
Lagenaria siceraria		
OIL AND FIBRE PLANTS		
Linum usitatissimum		
Papaver somniferum		
WEEDS OF WINTER CEREALS		
Agrostemma githago		
Buglossoides arvensis		
Fallopia convolvulus		
Galium aparine		
cf *Veronica hederifolia*		
Order Aperetalia_weeds of rather acidic/neutral soils		
Camelina sativa		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils		
Caucalis platycarpos		
Galium spurium		
Vaccaria pyramidata		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS		
Galeopsis cf *speciosa*		
Polygonum lapathifolium/persicaria		
Solanum nigrum		
Sonchus oleraceus		
Stellaria media		
Thlaspi arvense		

Chronology		
Context	**trench**	**trench**
Structure	**Son 27**	**Son 27**
US	C26	C27-28
Sample N°	BK39035	BK39037
PERENNIAL RUDERALS		
Arctium sp.		
Convolvulus arvensis		
Hyoscyamus niger		
Lapsana communis		
MEADOWS AND PASTURES		
Centaurea sp.		
Rhinanthus sp.		
Scabiosa sp.		
Reed fields		
Carex sp. tricarpellat		
Galium palustre		
Forests, forest edges and clearings, hedges		
Rosa sp.		
cf *Seseli libanotis*		
VARIA		
Apiaceae		
Asteraceae		
Brassicaceae		
Bromus sp.		
Cannabinaceae		
Chenopodium sp.		
Galium sp.		
Lamiaceae		
Lolium sp.		
Papaver sp.		
Poa sp.		
Poaceae		
Potentilla sp.		
Rumex sp.		
Indeterminata - endocarp		
Indeterminata - fruitflesh		
Indeterminata - coprolithes		
Indeterminata - crusts		
Indeterminata - seed/fruit		

Table 2.a Semi-quantitative data of the main archaeobotanical analysis of the Roman civil agglomeration Oedenburg/Biesheim-Kunheim. Civil East.

Civil East																					
Chronology	**Horizon 1**																				
Context	**Pit**																				
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3	P4	P6	P7	P8	P9	P10	P11
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004009**	**BK004010**	**BK004011**
Volume	5000	5000	5000	4000	7000	7000	5000	5000	4000	4000	8000	7000	8000	8000	1000	2500	4000	6000	2000	3500	7000
Analysis	RS	RS	RS	RS	RS	RS	FU	RS	FU	RS	RS	RS	FU	FU	FU	FU	FU	FU	FU	FU	FU
WATERLOGGED																					
CEREALS _ grain																					
Avena sativa/fatua						1															
Cerealia - Testa													4	3				3			
Panicum miliaceum									3									4			
Setaria italica																					
Panicum/Setaria																		2			
CEREALS _ chaff																					
Hordeum vulgare - rachis							4		2												
Hordeum sp. - rachis	2		1															2			
Triticum dicoccon - glume base																					
Triticum dicoccon - spikelet fork																		4			
Triticum dicoccon - glume			1																		
Triticum cf *dicoccon* - glume																					
Triticum dicoccon/spelta - glume																					
Triticum monococcum - glume base																					
Triticum monococcum - spikelet fork																	3	1			
Triticum monococcum - glume																					
Triticum cf *monococcum* - spikelet fork																					
Triticum cf *monococcum* - glume																					
Triticum spelta - glume base																					
Triticum spelta - spikelet fork							2											4			
Triticum spelta - glume				1		1	3						2				3	2			
Triticum sp. - spikelet fork									3												
Triticum sp. - glume	2	2		1	2		4		4												
Cerealia - rachis									4												
Cerealia ohne Hirsen - glume						2		1	4												
Panicum miliaceum - glume		1					3		4				3					2			
Setaria italica - glume																					
Panicum/Setaria - glume																					
NUTS																					
Corylus avellana							2				1		2	1				3			4
Juglans regia						1		2										3			
PULSES																					
Lens culinaris													3								
Pisum sativum													2								
Pisum cf *sativum*														2							
Vicia faba																					
Fabaceae						1		2	2									1			
SPICES																					
Anethum graveolens							2				1		4					3			
Apium graveolens				1					3			2	3	3				4			
Carum carvi																		3			
Coriandrum sativum		1							3		2	1	4	4			4	4		3	3
Foeniculum vulgare																					
Origanum vulgare																		2			
cf *Petroselinum crispum*																					
Pimpinella anisum													2								
cf *Piper nigrum*																					
Piper nigrum														3							
cf *Ruta graveolens*																					
Satureja hortensis									3												
VEGETABLES AND SALADS																					
Amaranthus sp.									3		1	1	4	5	1		5	3		4	4
Atriplex sp. - perianth																					
Atriplex sp.									2			1									
Beta vulgaris																					
Brassica cf *oleracea*																					
Brassica rapa/nigra																					
Brassica sp.					2	1			4			1	2								
Brassica/Sinapis																					

Chronology	Horizon 1																				
Context	**Pit**																				
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3	P4	P6	P7	P8	P9	P10	P11
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004009**	**BK004010**	**BK004011**
Daucus carota					1		3		2					3	1						
Lagenaria siceraria						1															1
Pastinaca sativa																					
Portulaca oleracea							3														
FRUITS																					
Cucumis melo																					
Cucumis sativus																					
Cucumis melo/sativa																					
Ficus carica											2	4	5	5	2	4	4	4	3	4	5
Fragaria vesca													4					3			
Malus domestica																		4			
Malus sylvestris/domestica																					
Malus/Pyrus - fragment																					
Malus/Pyrus - seed base													4	4				1			
Malus/Pyrus - pericarp												1	4	3			5	4			
Malus/Pyrus											2	4	4	4		3	4	3	2	3	4
Pyrus sp.																					
Pyrus sp. - stone cells																					
Pyrus sp. - flower											2	2		3							
Morus sp.																					
Olea europaea																		2		1	
Physalis alkekengi											3	2	4	4		4	4	1	4	4	4
Prunus cf *avium*													4	3			3	4	2	3	3
Prunus avium/cerasus												1									
Prunus cf *domestica*													4								2
Prunus domestica												2									
Prunus domestica/insititia													4		1		3	4			3
Prunus insititia													3	3					1	2	2
Prunus persica													2								
Prunus cf *spinosa*																					
Prunus spinosa												3	3	2	1		2	2			1
Prunus sp.											1		4	4	2	4	4	3	3	4	4
Rubus caesius												1	4	4			4	3			4
Rubus cf *fruticosus*																					
Rubus fruticosus													4	4		3		2			4
Rubus idaeus													4	4			3	2			4
Rubus sp.																			2	3	
Sambucus nigra/racemosa											2		2			4			3		
Vitis vinifera - aborted seed																					
Vitis vinifera											3	3	5	4		4	4	3	2	4	3
OIL, DYE AND FIBRE PLANTS																					
Cannabis sativa																					
cf *Isatis tinctoria*																					
Linum usitatissimum																		1			4
Papaver cf *somniferum*																					
Papaver somniferum									2									1			3
WEEDS OF WINTER CEREALS																					
Adonis sp.											1										
Agrostemma githago	3	2	1	2	2	3	3	2	4				3				4	3			
Anthemis arvensis							4		4												
Bromus arvensis Type									4												
Buglossoides arvensis																					
Fallopia convolvulus			1				3		3		1										3
Galium aparine	2	2	2		2		3		3												
Silene gallica																					
Stachys annua/arvensis																					
Valerianella locusta																					
Valerianella rimosa				2																	
Veronica hederifolia																					
Viola tricolor																					
Order Aperetalia_weeds of rather acidic/neutral soils																					
Aphanes arvensis																					
cf *Bromus secalinus*																					
Camelina sativa - pod																					

Chronology	**Horizon 1**																				
Context	**Pit**																				
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3	P4	P6	P7	P8	P9	P10	P11
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004009**	**BK004010**	**BK004011**
Camelina sativa																					
Camelina cf *sativa*																					
Centaurea cf *cyanus*																					
Centaurea cyanus														3							
Papaver argemone							3		3												
Papaver dubium																					
Raphanus raphanistrum																					
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																					
Ajuga chamaepitys													2								
Bupleurum rotundifolium									2												
Caucalis platycarpos	3	3	2	1	2		3		2												
Galium spurium									3												
Glaucium corniculatum																					
Myagrum perfoliatum							3		3		2	2		3				3			
Myosoton aquaticum			1	1					3												
Orlaya grandiflora						1		1													
Ranunculus arvensis		1			1													2			
Scandix pecten-veneris																					
Stachys annua		1									1	1									
Torilis arvensis																					
Vaccaria pyramidata																					
Valerianella dentata							2														
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																					
Aethusa cynapium												1									
Anagallis arvensis/foemina			1				2				2	1		3				1		3	3
Arenaria serpyllifolia							4		3												
Atriplex/Chenopodium																					
Capsella bursa-pastoris							3														
Chenopodium album	3	3	2	2	3		5		4		3	2	4	4			4	1		3	4
Chenopodium ficifolium																					
Chenopodium cf *ficifolium*																					
Chenopodium foliosum																					
Chenopodium hybridum				1	1				2		2	2	3	4	1	3		1			4
Chenopodium murale																					
Chenopodium polyspermum																					
Echinochloa crus-galli													2								
Euphorbia helioscopia																					
Fumaria officinalis																2					
Fumaria sp.																					
Galeopsis bifida																					
Galeopsis ladanum																					
Galeopsis sp.							3		3												
Heliotropium sp.		1																			
Lamium amplexicaule/purpureum																					
Lamium cf *purpureum*																					
Malva sylvestris									2												
Mercurialis annua																					
Poa annua							4		3												
Polygonum lapathifolium/persicaria	1						3														
Polygonum persicaria									3												
Portulaca sp.																					
Setaria verticillata/viridis																					
Solanum nigrum									2												
Sonchus asper							4														
Sonchus asper/oleraceus	1		1	1	1				2												
Sonchus oleraceus																					
Stachys cf *arvensis*																					
Stellaria media	1	1	1				4		4				3	3			1	1		3	
Thlaspi arvense				2									3							3	
Urtica urens							2				1		3								
Verbena officinalis																					
PERENNIAL RUDERALS																					
Agropyron repens																					

Chronology	**Horizon 1**																				
Context	**Pit**																				
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3	P4	P6	P7	P8	P9	P10	P11
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004009**	**BK004010**	**BK004011**
Arctium lappa																					
Arctium minus																					
Arctium sp.				1																	
Bryonia dioica																					
Carduus crispus																					
Cerastium arvense																					
Chelidonium majus																					
cf *Chondrilla juncea*																					
Cirsium sp.			1		1		3				1			3			3		2		
Cirsium/Carduus	1	1																			
Conium maculatum												1									
Convolvulus arvensis																					
Cruciata laevipes																					
Dipsacus cf *fullonum*																					
Fallopia dumetorum									2												
Hyoscyamus niger												1						1			3
Lamium cf *album*																					
Lamium album																					
Lapsana communis	2				1		2		2				3								
cf *Marrubium vulgare*																					
Onopordum acanthium																					
Plantago major							4		4												
Poa compressa							4		3												
Polygonum cf *aviculare*																					
Polygonum aviculare				1	1		3		3						1						3
Potentilla anserina									2												
Ranunculus repens		2	3	2			4		4			1									
Reseda sp.		1																			
Rumex conglomeratus - perianth					2																
Rumex conglomeratus - tubercle							3														
Rumex cf *conglomeratus* - perianth																					
Rumex cf *crispus*																					
Rumex crispus - perianth					1				3												
Rumex crispus - tubercle							3		3												
Rumex obtusifolius - perianth																					
Rumex obtusifolius	3	3	2	2	3		4		4		2	2									
Sambucus cf *ebulus*																					
Sambucus ebulus																					
Saponaria officinalis																					
Saponaria cf *officinalis*																					
Silene alba																					
Urtica dioica							3						3					1			
MEADOWS AND PASTURES																					
Achillea millefolium									4												
Agrostis sp.							4		4												
Ajuga cf *reptans*																					
Ajuga reptans												1									
Anthriscus sp.																					
Bromus cf *commutatus*							4		4												
Bromus hordeaceus							3		4												
Centaurea cf *jacea*																					
Centaurea sp.			1			2	3		3												
Cichorium intybus																					
Cirsium/Centaurea																					
cf *Cynosurus* sp.																					
Dactylis glomerata									3												
Deschampsia caespitosa							3		2												
Dianthus cf *armeria*																					
Festuca rubra/ovina							3														
Festuca/Lolium							2		4												
Holcus lanatus							4		3												
Leontodon autumnalis				1																	
Leontodon sp.									2												
Leucanthemum vulgare							4		4												
Lolium perenne							2														

Chronology	Horizon 1																				
Context	Pit																				
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3	P4	P6	P7	P8	P9	P10	P11
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004009**	**BK004010**	**BK004011**
Nardus stricta							2														
Plantago lanceolata					2				3												
Plantago media							4		4												
Poa pratensis							4		4												
Poa pratensis Type																					
Poa pratensis/trivialis																					
Potentilla cf *erecta*																					
Potentilla erecta									2												
Prunella cf *vulgaris*																					
Prunella vulgaris	3	3	3	2	3	3	5	3	5												
Ranunculus cf *acris*							4														
Ranunculus acris						3			3				2								
Rhinanthus sp.	2		2		3	1	4		4												
Rumex acetosa - perianth							3														
Rumex acetosella																					
Silene vulgaris									4												
Taraxacum officinale							2														
Trifolium pratense - pod with seeds									4												
Trifolium pratense - capsule							4		4												
Trifolium sp. - chalice	2	3		2	3	3	4	2	5												
Open swards																					
Acinos arvensis																					
Ajuga genevensis																					
Artemisia campestris																					
Centaurea scabiosa																					
Dianthus sp.							2														
Euphorbia cf *seguieriana*																					
Euphrasia/Odontites																					
Gentiana cruciata																					
Medicago lupulina - pod with seed		2			1				4												
Medicago lupulina - pod							3		4												
Medicago minima - pod							3														
Odontites sp.							4														
Prunella grandiflora									3												
Scabiosa columbaria									3												
Stachys cf *recta*																					
Stachys recta																					
Teucrium botrys																					
Teucrium montanum																					
Trifolium cf *campestre* - chalice									4												
Aquatic plants																					
Lemna sp.																					
Polygonum cf *amphibium*																					
Potamogeton sp.																					
Sparganium sp.																					
Reed fields																					
Alisma plantago-aquatica							4		3												
Carex sp.													4	3				2		3	3
Carex sp. - utriculus									2												
Carex sp. bicarpellate		3		2	3		4		3					3							
Carex sp. tricarpellate	2	2	2	1	2		4		3		2	1									
Cicuta virosa																					
Eleocharis palustris	2	3	2	3	3		4		3									2			
Galium cf *palustre*							3		2												
Galium palustre																					
Glyceria sp.																					
Hippuris vulgaris																					
Juncus sp.						1	5		4												
Lycopus europaeus																					
Mentha arvensis/aquatica							3		4												
Nasturtium officinale																					
Oenanthe fistulosa			1																		
Oenanthe sp.																					
Poa palustris							3														
Rorippa amphibia																					

Chronology	Horizon 1																				
Context	**Pit**																				
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3	P4	P6	P7	P8	P9	P10	P11
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004009**	**BK004010**	**BK004011**
Rumex cf *aquaticus/hydrolapatum*																					
Salix sp. - veg. part																					
Schoenoplectus sp.																					
Riverbank plants (pioneer)																					
Alnus glutinosa - veg. part																					
Alnus sp. - veg. Part																					
Cyperus flavescens																					
Cyperus fuscus																					
cf *Myosoton aquaticum*							5														
Polygonum cf *hydropiper*																					
Polygonum hydropiper													4		2					3	
Polygonum hydropiper/mite									4												
Polygonum lapathifolium									3				5	5	3	4	5	3	4	4	5
Polygonum minus																					
Polygonum mite/minus																					
Ranunculus cf *flammula*																					
Ranunculus flammula							2														
Ranunculus sardous																					
Ranunculus sceleratus																					
Teucrium cf *scordium*																					
Wet meadows																					
cf *Euphorbia palustris*																					
Filipendula ulmaria																					
Linum catharticum									4												
Lychnis flos-cuculi							3		3												
Scirpus sylvaticus																					
Stachys officinalis																					
Forests, forest edges and clearings, hedges																					
Abies alba - needle																					
Arctium cf *nemorosum*																					
Cornus sanguinea																					
Crataegus sp.																					
cf *Humulus lupulus*																					
Quercus sp. - veg. part																					
Rosa sp.									2					3				2			
Solanum cf *dulcamara*																					
Stellaria cf *nemorum*																					
Torilis cf *japonica*																					
Valeriana cf *tripteris*																					
Viburnum lantana																					
Viburnum opulus																					
Calamintha sylvatica																					
Galium verum									4												
Hypericum perforatum																					
Saponaria cf *ocymoides*																					
Silene cf *nutans*																					
Silene nutans																					
Thalictrum minus																					
VARIA																					
Ajuga sp.													2								
Allium sp.																					
Apiaceae - fragments																					
Asteraceae			1				3		3												
Boraginaceae																					
Brassicaceae									3												
Bromus sp.							4		4												
Campanula sp.																					
Carduus sp.																					
Caryophyllaceae						3											3				
Cerastium sp.																					
Chenopodiaceae									4												
Chenopodiaceae/Amaranthaceae									4					5				2			

Chronology	Horizon 1																				
Context	Pit																				
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3	P4	P6	P7	P8	P9	P10	P11
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004009**	**BK004010**	**BK004011**
Chenopodium sp.						3		1					5					3		1	
Cichorium sp.																					3
Crepis sp.																					
Cuscuta sp.				1			3		2												
Cyperaceae						3			4												
Epilobium sp.																					
Euphorbia sp.																					
Euphorbia sp. - fruit																					
Euphorbia sp. - capsule																					
Fallopia sp.																					
Filipendula sp.		2					3		2												
Galium sp.		1			1		4		4												
Hypericum sp.																					
Inula sp.																					
Lamiaceae				1					4									1			
Lamium sp.									2		2									3	
Liliaceae			1																		
Malva sp.																					
cf *Matricaria* sp.																					
Papaver sp.									3												
Physalis/Solanum																					
Phyteuma sp.	1																				
Plantago sp. - chalice									3												
Plantago sp.							3		3												
Poa sp.		2					5		4												
Poaceae																					
Poaceae	3	4	1	3	4	5	4	2	5				2								
Polygonaceae						2			3												
Polygonum sp.																					
Polygonum sp.			2				4		2				5	3			4	3	2	3	
Potentilla sp.		1					4		4									2			
Primulaceae							4														
Ranunculaceae																					
Ranunculus sp.																					
cf *Raphanus* sp.																					
Rosaceae - thorn																					
Rosaceae																					
Rosaceae - flower																					
Rumex sp. - tubercle							4														
Rumex sp.						1							4	4	1		3	2		3	4
Rumex sp. - perianth	1	1				3			4												
Sambucus sp.											1	2	2	3	1					3	
Satureja sp.														3							
Scabiosa sp.							2														
cf *Scandix* sp.																					
Scrophulariaceae																					
Silene alba/dioica																					
Silene sp.	3	3	2				4		3												
Solanaceae						2	2		2	1											
Solanum sp.																					
Sonchus sp.																					
Stachys sp.			1	1					2					3	2						
Stachys/Lamium																					
Stellaria graminea/palustris				1			4		3												
Stellaria sp.																					
Teucrium sp.																					
Torilis sp.							3														
Veronica sp.					1		3		2												
Vicia sp.																					3
Viola sp. - capsule			1																		
Viola sp.				1							1	1									
Indeterminata - rhizome																					
Indeterminata - fruitstem																					
Indeterminata - endocarp																					
Indeterminata						4		2					4	5	3	4	5	4	4	4	4

Chronology	Horizon 1																				
Context	Pit																				
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3	P4	P6	P7	P8	P9	P10	P11
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004009**	**BK004010**	**BK004011**
CHARRED																					
CEREALS _ grain																					
Avena sp.																					
Hordeum vulgare										1											
Hordeum sp.																					
Triticum aestivum																					
Triticum aestivum/durum/turgidum																					
Triticum dicoccon																					
Triticum cf *dicoccon*																					
Triticum sp.																					
Cerealia ohne Hirsen										1		1				1	1	2			
Panicum miliaceum																					
Setaria italica																					
Panicum/Setaria																					
CEREALS _ chaff																					
Hordeum vulgare - rachis																					
Hordeum sp. - rachis																					
Triticum dicoccon - spikelet fork																					
Triticum dicoccon - glume																					
Triticum monococcum - spikelet fork																		3			
Triticum monococcum - glume																					
Triticum spelta - spikelet fork														3				2			
Triticum spelta - glume base																2	1			1	
Triticum spelta - glume																					
Triticum sp. - spikelet fork																					
Triticum sp. - glume																					
Cerealia										1											
NUTS																					
Corylus avellana						1				1	1								1		
Juglans regia																					
PULSES																					
cf *Lathyrus* sp.																					
Lens culinaris																					
Pisum sativum																				1	
Vicia faba																					
Vicia/Lathyrus																					
Fabaceae																					
FRUITS																					
Vitis vinifera																					
WEEDS OF WINTER CEREALS																					
Galium aparine																					
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																					
Avena fatua																					
Galium spurium																					
Vicia cf *angustifolia*																					
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																					
Chenopodium polyspermum																					
Thlaspi arvense																					
PERENNIAL RUDERALS																					
Rumex obtusifolius																					
MEADOWS AND PASTURES																					
Centaurea sp.																					
Festuca/Lolium																					
Plantago lanceolata																					
Plantago media																					
Trifolium sp.																					
Reed fields																					
cf *Alisma plantago-aquatica*																					
Carex sp. tricarpellate																					
Galium cf *palustre*																					
Riverbank plants (pioneer)																					
Teucrium scordium																					

Chronology	Horizon 1																				
Context	**Pit**																				
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3	P4	P6	P7	P8	P9	P10	P11
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004009**	**BK004010**	**BK004011**
Forests, forest edges and clearings, hedges																					
Abies alba - needle																					
Galium verum																					
VARIA																					
Chenopodium sp.																					
Galium sp.																					
Poaceae							3														
Vicia sp.											1										
Indeterminata - amorphous object																					
Indeterminata - crusts													4								
Indeterminata - seed/fruit										1				1	1	1	1		2	1	
MINERALISED																					
CEREALS _ grain																					
Avena sp.																					
Hordeum vulgare																					
Triticum spelta																					
Triticum sp.																					
Panicum miliaceum											1	1						1	2		
Setaria italica																					
Panicum/Setaria																					
Cerealia ohne Hirsen														3				2			
CEREALS _ chaff																					
Hordeum vulgare - rachis																					
Triticum spelta - spikelet fork																					
Cerealia - ear																					
Cerealia - glume																					
Panicum miliaceum - glume																					
Setaria italica - glume																					
Panicum/Setaria - glume																					
PULSES																					
Lens culinaris											2	2									
Pisum sativum																					
Vicia faba											1	1									
Fabaceae - fruitflesh																					
Fabaceae																					
FRUITS																					
Cucumis melo																					
Cucumis melo/sativa																					
Ficus carica											2			5		1		1			
Fragaria vesca												1									
Malus domestica																					
Malus sylvestris/domestica																					
Pyrus sp.										1											
Malus/Pyrus										1	3	3	3			1			3		2
Morus sp.																					
Physalis alkekengi																					
Prunus sp. - fragment																					
Rubus caesius																					
Rubus sp. - inner																					
Sambucus nigra/racemosa																1					4
Vitis vinifera - fruitflesh																					
Vitis vinifera - aborted seed																					
Vitis vinifera										2	3	2					1				
SPICES																					
Anethum graveolens											2	2									
Apium graveolens											1										
Carum carvi																					
Coriandrum sativum																					
Foeniculum vulgare																					
Nigella cf *sativa*																					
VEGETABLES AND SALADS																					
Atriplex sp.																					
Beta vulgaris																					

Chronology	Horizon 1																				
Context	Pit																				
Structure	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**86**	**86**	**86**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	346.1	346.2	347.2	347.4	351.2	351.4	351.5	352.1	352.2	259.2	235.1	235.2	P2	P3	P4	P6	P7	P8	P9	P10	P11
Sample N°	**BK994009**	**BK994010**	**BK994013**	**BK994015**	**BK994021**	**BK994023**	**BK994024**	**BK994026**	**BK994027**	**BK994047**	**BK994048**	**BK994049**	**BK004002**	**BK004003**	**BK004004**	**BK004006**	**BK004007**	**BK004008**	**BK004009**	**BK004010**	**BK004011**
Brassica sp.																					
Daucus carota											1										
Lagenaria siceraria																					
OIL AND FIBRE PLANTS																					
Linum usitatissimum																					
Papaver somniferum												1									
WEEDS OF WINTER CEREALS																					
Agrostemma githago																					
Buglossoides arvensis												1									
Fallopia convolvulus																					
Galium aparine											1										
cf *Veronica hederifolia*																					
Order Aperetalia_weeds of rather acidic/neutral soils																					
Camelina sativa											2	2									
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																					
Caucalis platycarpos											1										
Galium spurium																					
Vaccaria pyramidata																					
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																					
Galeopsis cf *speciosa*																					
Polygonum lapathifolium/persicaria																					
Solanum nigrum																					
Sonchus oleraceus																					
Stellaria media																					
Thlaspi arvense											2	2									
PERENNIAL RUDERALS																					
Arctium sp.																					
Convolvulus arvensis																					
Hyoscyamus niger												1									
Lapsana communis											1										
MEADOWS AND PASTURES																					
Centaurea sp.											1										
Rhinanthus sp.																					
Scabiosa sp.											1	1									
Reed fields																					
Carex sp. tricarpellat												1									
Galium palustre																					
Forests, forest edges and clearings, hedges																					
Rosa sp.																					
cf *Seseli libanotis*																					
VARIA																					
Apiaceae																1					
Asteraceae												1									
Brassicaceae											1	1									
Bromus sp.													2								
Cannabinaceae											1										
Chenopodium sp.																			3		
Galium sp.													2			1		1			
Lamiaceae											2	1									
Lolium sp.											1										
Papaver sp.																					
Poaceae							2		2			1									
Potentilla sp.																					
Rumex sp.																					
Indeterminata - endocarp																					
Indeterminata - fruitflesh																					
Indeterminata - coprolithes																					
Indeterminata - crusts														1		1	1				
Indeterminata - seed/fruit										1			3	1		1		5	3		4

Civil East																							
Chronology																							
Context																							
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	01C	01D	01E	01G	02C	02D	02E	02G	03A	03C	03D	03E	03G	04A	4B	04C	04D	04E	05B	5C	05D	05E	06B
Sample N°	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14066**	**BK14069**	**BK14071**
Volume	6000	8000	8000	8000	8000	6000	7000	4000	7000	10000	9000	7000	5000	8000	5000	7000	8000	8000	17000	12000	14000	10000	6000
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	FU	RS	RS	RS	RS	FU	RS	RS	FU
WATERLOGGED																							
CEREALS _ grain																							
Avena sativa/fatua																							
Cerealia - Testa										1					1	1	2	1	2	1	1	2	
Panicum miliaceum																							3
Setaria italica																							
Panicum/Setaria																							
CEREALS _ chaff																							
Hordeum vulgare - rachis																							
Hordeum sp. - rachis																				3			
Triticum dicoccon - glume base																			2				
Triticum dicoccon - spikelet fork																							
Triticum dicoccon - glume															2	1				4			3
Triticum cf *dicoccon* - glume																							
Triticum dicoccon/spelta - glume																							
Triticum monococcum - glume base																			2				
Triticum monococcum - spikelet fork																							
Triticum monococcum - glume																							
Triticum cf *monococcum* - spikelet fork																							
Triticum cf *monococcum* - glume																							
Triticum spelta - glume base														2					1				
Triticum spelta - spikelet fork																							2
Triticum spelta - glume															3			1		5	2	3	4
Triticum sp. - spikelet fork																							3
Triticum sp. - glume												2			4		3	1		5	3	3	5
Cerealia - rachis															2					3			
Cerealia ohne Hirsen - glume																							
Panicum miliaceum - glume					1										2	1			1	5		1	4
Setaria italica - glume																	1	1			1	1	
Panicum/Setaria - glume															2								
NUTS																							
Corylus avellana				1		2			1	2		1			1	2	1	2		2	1	2	1
Juglans regia					1										1		2	2		1			
PULSES																							
Lens culinaris																							
Pisum sativum																							
Pisum cf *sativum*																							
Vicia faba																							
Fabaceae																							
SPICES																							
Anethum graveolens															4	1			2	3			
Apium graveolens					1	1	1	2		2		1			5	2	1		3	4	3	3	5
Carum carvi																							
Coriandrum sativum					2	2	2		2	2	1	2			5	3	3	1	2	4	2	2	4
Foeniculum vulgare																				3			
Origanum vulgare																							
cf *Petroselinum crispum*																							
Pimpinella anisum																							
cf *Piper nigrum*																							
Piper nigrum																				3			
cf *Ruta graveolens*																							
Satureja hortensis															3					4			4
VEGETABLES AND SALADS																							
Amaranthus sp.	1			1	1	3	2			4	4	4	2		5	4	4	4	3	5	3	4	4
Atriplex sp. - perianth																							
Atriplex sp.																							
Beta vulgaris													1				2	1		4	1	1	3
Brassica cf *oleracea*																							
Brassica rapa/nigra																							
Brassica sp.						1									2			2		3			2
Brassica/Sinapis															2								

Chronology																							
Context																							
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	01C	01D	01E	01G	02C	02D	02E	02G	03A	03C	03D	03E	03G	04A	4B	04C	04D	04E	05B	5C	05D	05E	06B
Sample N°	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14066**	**BK14069**	**BK14071**
Daucus carota				1		2		1			1	2		2	3	2		1		3	2	2	3
Lagenaria siceraria						2									2	1	1			1			
Pastinaca sativa																							
Portulaca oleracea								1							2			1	2	3			3
FRUITS																							
Cucumis melo																							
Cucumis sativus																							
Cucumis melo/sativa						1				1		1								3			
Ficus carica		3		3	4	4	2	3	4	3	3	4	2	4	5	3	2	1	3	4	3	3	4
Fragaria vesca										1			2		4	2	2	1	3	4	1	2	4
Malus domestica																							
Malus sylvestris/domestica									2										3				
Malus/Pyrus - fragment																							
Malus/Pyrus - seed base						1	1	1							4					4			
Malus/Pyrus - pericarp									2					3	1	1			1	1			2
Malus/Pyrus					1			1		2	1	1			4	2		1		4	1	2	3
Pyrus sp.																							
Pyrus sp. - stone cells									3			2		2	1	3			1				2
Pyrus sp. - flower						1	1			3				2	3	1		2		3	1	1	3
Morus sp.																							
Olea europaea														2								1	
Physalis alkekengi	1	2		3	3	2	2	2	2	3	2	2			2	3	3	1	2	3	2	2	3
Prunus cf *avium*																							
Prunus avium/cerasus		1			1	3	2			3	2	2		3	2	2	2	2	4	2	2	3	2
Prunus cf *domestica*																							
Prunus domestica					2		1			2		2				2	1				1	3	2
Prunus domestica/insititia															1					3			2
Prunus insititia									3					3					4				
Prunus persica		1			1	1											1						1
Prunus cf *spinosa*																							
Prunus spinosa						2			3	2				2	1	1			2	2		3	2
Prunus sp.					2	2	1				1	2			4					3			
Rubus caesius						1	1		5	2	1	1		2	4	2	1	1	4	4	1	1	4
Rubus cf *fruticosus*																							
Rubus fruticosus		2			2	2		1	2			1	1		4		1			3		1	2
Rubus idaeus		3	1		2					2		2		2	3	2		1		3		1	
Rubus sp.						1					1				2			1			1		
Sambucus nigra/racemosa	2	3	3	3			2							2									
Vitis vinifera - aborted seed															2								
Vitis vinifera				1	2	2	2	1		2	2	2			4		3	2		4	2	2	3
OIL, DYE AND FIBRE PLANTS																							
Cannabis sativa										1	1									3		1	
cf *Isatis tinctoria*																				3			
Linum usitatissimum																							
Papaver cf *somniferum*										1												2	
Papaver somniferum															4				1	4			3
WEEDS OF WINTER CEREALS																							
Adonis sp.																						2	
Agrostemma githago						1				2	2	2	1		5	2	2	2	1	5	2	3	5
Anthemis arvensis												1								3			3
Bromus arvensis Type																							
Buglossoides arvensis						1				1						1							
Fallopia convolvulus					1	1		1				2	1		2					3	1		2
Galium aparine															3					3			2
Silene gallica																							
Stachys annua/arvensis																							
Valerianella locusta																							
Valerianella rimosa																							
Veronica hederifolia																							
Viola tricolor																			2				
Order Aperetalia_weeds of rather acidic/neutral soils																							
Aphanes arvensis																							
cf *Bromus secalinus*																							
Camelina sativa - pod																							

Chronology																							
Context																							
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	01C	01D	01E	01G	02C	02D	02E	02G	03A	03C	03D	03E	03G	04A	4B	04C	04D	04E	05B	5C	05D	05E	06B
Sample N°	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14066**	**BK14069**	**BK14071**
Camelina sativa																							
Camelina cf *sativa*																							2
Centaurea cf *cyanus*																							
Centaurea cyanus																			2	4			
Papaver argemone															3					2			
Papaver dubium															2								
Raphanus raphanistrum																							
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																							
Ajuga chamaepitys																	1						
Bupleurum rotundifolium																							
Caucalis platycarpos																				3			
Galium spurium															3								
Glaucium corniculatum																							
Myagrum perfoliatum	3	4	3	3	2	3	1	2	2	3	3	3	3	2	4	2	3	2	2	4	1	1	3
Myosoton aquaticum																							
Orlaya grandiflora													1							3			2
Ranunculus arvensis																				3		1	
Scandix pecten-veneris																							
Stachys annua		1		1	2	2	2	1		2		1			2	1	1					2	2
Torilis arvensis																				3			
Vaccaria pyramidata															2								
Valerianella dentata																					1		1
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																							
Aethusa cynapium																							
Anagallis arvensis/foemina											2				2			1			1	1	1
Arenaria serpyllifolia															3					3			4
Atriplex/Chenopodium									4					4					3				
Capsella bursa-pastoris															2					2			
Chenopodium album		1			2	2	1	3		2	2	2	2		4	3	2	1		4	1	2	4
Chenopodium ficifolium																							
Chenopodium cf *ficifolium*																							
Chenopodium foliosum																							
Chenopodium hybridum					1	1	2	1		1	2	2	1		3	1	1	1		3		1	
Chenopodium murale																							
Chenopodium polyspermum																				3			
Echinochloa crus-galli																							
Euphorbia helioscopia					1																		
Fumaria officinalis																							
Fumaria sp.				1														1				1	
Galeopsis bifida																							
Galeopsis ladanum																							
Galeopsis sp.																							
Heliotropium sp.																							
Lamium amplexicaule/purpureum																							
Lamium cf *purpureum*																							
Malva sylvestris																							
Mercurialis annua					1		1																
Poa annua																				3			3
Polygonum lapathifolium/persicaria		3	1		4	3	3	1	4	3	3	3	1	4	5	3	3	2	1	5	1	2	4
Polygonum persicaria															4					4			
Portulaca sp.																							2
Setaria verticillata/viridis																							
Solanum nigrum										1					2					4	1		
Sonchus asper															2			1		3			3
Sonchus asper/oleraceus																		1					
Sonchus oleraceus																							
Stachys cf *arvensis*																							
Stellaria media						1		1		1	1	2	1	2	3	1	2	1	2	4	2	3	4
Thlaspi arvense										1	2	2		2	3	1	2	1		3	1	1	3
Urtica urens						2	1				3	2	1	2	4	2	3	2		4	1	2	4
Verbena officinalis															2					3			3
PERENNIAL RUDERALS																							
Agropyron repens																							

Chronology																							
Context																							
Structure	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
US	01C	01D	01E	01G	02C	02D	02E	02G	03A	03C	03D	03E	03G	04A	4B	04C	04D	04E	05B	5C	05D	05E	06B
Sample N°	BK14025	BK14026	BK14027	BK14029	BK14034	BK14035	BK14036	BK14038	BK14041	BK14043	BK14044	BK14045	BK14047	BK14050	BK14051	BK14052	BK14053	BK14054	BK14064	BK14065	BK14066	BK14069	BK14071
Arctium lappa																							
Arctium minus																							
Arctium sp.											1		1										
Bryonia dioica																					1		
Carduus crispus																							
Cerastium arvense																							
Chelidonium majus																							
cf *Chondrilla juncea*																							
Cirsium sp.															2					3			
Cirsium/Carduus											1												
Conium maculatum																							
Convolvulus arvensis																							
Cruciata laevipes																							
Dipsacus cf *fullonum*																							
Fallopia dumetorum																							
Hyoscyamus niger				1		1									2						1		
Lamium cf *album*																							2
Lamium album																							
Lapsana communis															2					3			
cf *Marrubium vulgare*																							
Onopordum acanthium															2								2
Plantago major															3			1		3			4
Poa compressa																							3
Polygonum cf *aviculare*																							
Polygonum aviculare					1		1			2	2	2			4	2		1		3		2	2
Potentilla anserina						1	1													3			2
Ranunculus repens					1	1					2	1			2		2	1		3	1		2
Reseda sp.																							
Rumex conglomeratus - perianth																				3			
Rumex conglomeratus - tubercle																							
Rumex cf *conglomeratus* - perianth																							
Rumex cf *crispus*																							
Rumex crispus - perianth																							
Rumex crispus - tubercle																							
Rumex obtusifolius - perianth																		1					
Rumex obtusifolius		2				2		1	1	2	2	2	2	3	4	2	2	1	2	4	2	2	4
Sambucus cf *ebulus*																							
Sambucus ebulus	3	3		2		1				1											1		
Saponaria officinalis																							
Saponaria cf *officinalis*																							
Silene alba																							
Urtica dioica					1	1	2	2		3	1	1	2		5	1	1			3		2	3
MEADOWS AND PASTURES																							
Achillea millefolium																				3			
Agrostis sp.															2					3			
Ajuga cf *reptans*																							
Ajuga reptans												2	1					1					
Anthriscus sp.																							
Bromus cf *commutatus*																							
Bromus hordeaceus																							
Centaurea cf *jacea*																							1
Centaurea sp.											1	1						1			1	1	3
Cichorium intybus												1						1			1		
Cirsium/Centaurea																				4			
cf *Cynosurus* sp.															2								
Dactylis glomerata																							
Deschampsia caespitosa																							3
Dianthus cf *armeria*																			2				
Festuca rubra/ovina																							
Festuca/Lolium																							
Holcus lanatus																							
Leontodon autumnalis																							
Leontodon sp.																							
Leucanthemum vulgare																							2
Lolium perenne																							

Chronology																							
Context																							
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	01C	01D	01E	01G	02C	02D	02E	02G	03A	03C	03D	03E	03G	04A	4B	04C	04D	04E	05B	5C	05D	05E	06B
Sample N°	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14066**	**BK14069**	**BK14071**
Nardus stricta																							
Plantago lanceolata																							
Plantago media																		1					2
Poa pratensis																							
Poa pratensis Type																							
Poa pratensis/trivialis																							
Potentilla cf *erecta*																							
Potentilla erecta																				3			
Prunella cf *vulgaris*																			2				
Prunella vulgaris												1			2		1	2		2	1	2	4
Ranunculus cf *acris*																							
Ranunculus acris																							
Rhinanthus sp.																							
Rumex acetosa - perianth																							
Rumex acetosella																				3			
Silene vulgaris																							
Taraxacum officinale																							
Trifolium pratense - pod with seeds																							
Trifolium pratense - capsule															2								
Trifolium sp. - chalice																				3			
Open swards																							
Acinos arvensis																							
Ajuga genevensis																		1					
Artemisia campestris																							
Centaurea scabiosa																				3			
Dianthus sp.																							
Euphorbia cf *seguieriana*																							
Euphrasia/Odontites															2								
Gentiana cruciata															2								
Medicago lupulina - pod with seed																							
Medicago lupulina - pod																							
Medicago minima - pod							1			1					4	1	1			3			
Odontites sp.																							
Prunella grandiflora																							
Scabiosa columbaria																							
Stachys cf *recta*																							
Stachys recta																							
Teucrium botrys																							
Teucrium montanum																							
Trifolium cf *campestre* - chalice																							
Aquatic plants																							
Lemna sp.																							
Polygonum cf *amphibium*																							
Potamogeton sp.																							
Sparganium sp.																							
Reed fields																							
Alisma plantago-aquatica														2	2					3			
Carex sp.																							
Carex sp. - utriculus												1											3
Carex sp. bicarpellate						1					2		1		2	1				3			2
Carex sp. tricarpellate		1		2	2	3	2	2	3	2		3	2	4	3	2	2	1	2	4	2	1	4
Cicuta virosa																							
Eleocharis palustris					1	1	1			1	3	2	1	2	3	2	3	1	3	4	3	3	4
Galium cf *palustre*																							
Galium palustre																							
Glyceria sp.																							
Hippuris vulgaris																							
Juncus sp.											1	1								4			3
Lycopus europaeus																				3			
Mentha arvensis/aquatica																1			2				3
Nasturtium officinale															2								3
Oenanthe fistulosa						1						1	1			1	2			3			
Oenanthe sp.																							
Poa palustris																							
Rorippa amphibia																							

Chronology																							
Context																							
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	01C	01D	01E	01G	02C	02D	02E	02G	03A	03C	03D	03E	03G	04A	4B	04C	04D	04E	05B	5C	05D	05E	06B
Sample N°	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14066**	**BK14069**	**BK14071**
Rumex cf *aquaticus/hydrolapatum*																							
Salix sp. - veg. part															2		1						
Schoenoplectus sp.												1											
Riverbank plants (pioneer)																							
Alnus glutinosa - veg. part																							
Alnus sp. - veg. Part															2								
Cyperus flavescens																				2			
Cyperus fuscus																				2			3
cf *Myosoton aquaticum*																							
Polygonum cf *hydropiper*																							2
Polygonum hydropiper														2					2	3			
Polygonum hydropiper/mite													1		4					3			
Polygonum lapathifolium															5					4			
Polygonum minus																				3			
Polygonum mite/minus																							
Ranunculus cf *flammula*																							
Ranunculus flammula																							
Ranunculus sardous																							2
Ranunculus sceleratus																				2			
Teucrium cf *scordium*																							
Wet meadows																							
cf *Euphorbia palustris*																							
Filipendula ulmaria																				3			
Linum catharticum																				3			
Lychnis flos-cuculi																				3			
Scirpus sylvaticus															2					3			
Stachys officinalis																				3			
Forests, forest edges and clearings, hedges																							
Abies alba - needle								1							3					3			
Arctium cf *nemorosum*																							
Cornus sanguinea																							2
Crataegus sp.																							
cf *Humulus lupulus*																							
Quercus sp. - veg. part														1									
Rosa sp.																							
Solanum cf *dulcamara*																							
Stellaria cf *nemorum*																							
Torilis cf *japonica*																							
Valeriana cf *tripteris*																							
Viburnum lantana																							2
Viburnum opulus																							
Calamintha sylvatica																				3			
Galium verum																							
Hypericum perforatum																				2			
Saponaria cf *ocymoides*																							2
Silene cf *nutans*															2								
Silene nutans																				3			
Thalictrum minus																							
VARIA																							
Ajuga sp.																							
Allium sp.																1		1		3		1	2
Apiaceae - fragments															4					4			
Asteraceae															3					2			
Boraginaceae																							
Brassicaceae																				3			
Bromus sp.																							
Campanula sp.															2								
Carduus sp.																		1					
Caryophyllaceae															2								
Cerastium sp.																							
Chenopodiaceae															3					3			
Chenopodiaceae/Amaranthaceae															3								

Chronology																							
Context																							
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	01C	01D	01E	01G	02C	02D	02E	02G	03A	03C	03D	03E	03G	04A	4B	04C	04D	04E	05B	5C	05D	05E	06B
Sample N°	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14066**	**BK14069**	**BK14071**
Chenopodium sp.				1																3			4
Cichorium sp.																							2
Crepis sp.																							
Cuscuta sp.																							3
Cyperaceae															3					3			
Epilobium sp.																							
Euphorbia sp.												1											
Euphorbia sp. - fruit																							
Euphorbia sp. - capsule																							
Fallopia sp.																							
Filipendula sp.																							
Galium sp.		2											1		3					3			2
Hypericum sp.																				3			
Inula sp.																				2			
Lamiaceae											1				3					3			4
Lamium sp.					1	1				1													
Liliaceae																							
Malva sp.															2								
cf *Matricaria* sp.																							
Papaver sp.															3					3			4
Physalis/Solanum															2								
Phyteuma sp.																							
Plantago sp. - chalice																							
Plantago sp.																							
Poa sp.															3					3			3
Poaceae																							
Poaceae					1															3			4
Polygonaceae																				3			3
Polygonum sp.															4					3			
Polygonum sp.															3					3			2
Potentilla sp.										1	1	1								4			4
Primulaceae																							
Ranunculaceae																							
Ranunculus sp.									2					2									
cf *Raphanus* sp.																							
Rosaceae - thorn															2								
Rosaceae																							
Rosaceae - flower																							
Rumex sp. - tubercle																							3
Rumex sp.																							
Rumex sp. - perianth							1						1		2					4			2
Sambucus sp.		3			3	2	2	3		1	1	2	3		2	1	2	1		3	1	1	
Satureja sp.																							
Scabiosa sp.												2				1	1	1		3	1	1	
cf *Scandix* sp.																							
Scrophulariaceae																							
Silene alba/dioica			1																2				
Silene sp.												1					1						
Solanaceae																				2			
Solanum sp.													1			1						1	
Sonchus sp.																							
Stachys sp.																				3			
Stachys/Lamium														2					3				
Stellaria graminea/palustris																				3		1	
Stellaria sp.																							
Teucrium sp.																		1					
Torilis sp.																							
Veronica sp.																				2			
Vicia sp.																							
Viola sp. - capsule																				3			
Viola sp.		1		1	1	3	1	1	2	1	3	3	2			1	2	1		3	1	2	3
Indeterminata - rhizome																							
Indeterminata - fruitstem																							
Indeterminata - endocarp																							
Indeterminata															5				3	4			

Chronology																							
Context																							
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	01C	01D	01E	01G	02C	02D	02E	02G	03A	03C	03D	03E	03G	04A	4B	04C	04D	04E	05B	5C	05D	05E	06B
Sample N°	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14066**	**BK14069**	**BK14071**
CHARRED																							
CEREALS _ grain																							
Avena sp.					1			1															2
Hordeum vulgare			1	2							1												2
Hordeum sp.		2					1	2				1										1	
Triticum aestivum																							
Triticum aestivum/durum/turgidum																							
Triticum dicoccon																							
Triticum cf *dicoccon*																							
Triticum sp.		1																					
Cerealia ohne Hirsen	2		2	1												1		1					2
Panicum miliaceum																							
Setaria italica																							
Panicum/Setaria																							
CEREALS _ chaff																							
Hordeum vulgare - rachis																							
Hordeum sp. - rachis								1															
Triticum dicoccon - spikelet fork									2														
Triticum dicoccon - glume						1	1	1														1	2
Triticum monococcum - spikelet fork																							
Triticum monococcum - glume																							
Triticum spelta - spikelet fork																							
Triticum spelta - glume base																							
Triticum spelta - glume																						1	
Triticum sp. - spikelet fork																							
Triticum sp. - glume								1					1										1
Cerealia																							
NUTS																							
Corylus avellana																							
Juglans regia																							
PULSES																							
cf *Lathyrus* sp.																							
Lens culinaris				1		1		2															
Pisum sativum																							
Vicia faba																							
Vicia/Lathyrus																							
Fabaceae																							
FRUITS																							
Vitis vinifera													1										
WEEDS OF WINTER CEREALS																							
Galium aparine																							
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																							
Avena fatua																							
Galium spurium							2																
Vicia cf *angustifolia*																							
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																							
Chenopodium polyspermum																							
Thlaspi arvense																							
PERENNIAL RUDERALS																							
Rumex obtusifolius			2																				
MEADOWS AND PASTURES																							
Centaurea sp.																							
Festuca/Lolium																							
Plantago lanceolata																							
Plantago media																							
Trifolium sp.																							
Reed fields																							
cf *Alisma plantago-aquatica*																							
Carex sp. tricarpellate																							
Galium cf *palustre*																							
Riverbank plants (pioneer)																							
Teucrium scordium																							

Chronology																							
Context																							
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	01C	01D	01E	01G	02C	02D	02E	02G	03A	03C	03D	03E	03G	04A	4B	04C	04D	04E	05B	5C	05D	05E	06B
Sample N°	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14066**	**BK14069**	**BK14071**
Forests, forest edges and clearings, hedges																							
Abies alba - needle																							
Galium verum																							
VARIA																							
Chenopodium sp.																							
Galium sp.				1									1										
Poaceae			1																				
Vicia sp.																							
Indeterminata - amorphous object																							
Indeterminata - crusts																							
Indeterminata - seed/fruit																							
MINERALISED																							
CEREALS _ grain																							
Avena sp.																							
Hordeum vulgare											1												
Triticum spelta																							
Triticum sp.																							
Panicum miliaceum							1	2						2	3	1							2
Setaria italica																							
Panicum/Setaria												1											
Cerealia ohne Hirsen																		1					
CEREALS _ chaff																							
Hordeum vulgare - rachis																							
Triticum spelta - spikelet fork																							
Cerealia - ear																							
Cerealia - glume																							
Panicum miliaceum - glume																							
Setaria italica - glume																							
Panicum/Setaria - glume																							
PULSES																							
Lens culinaris															2								
Pisum sativum																							
Vicia faba																							2
Fabaceae - fruitflesh																							
Fabaceae																							
FRUITS																							
Cucumis melo																							
Cucumis melo/sativa																							
Ficus carica									4					4					3				
Fragaria vesca															2								
Malus domestica																							
Malus sylvestris/domestica									2										3				
Pyrus sp.																							
Malus/Pyrus								1							2								
Morus sp.																							
Physalis alkekengi																							
Prunus sp. - fragment																							
Rubus caesius								1															
Rubus sp. - inner															3								
Sambucus nigra/racemosa																							
Vitis vinifera - fruitflesh																			1				
Vitis vinifera - aborted seed																							
Vitis vinifera								1	2	1	1		2	2		2			3		1	2	2
SPICES																							
Anethum graveolens										1													
Apium graveolens					1		1	2		2					4								
Carum carvi																							
Coriandrum sativum																							
Foeniculum vulgare																							
Nigella cf *sativa*																							
VEGETABLES AND SALADS																							
Atriplex sp.																							
Beta vulgaris																		1					

Chronology																							
Context																							
Structure	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
US	01C	01D	01E	01G	02C	02D	02E	02G	03A	03C	03D	03E	03G	04A	4B	04C	04D	04E	05B	5C	05D	05E	06B
Sample N°	**BK14025**	**BK14026**	**BK14027**	**BK14029**	**BK14034**	**BK14035**	**BK14036**	**BK14038**	**BK14041**	**BK14043**	**BK14044**	**BK14045**	**BK14047**	**BK14050**	**BK14051**	**BK14052**	**BK14053**	**BK14054**	**BK14064**	**BK14065**	**BK14066**	**BK14069**	**BK14071**
Brassica sp.																							
Daucus carota																	2	1					
Lagenaria siceraria																							
OIL AND FIBRE PLANTS																							
Linum usitatissimum																							
Papaver somniferum															3								
WEEDS OF WINTER CEREALS																							
Agrostemma githago																							
Buglossoides arvensis																							
Fallopia convolvulus																							
Galium aparine							1						1										
cf *Veronica hederifolia*																							
Order Aperetalia_weeds of rather acidic/neutral soils																							
Camelina sativa																							
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																							
Caucalis platycarpos										1					2								
Galium spurium																							
Vaccaria pyramidata																							
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																							
Galeopsis cf *speciosa*																							
Polygonum lapathifolium/persicaria																							
Solanum nigrum																							
Sonchus oleraceus																							
Stellaria media						1																	
Thlaspi arvense																							
PERENNIAL RUDERALS																							
Arctium sp.								1															
Convolvulus arvensis																							
Hyoscyamus niger																							
Lapsana communis																							
MEADOWS AND PASTURES																							
Centaurea sp.																							
Rhinanthus sp.																							
Scabiosa sp.																							
Reed fields																							
Carex sp. tricarpellat																							
Galium palustre																							
Forests, forest edges and clearings, hedges																							
Rosa sp.																		1					
cf *Seseli libanotis*																							
VARIA																							
Apiaceae									1	1				2					2				
Asteraceae																							
Brassicaceae																							
Bromus sp.																							
Cannabinaceae																							
Chenopodium sp.							1	1															
Galium sp.																							
Lamiaceae																							
Lolium sp.																							
Papaver sp.																				2			
Poaceae															2								
Potentilla sp.								1															
Rumex sp.																							
Indeterminata - endocarp																							
Indeterminata - fruitflesh																							
Indeterminata - coprolithes																							
Indeterminata - crusts																							
Indeterminata - seed/fruit																							

Civil East																						
Chronology																						
Context																						
Structure	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**27**	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**
US	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	Fonds de fosse	01 1A	01	02	02C	02D	03C	04	01	02 2	02 01	01
Sample N°	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14078**	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**
Volume	1000	1000	6000	2000	7000	5500	13000	14000	12000	12000	20000	6000	8000	4000	7000	5000	4000	7000	16000	8000	6000	10000
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	FU	RS	RS	RS	RS	RS	RS	RS	RS	RS
WATERLOGGED																						
CEREALS _ grain																						
Avena sativa/fatua																						
Cerealia - Testa		3											4							3		1
Panicum miliaceum																						
Setaria italica																						
Panicum/Setaria																						
CEREALS _ chaff																						
Hordeum vulgare - rachis																						
Hordeum sp. - rachis																						
Triticum dicoccon - glume base				2																		
Triticum dicoccon - spikelet fork																						
Triticum dicoccon - glume																						
Triticum cf *dicoccon* - glume																						
Triticum dicoccon/spelta - glume																						
Triticum monococcum - glume base																						
Triticum monococcum - spikelet fork																						
Triticum monococcum - glume																						
Triticum cf *monococcum* - spikelet fork																						
Triticum cf *monococcum* - glume																						
Triticum spelta - glume base		2							2		1											
Triticum spelta - spikelet fork													4									
Triticum spelta - glume													2									
Triticum sp. - spikelet fork																						
Triticum sp. - glume								1		1	2		5	1								2
Cerealia - rachis																						
Cerealia ohne Hirsen - glume																						
Panicum miliaceum - glume	1			2		2		2	2	1	2	3	4			1				2	2	2
Setaria italica - glume																						
Panicum/Setaria - glume													2									
NUTS																						
Corylus avellana	1			3		2		1									2		2	2	1	1
Juglans regia								1							1							
PULSES																						
Lens culinaris																						
Pisum sativum																						
Pisum cf *sativum*																						
Vicia faba																						
Fabaceae													2									1
SPICES																						
Anethum graveolens										1			2							2		
Apium graveolens		2						3	2	1	1	3	5	2	2	2				1	3	3
Carum carvi																						
Coriandrum sativum		2						3		3	3	4	4	3	3	3	2			2	3	2
Foeniculum vulgare													2									
Origanum vulgare																						
cf *Petroselinum crispum*													2									
Pimpinella anisum																						
cf *Piper nigrum*																						
Piper nigrum																						
cf *Ruta graveolens*															1							
Satureja hortensis													3	1		1						2
VEGETABLES AND SALADS																						
Amaranthus sp.	3	2		1				1			2	4	4	2	3	1	3				4	3
Atriplex sp. - perianth																						
Atriplex sp.																		1			2	
Beta vulgaris								2		2	1						2				1	2
Brassica cf *oleracea*																				2		
Brassica rapa/nigra																						
Brassica sp.	1												3	1	1						1	
Brassica/Sinapis																						

Chronology																						
Context																						
Structure	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**27**	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**
US	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	Fonds de fosse	01 1A	01	02	02C	02D	03C	04	01	02 2	02 01	01
Sample N°	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14078**	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**
Daucus carota								2		2	1	3									2	
Lagenaria siceraria																						
Pastinaca sativa																						
Portulaca oleracea																						
FRUITS																						
Cucumis melo																						
Cucumis sativus																						
Cucumis melo/sativa											1									2		
Ficus carica	3	3		2								2	4	3	3	3	2	1		2	3	3
Fragaria vesca								2					5	1	2	2						
Malus domestica																						
Malus sylvestris/domestica		2	1									3								2		
Malus/Pyrus - fragment																						
Malus/Pyrus - seed base	1												3			2						
Malus/Pyrus - pericarp		2		3								1		2						2		
Malus/Pyrus													4		2	2						
Pyrus sp.																						
Pyrus sp. - stone cells		3		3										2	1					3		3
Pyrus sp. - flower	1											2	2	3	1	2						
Morus sp.																						
Olea europaea																						
Physalis alkekengi	2												3	2	2	1	2	2		2		1
Prunus cf *avium*																						
Prunus avium/cerasus	3											2	2	2	2	4				1		
Prunus cf *domestica*																						
Prunus domestica														2	1	2						1
Prunus domestica/insititia																						
Prunus insititia				3																		
Prunus persica											2										1	1
Prunus cf *spinosa*																						
Prunus spinosa				3								2	2	4	2	3	1			3		2
Prunus sp.	3												3		2	3	1					
Rubus caesius	2	2		2									3	2	2	2						1
Rubus cf *fruticosus*																						
Rubus fruticosus												3	3	2	1		2					
Rubus idaeus	1												2			1						1
Rubus sp.	2														1						2	
Sambucus nigra/racemosa			4	3	2					1							1		2		2	2
Vitis vinifera - aborted seed																						
Vitis vinifera	2													2	2	2	2				3	3
OIL, DYE AND FIBRE PLANTS																						
Cannabis sativa																						
cf *Isatis tinctoria*																						
Linum usitatissimum																						
Papaver cf *somniferum*																						
Papaver somniferum													4									
WEEDS OF WINTER CEREALS																						
Adonis sp.								1													1	
Agrostemma githago		2								2	2	4	5	2	2	2				2	2	2
Anthemis arvensis																						1
Bromus arvensis Type													2									
Buglossoides arvensis																1						
Fallopia convolvulus										1			3	1	1	1				2		1
Galium aparine										1		1	3		1					2		
Silene gallica																						
Stachys annua/arvensis																						
Valerianella locusta																						
Valerianella rimosa																						
Veronica hederifolia																						
Viola tricolor																						
Order Aperetalia_weeds of rather acidic/neutral soils																						
Aphanes arvensis																						
cf *Bromus secalinus*																						
Camelina sativa - pod																						

Chronology																						
Context																						
Structure	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**27**	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**
US	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	Fonds de fosse	01 1A	01	02	02C	02D	03C	04	01	02 2	02 01	01
Sample N°	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14078**	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**
Camelina sativa																						
Camelina cf *sativa*																						
Centaurea cf *cyanus*																						
Centaurea cyanus																						
Papaver argemone										1												
Papaver dubium																						
Raphanus raphanistrum																						
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																						
Ajuga chamaepitys									2											2		
Bupleurum rotundifolium																						
Caucalis platycarpos													2									
Galium spurium	2												3									
Glaucium corniculatum																						
Myagrum perfoliatum	2		2		3		2	2	2	2	2					2	1	2	2	3	2	2
Myosoton aquaticum									2													
Orlaya grandiflora													5									
Ranunculus arvensis																						
Scandix pecten-veneris																						
Stachys annua								1		1			2		1		2				2	1
Torilis arvensis																						
Vaccaria pyramidata																				2		
Valerianella dentata		2																				
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																						
Aethusa cynapium																						
Anagallis arvensis/foemina											1		2								1	
Arenaria serpyllifolia											1		4									
Atriplex/Chenopodium		3							1		1	4							2	1		
Capsella bursa-pastoris													4									
Chenopodium album	2							2		3	2		4	3	1	2	1				3	3
Chenopodium ficifolium																						
Chenopodium cf *ficifolium*																						
Chenopodium foliosum																						
Chenopodium hybridum	1							2		1		1	2		2				2	2	2	2
Chenopodium murale																						
Chenopodium polyspermum																						
Echinochloa crus-galli										1												
Euphorbia helioscopia																					1	
Fumaria officinalis																			2			
Fumaria sp.																						
Galeopsis bifida																					1	
Galeopsis ladanum																						
Galeopsis sp.										1					1							
Heliotropium sp.																						
Lamium amplexicaule/purpureum																						
Lamium cf *purpureum*																						
Malva sylvestris													3									
Mercurialis annua																						
Poa annua																						
Polygonum lapathifolium/persicaria	3	3		1						1		1	4	2	2	2	2	1			2	2
Polygonum persicaria																						
Portulaca sp.																						
Setaria verticillata/viridis								2			1											
Solanum nigrum								1	2	1	2		3	1		2				2	3	2
Sonchus asper													2									
Sonchus asper/oleraceus								3		3	2		3									
Sonchus oleraceus													2									
Stachys cf *arvensis*																						
Stellaria media	1							2	2	2	2	1	5	1	2	2	1			2	3	3
Thlaspi arvense		2				2					1		3	1	1						1	1
Urtica urens								2	2	3	1					1				2	3	3
Verbena officinalis								1														1
PERENNIAL RUDERALS																						
Agropyron repens																						

Chronology																						
Context																						
Structure	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**27**	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**
US	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	Fonds de fosse	01 1A	01	02	02C	02D	03C	04	01	02 2	02 01	01
Sample N°	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14078**	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**
Arctium lappa																						
Arctium minus																						
Arctium sp.																						
Bryonia dioica																						1
Carduus crispus																						
Cerastium arvense																						
Chelidonium majus																		1				
cf *Chondrilla juncea*																						
Cirsium sp.																						
Cirsium/Carduus								1					3								1	1
Conium maculatum																						
Convolvulus arvensis													2									
Cruciata laevipes																						
Dipsacus cf *fullonum*																						
Fallopia dumetorum																						
Hyoscyamus niger																						1
Lamium cf *album*																						
Lamium album																						
Lapsana communis																						
cf *Marrubium vulgare*													2									
Onopordum acanthium																				1		
Plantago major										1	1		4									
Poa compressa																						
Polygonum cf *aviculare*																						
Polygonum aviculare										1	1			1								
Potentilla anserina																						1
Ranunculus repens	1							2		1	1		2		1						1	1
Reseda sp.																						
Rumex conglomeratus - perianth															1							
Rumex conglomeratus - tubercle																						
Rumex cf *conglomeratus* - perianth													4									
Rumex cf *crispus*																						
Rumex crispus - perianth																						
Rumex crispus - tubercle																						
Rumex obtusifolius - perianth																						
Rumex obtusifolius	2	2						1	2	1	1	4	4	2	2	1	2	2		2	3	2
Sambucus cf *ebulus*																						
Sambucus ebulus			4		3					1	1	1					1		2	2		
Saponaria officinalis																						
Saponaria cf *officinalis*													2									
Silene alba																						
Urtica dioica										1			3									1
MEADOWS AND PASTURES																						
Achillea millefolium											1											
Agrostis sp.																						
Ajuga cf *reptans*																						
Ajuga reptans																						1
Anthriscus sp.																						
Bromus cf *commutatus*																						
Bromus hordeaceus																						
Centaurea cf *jacea*																						
Centaurea sp.										1			2							2		
Cichorium intybus																						
Cirsium/Centaurea																						
cf *Cynosurus* sp.																						
Dactylis glomerata																						
Deschampsia caespitosa																						
Dianthus cf *armeria*																						
Festuca rubra/ovina																						
Festuca/Lolium																						
Holcus lanatus																						
Leontodon autumnalis																						
Leontodon sp.																						
Leucanthemum vulgare																						
Lolium perenne																						

Chronology																						
Context																						
Structure	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**27**	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**
US	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	Fonds de fosse	01 1A	01	02	02C	02D	03C	04	01	02 2	02 01	01
Sample N°	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14078**	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**
Nardus stricta																						
Plantago lanceolata																						
Plantago media											1											
Poa pratensis																						
Poa pratensis Type																						
Poa pratensis/trivialis																						
Potentilla cf *erecta*																						
Potentilla erecta																						
Prunella cf *vulgaris*									2													
Prunella vulgaris								2		1	3		3									
Ranunculus cf *acris*																						
Ranunculus acris																						
Rhinanthus sp.																						
Rumex acetosa - perianth																						
Rumex acetosella																						
Silene vulgaris																						
Taraxacum officinale								1														
Trifolium pratense - pod with seeds																						
Trifolium pratense - capsule																						
Trifolium sp. - chalice																						
Open swards																						
Acinos arvensis																						
Ajuga genevensis																						
Artemisia campestris																						
Centaurea scabiosa																						
Dianthus sp.																						
Euphorbia cf *seguieriana*																						
Euphrasia/Odontites																						
Gentiana cruciata																						
Medicago lupulina - pod with seed																						
Medicago lupulina - pod													2									
Medicago minima - pod	2										1										1	
Odontites sp.																						
Prunella grandiflora																						
Scabiosa columbaria																						
Stachys cf *recta*																						
Stachys recta																						
Teucrium botrys																						
Teucrium montanum																						
Trifolium cf *campestre* - chalice																						
Aquatic plants																						
Lemna sp.													3									
Polygonum cf *amphibium*																						
Potamogeton sp.																						
Sparganium sp.																						
Reed fields																						
Alisma plantago-aquatica													4									
Carex sp.																						
Carex sp. - utriculus		2																				
Carex sp. bicarpellate									3	1	1		2	1		1	1			2	2	2
Carex sp. tricarpellate		2						3	3	2	2		3	1	1	1	2		2	3	4	3
Cicuta virosa																						
Eleocharis palustris	2							2		1	1		3	1		1	1					
Galium cf *palustre*																						
Galium palustre																						
Glyceria sp.																						
Hippuris vulgaris																						
Juncus sp.													3									
Lycopus europaeus										1									2			
Mentha arvensis/aquatica										1			3									
Nasturtium officinale													2									
Oenanthe fistulosa																1						
Oenanthe sp.																						
Poa palustris																						
Rorippa amphibia																						

Chronology																						
Context																						
Structure	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**27**	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**
US	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	Fonds de fosse	01 1A	01	02	02C	02D	03C	04	01	02 2	02 01	01
Sample N°	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14078**	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**
Rumex cf *aquaticus/hydrolapatum*																						
Salix sp. - veg. part																						
Schoenoplectus sp.			1						2												1	
Riverbank plants (pioneer)																						
Alnus glutinosa - veg. part																						
Alnus sp. - veg. Part																						
Cyperus flavescens																						
Cyperus fuscus																						
cf *Myosoton aquaticum*													3									
Polygonum cf *hydropiper*																						
Polygonum hydropiper																						
Polygonum hydropiper/mite																						
Polygonum lapathifolium																						
Polygonum minus																						
Polygonum mite/minus																						
Ranunculus cf *flammula*																						
Ranunculus flammula																						
Ranunculus sardous													2								1	
Ranunculus sceleratus													3									
Teucrium cf *scordium*																						
Wet meadows																						
cf *Euphorbia palustris*																				2		
Filipendula ulmaria																						
Linum catharticum																						
Lychnis flos-cuculi																						
Scirpus sylvaticus																						
Stachys officinalis																						
Forests, forest edges and clearings, hedges																						
Abies alba - needle																						
Arctium cf *nemorosum*																						
Cornus sanguinea																						
Crataegus sp.																						
cf *Humulus lupulus*																						
Quercus sp. - veg. part												1										
Rosa sp.													2	1	1	1						1
Solanum cf *dulcamara*										1												
Stellaria cf *nemorum*											1											
Torilis cf *japonica*																						
Valeriana cf *tripteris*														1								
Viburnum lantana																						
Viburnum opulus																						
Calamintha sylvatica																						
Galium verum																						
Hypericum perforatum													2									
Saponaria cf *ocymoides*																						
Silene cf *nutans*																						
Silene nutans																						
Thalictrum minus																						
VARIA																						
Ajuga sp.																						
Allium sp.										1												
Apiaceae - fragments																						
Asteraceae								1														
Boraginaceae																						
Brassicaceae																						
Bromus sp.																						
Campanula sp.																						
Carduus sp.																					1	1
Caryophyllaceae													4									
Cerastium sp.											1											
Chenopodiaceae													3									
Chenopodiaceae/Amaranthaceae																						

Chronology																						
Context																						
Structure	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**27**	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**
US	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	Fonds de fosse	01 1A	01	02	02C	02D	03C	04	01	02 2	02 01	01
Sample N°	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14078**	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**
Chenopodium sp.																						
Cichorium sp.																						
Crepis sp.																						
Cuscuta sp.																						
Cyperaceae										1												1
Epilobium sp.																						
Euphorbia sp.													2								1	
Euphorbia sp. - fruit																						
Euphorbia sp. - capsule																						
Fallopia sp.																						
Filipendula sp.																						
Galium sp.																					2	1
Hypericum sp.																						
Inula sp.																						
Lamiaceae													3									
Lamium sp.										1	1						1	1			1	2
Liliaceae																						
Malva sp.																						
cf *Matricaria* sp.																						
Papaver sp.													4		1							
Physalis/Solanum															1							
Phyteuma sp.																						
Plantago sp. - chalice																						
Plantago sp.																						
Poa sp.								1			2											
Poaceae																						
Poaceae											2		3									
Polygonaceae																						
Polygonum sp.																						
Polygonum sp.													4									
Potentilla sp.								1			1				1	1						
Primulaceae																						
Ranunculaceae																						
Ranunculus sp.				2					2			2								2		
cf *Raphanus* sp.																						
Rosaceae - thorn																						
Rosaceae																						
Rosaceae - flower																						
Rumex sp. - tubercle																						
Rumex sp.																						
Rumex sp. - perianth													4									
Sambucus sp.										1				2	1			2				
Satureja sp.																						
Scabiosa sp.	1							1			1											
cf *Scandix* sp.																						
Scrophulariaceae																						
Silene alba/dioica	1																					
Silene sp.										2	1		2								1	1
Solanaceae													3									
Solanum sp.										1												
Sonchus sp.																						
Stachys sp.													2									
Stachys/Lamium																			2	2		
Stellaria graminea/palustris								1		1			2									1
Stellaria sp.													3									
Teucrium sp.																						
Torilis sp.																						
Veronica sp.																						
Vicia sp.																						
Viola sp. - capsule																						
Viola sp.								1		1												
Indeterminata - rhizome																						
Indeterminata - fruitstem																				2		
Indeterminata - endocarp																						
Indeterminata				1																		

Chronology																						
Context																						
Structure	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**27**	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**
US	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	Fonds de fosse	01 1A	01	02	02C	02D	03C	04	01	02 2	02 01	01
Sample N°	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14078**	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**
CHARRED																						
CEREALS _ grain																						
Avena sp.			2																			
Hordeum vulgare																					1	
Hordeum sp.			1		2																	
Triticum aestivum																				3		
Triticum aestivum/durum/turgidum																						
Triticum dicoccon																						
Triticum cf *dicoccon*			1																			
Triticum sp.			2																2			
Cerealia ohne Hirsen	2						2			1	1									2		
Panicum miliaceum								1												1		
Setaria italica																						
Panicum/Setaria																						
CEREALS _ chaff																						
Hordeum vulgare - rachis													2									
Hordeum sp. - rachis																						
Triticum dicoccon - spikelet fork																						
Triticum dicoccon - glume														1								
Triticum monococcum - spikelet fork																						
Triticum monococcum - glume																						
Triticum spelta - spikelet fork																						
Triticum spelta - glume base			1																			
Triticum spelta - glume																					1	
Triticum sp. - spikelet fork																						
Triticum sp. - glume																						
Cerealia																						
NUTS																						
Corylus avellana					2																	
Juglans regia																						
PULSES																						
cf *Lathyrus* sp.																						
Lens culinaris																						
Pisum sativum																						
Vicia faba			1																			
Vicia/Lathyrus																						
Fabaceae																	1					
FRUITS																						
Vitis vinifera																						
WEEDS OF WINTER CEREALS																						
Galium aparine			1																			
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																						
Avena fatua																						
Galium spurium																						
Vicia cf *angustifolia*																						
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																						
Chenopodium polyspermum																						
Thlaspi arvense																						
PERENNIAL RUDERALS																						
Rumex obtusifolius																						
MEADOWS AND PASTURES																						
Centaurea sp.																						
Festuca/Lolium			1																			
Plantago lanceolata																						
Plantago media																						
Trifolium sp.																						
Reed fields																						
cf *Alisma plantago-aquatica*																						
Carex sp. tricarpellate																						
Galium cf *palustre*																						
Riverbank plants (pioneer)																						
Teucrium scordium																						

Chronology																						
Context																						
Structure	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**27**	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**
US	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	Fonds de fosse	01 1A	01	02	02C	02D	03C	04	01	02 2	02 01	01
Sample N°	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14078**	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**
Forests, forest edges and clearings, hedges																						
Abies alba - needle																						
Galium verum																						
VARIA																						
Chenopodium sp.																						
Galium sp.																	3					
Poaceae																1						1
Vicia sp.																						
Indeterminata - amorphous object			1						2													
Indeterminata - crusts																						
Indeterminata - seed/fruit			1																			
MINERALISED																						
CEREALS _ grain																						
Avena sp.																						
Hordeum vulgare																						
Triticum spelta																						
Triticum sp.																						
Panicum miliaceum			2										3	2	1		1	1				
Setaria italica																						
Panicum/Setaria																						
Cerealia ohne Hirsen													2									
CEREALS _ chaff																						
Hordeum vulgare - rachis													3									
Triticum spelta - spikelet fork												2										
Cerealia - ear																						
Cerealia - glume																						
Panicum miliaceum - glume																						
Setaria italica - glume																						
Panicum/Setaria - glume																						
PULSES																						
Lens culinaris												3	1		2			2				
Pisum sativum													4									
Vicia faba																						
Fabaceae - fruitflesh															1	1						
Fabaceae																						
FRUITS																						
Cucumis melo																						
Cucumis melo/sativa											1									2		
Ficus carica		3		2								2								2		
Fragaria vesca																						
Malus domestica																						
Malus sylvestris/domestica		2	1									3								2		
Pyrus sp.																						
Malus/Pyrus													3	2			1					
Morus sp.																						
Physalis alkekengi																						
Prunus sp. - fragment																						
Rubus caesius																						
Rubus sp. - inner																						
Sambucus nigra/racemosa																						
Vitis vinifera - fruitflesh				1								2								3		
Vitis vinifera - aborted seed																						
Vitis vinifera		2														2						
SPICES																						
Anethum graveolens													2									
Apium graveolens																						
Carum carvi																						
Coriandrum sativum													3	1			1					
Foeniculum vulgare																						
Nigella cf *sativa*																						
VEGETABLES AND SALADS																						
Atriplex sp.																						
Beta vulgaris													1									

Chronology																						
Context																						
Structure	**24**	**24**	**02**	**02**	**08**	**14**	**15**	**25**	**25**	**25**	**25**	**27**	**27**	**27**	**27**	**27**	**27**	**27**	**33**	**73**	**73**	**73**
US	04AD	5/6 A/B	05	07	00	02	02	01A	01B	01C	Fonds de fosse	01 1A	01	02	02C	02D	03C	04	01	02 2	02 01	01
Sample N°	**BK14073**	**BK14082**	**BK14007**	**BK14008**	**BK14009**	**BK14015**	**BK14017**	**BK14020**	**BK14021**	**BK14022**	**BK14059**	**BK14078**	**BK14184**	**BK14097**	**BK14103**	**BK14104**	**BK14105**	**BK14102**	**BK14143**	**BK14148**	**BK14149**	**BK14157**
Brassica sp.																						
Daucus carota																						
Lagenaria siceraria																						
OIL AND FIBRE PLANTS																						
Linum usitatissimum																						
Papaver somniferum																						
WEEDS OF WINTER CEREALS																						
Agrostemma githago														1	1							
Buglossoides arvensis																						
Fallopia convolvulus																						
Galium aparine			3																			
cf *Veronica hederifolia*																						
Order Aperetalia_weeds of rather acidic/neutral soils																						
Camelina sativa																						
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																						
Caucalis platycarpos																						
Galium spurium													2									
Vaccaria pyramidata																						
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																						
Galeopsis cf *speciosa*																						
Polygonum lapathifolium/persicaria																						
Solanum nigrum																						
Sonchus oleraceus																						
Stellaria media																						
Thlaspi arvense																						
PERENNIAL RUDERALS																						
Arctium sp.																						
Convolvulus arvensis																						
Hyoscyamus niger																			2			
Lapsana communis																						
MEADOWS AND PASTURES																						
Centaurea sp.																						
Rhinanthus sp.																						
Scabiosa sp.																						
Reed fields																						
Carex sp. tricarpellat																						
Galium palustre																						
Forests, forest edges and clearings, hedges																						
Rosa sp.													1									
cf *Seseli libanotis*																						
VARIA																						
Apiaceae									3			4										
Asteraceae																						
Brassicaceae																						
Bromus sp.																						
Cannabinaceae																						
Chenopodium sp.																						
Galium sp.																						
Lamiaceae			1																			
Lolium sp.																						
Papaver sp.																						
Poaceae															1							
Potentilla sp.																						
Rumex sp.																						
Indeterminata - endocarp																						
Indeterminata - fruitflesh																						
Indeterminata - coprolithes																						
Indeterminata - crusts																						
Indeterminata - seed/fruit			1																2			

Civil East																						
Chronology				**Horizon 1**																		
Context				**Layer**																		
Structure	**73**	**140**	**140**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**71**	**71**	**72**	**72**	**72**
US	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	A	B	P26	35	37	07	08	08
Sample N°	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**
Volume	9000	16000	500	6000	6000	7000	9000	5000	5000	5000	7000	6000	5500	8000	5000	3000	6000	2000	5000	9000	8000	8000
Analysis	RS	FU	FU	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	FU	RS	RS	RS	RS	RS
WATERLOGGED																						
CEREALS _ grain																						
Avena sativa/fatua																						
Cerealia - Testa	3	1																				
Panicum miliaceum																						
Setaria italica																						
Panicum/Setaria																						
CEREALS _ chaff																						
Hordeum vulgare - rachis																						
Hordeum sp. - rachis																			2			
Triticum dicoccon - glume base				2											2				3			
Triticum dicoccon - spikelet fork																						
Triticum dicoccon - glume																				1		
Triticum cf *dicoccon* - glume																						
Triticum dicoccon/spelta - glume																						
Triticum monococcum - glume base																						
Triticum monococcum - spikelet fork																						
Triticum monococcum - glume																						
Triticum cf *monococcum* - spikelet fork																						
Triticum cf *monococcum* - glume																						
Triticum spelta - glume base																2		2	3			
Triticum spelta - spikelet fork																	1					
Triticum spelta - glume	1																			1		
Triticum sp. - spikelet fork																						
Triticum sp. - glume	1																			3		
Cerealia - rachis																						
Cerealia ohne Hirsen - glume																						
Panicum miliaceum - glume	3				2														2			
Setaria italica - glume																						
Panicum/Setaria - glume																						
NUTS																						
Corylus avellana	2																			2		
Juglans regia	1																					
PULSES																						
Lens culinaris																						
Pisum sativum																						
Pisum cf *sativum*																						
Vicia faba																						
Fabaceae																						
SPICES																						
Anethum graveolens	2	4														2						2
Apium graveolens	4	4														2						
Carum carvi																						
Coriandrum sativum	3	3						1					1							1	2	2
Foeniculum vulgare																						
Origanum vulgare																						
cf *Petroselinum crispum*																						
Pimpinella anisum																						
cf *Piper nigrum*																						
Piper nigrum																						
cf *Ruta graveolens*																						
Satureja hortensis																						
VEGETABLES AND SALADS																						
Amaranthus sp.	3	3													2							
Atriplex sp. - perianth																						
Atriplex sp.		3																				
Beta vulgaris	1	3							2													
Brassica cf *oleracea*															2				2			2
Brassica rapa/nigra																						
Brassica sp.																						
Brassica/Sinapis																						

Chronology				Horizon 1																		
Context				Layer																		
Structure	**73**	**140**	**140**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**71**	**71**	**72**	**72**	**72**
US	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	A	B	P26	35	37	07	08	08
Sample N°	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**
Daucus carota								1														
Lagenaria siceraria	1																					
Pastinaca sativa																						
Portulaca oleracea																						
FRUITS																						
Cucumis melo																						
Cucumis sativus																						
Cucumis melo/sativa							1															
Ficus carica	3	4	2				2		1					1								
Fragaria vesca																						
Malus domestica																						
Malus sylvestris/domestica																						
Malus/Pyrus - fragment																						
Malus/Pyrus - seed base																						
Malus/Pyrus - pericarp	1	1		2																		
Malus/Pyrus	2	4																				
Pyrus sp.		3																				
Pyrus sp. - stone cells	2	1																				
Pyrus sp. - flower	2	4																				
Morus sp.																						
Olea europaea																						
Physalis alkekengi	1	5																		1		
Prunus cf *avium*																						
Prunus avium/cerasus	1	3	2																			
Prunus cf *domestica*																						
Prunus domestica																						
Prunus domestica/insititia																						
Prunus insititia		3	3																			
Prunus persica		3	2						1													
Prunus cf *spinosa*		1																				
Prunus spinosa	2	3																				
Prunus sp.		3	1																			
Rubus caesius	1	4																				
Rubus cf *fruticosus*																						
Rubus fruticosus																						
Rubus idaeus		3																				
Rubus sp.		1	1																			
Sambucus nigra/racemosa	1	3							2						2							
Vitis vinifera - aborted seed																						
Vitis vinifera	3	4	1						1													
OIL, DYE AND FIBRE PLANTS																						
Cannabis sativa																						
cf *Isatis tinctoria*																						
Linum usitatissimum																						
Papaver cf *somniferum*																						
Papaver somniferum																						
WEEDS OF WINTER CEREALS																						
Adonis sp.	1							1														
Agrostemma githago	2							1							2	2			3	1	2	
Anthemis arvensis								1											2			
Bromus arvensis Type																						
Buglossoides arvensis																						
Fallopia convolvulus	1						1								2				2			
Galium aparine																			2			
Silene gallica																						
Stachys annua/arvensis																						
Valerianella locusta																						
Valerianella rimosa																						
Veronica hederifolia																						
Viola tricolor																						
Order Aperetalia_weeds of rather acidic/neutral soils																						
Aphanes arvensis																						
cf *Bromus secalinus*																			2			
Camelina sativa - pod																						

Chronology				Horizon 1																		
Context				Layer																		
Structure	73	140	140	50	50	50	50	50	50	50	50	50	50	50	50	50	50	71	71	72	72	72
US	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	A	B	P26	35	37	07	08	08
Sample N°	BK14159	BK25018	BK25031	BK14130	BK14131	BK14112	BK14113	BK14086	BK14090	BK14126	BK14118	BK14129	BK14135	BK14136	BK14175	BK14176	BK004026	BK14177	BK14178	BK14153	BK14163	BK14164
Camelina sativa																						
Camelina cf *sativa*																						
Centaurea cf *cyanus*																						
Centaurea cyanus																2			2			
Papaver argemone																						
Papaver dubium																						
Raphanus raphanistrum																						
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																						
Ajuga chamaepitys						2	2			1	2			2								
Bupleurum rotundifolium																						
Caucalis platycarpos	2																					
Galium spurium	1																					
Glaucium corniculatum																						
Myagrum perfoliatum	2	3			2				2										2			
Myosoton aquaticum																						
Orlaya grandiflora																		2	2			
Ranunculus arvensis																						
Scandix pecten-veneris																						
Stachys annua		4	1				2		1		1	1		3						2		
Torilis arvensis																						
Vaccaria pyramidata																						
Valerianella dentata		3						1			1								2			
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																						
Aethusa cynapium		3																				
Anagallis arvensis/foemina									1													
Arenaria serpyllifolia																						
Atriplex/Chenopodium				2		2									2	2	1		2			
Capsella bursa-pastoris																						
Chenopodium album	4	3					1	2	3	2	1	1								1		
Chenopodium ficifolium																						
Chenopodium cf *ficifolium*																						
Chenopodium foliosum																						
Chenopodium hybridum	1	4						2	1		3								2			
Chenopodium murale																						
Chenopodium polyspermum																						
Echinochloa crus-galli																						
Euphorbia helioscopia																						
Fumaria officinalis																						
Fumaria sp.																				1		
Galeopsis bifida																						
Galeopsis ladanum																						
Galeopsis sp.																				1		
Heliotropium sp.																						
Lamium amplexicaule/purpureum																						
Lamium cf *purpureum*																						
Malva sylvestris																						
Mercurialis annua																						
Poa annua																						
Polygonum lapathifolium/persicaria	1	3		3	2			1	1				2			2				2		2
Polygonum persicaria																						
Portulaca sp.																						
Setaria verticillata/viridis																						
Solanum nigrum	1	4				1	1	2	2				2									
Sonchus asper	1																					
Sonchus asper/oleraceus															2	2			2			
Sonchus oleraceus																						
Stachys cf *arvensis*																						
Stellaria media	3			3	2			3	3						1	1	2			3		2
Thlaspi arvense	1														2				2	2		
Urtica urens	3				2																	
Verbena officinalis					2			1														
PERENNIAL RUDERALS																						
Agropyron repens																						

Chronology				Horizon 1																		
Context				**Layer**																		
Structure	**73**	**140**	**140**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**71**	**71**	**72**	**72**	**72**
US	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	A	B	P26	35	37	07	08	08
Sample N°	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**
Arctium lappa																						
Arctium minus																						
Arctium sp.														1								
Bryonia dioica	1																					
Carduus crispus																						
Cerastium arvense																						
Chelidonium majus		3																2				
cf *Chondrilla juncea*																						
Cirsium sp.															2							2
Cirsium/Carduus	1						1							1								
Conium maculatum																						
Convolvulus arvensis																						
Cruciata laevipes		3																				
Dipsacus cf *fullonum*																						
Fallopia dumetorum																						
Hyoscyamus niger								1	1													
Lamium cf *album*																						
Lamium album																						
Lapsana communis																						
cf *Marrubium vulgare*																						
Onopordum acanthium									1													
Plantago major																			2			
Poa compressa																						
Polygonum cf *aviculare*																						
Polygonum aviculare					2	2		2	1			1								1		
Potentilla anserina																						
Ranunculus repens	1							3	1					3						2		
Reseda sp.																						
Rumex conglomeratus - perianth																						
Rumex conglomeratus - tubercle																						
Rumex cf *conglomeratus* - perianth																						
Rumex cf *crispus*																						
Rumex crispus - perianth																						
Rumex crispus - tubercle																						
Rumex obtusifolius - perianth																						
Rumex obtusifolius	2	3				2	1	2	2									3		1		
Sambucus cf *ebulus*																						
Sambucus ebulus								2	1		1											
Saponaria officinalis																						
Saponaria cf *officinalis*																						
Silene alba		3																				
Urtica dioica	1																					
MEADOWS AND PASTURES																						
Achillea millefolium																						
Agrostis sp.																						
Ajuga cf *reptans*																						
Ajuga reptans							1	1		2	2			1						2		
Anthriscus sp.																						
Bromus cf *commutatus*																						
Bromus hordeaceus																						
Centaurea cf *jacea*																						
Centaurea sp.								1														
Cichorium intybus																						
Cirsium/Centaurea																						
cf *Cynosurus* sp.																						
Dactylis glomerata																						
Deschampsia caespitosa																						
Dianthus cf *armeria*																						
Festuca rubra/ovina																						
Festuca/Lolium																						
Holcus lanatus																						
Leontodon autumnalis																						
Leontodon sp.																						
Leucanthemum vulgare																						
Lolium perenne																						

Chronology				Horizon 1																	
Context				**Layer**																	
Structure	**73**	**140**	**140**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**71**	**71**	**72**	**72**	**72**
US	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	A	B	P26	35	37	07	08	08
Sample N°	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**
Nardus stricta																						
Plantago lanceolata									1													
Plantago media																						
Poa pratensis																						
Poa pratensis Type																						
Poa pratensis/trivialis																			2			
Potentilla cf *erecta*					2																	
Potentilla erecta																						
Prunella cf *vulgaris*																2		2	2			
Prunella vulgaris								1														
Ranunculus cf *acris*																						
Ranunculus acris																						
Rhinanthus sp.																						
Rumex acetosa - perianth																						
Rumex acetosella																						
Silene vulgaris																						
Taraxacum officinale																						
Trifolium pratense - pod with seeds																						
Trifolium pratense - capsule																						
Trifolium sp. - chalice					2		1												2			
Open swards																						
Acinos arvensis																						
Ajuga genevensis																						
Artemisia campestris																						
Centaurea scabiosa																						
Dianthus sp.																						
Euphorbia cf *seguieriana*							1			1	1	1		2								
Euphrasia/Odontites																						
Gentiana cruciata																						
Medicago lupulina - pod with seed																						
Medicago lupulina - pod																						
Medicago minima - pod											1											
Odontites sp.																						
Prunella grandiflora																						
Scabiosa columbaria																						
Stachys cf *recta*																						
Stachys recta																						
Teucrium botrys																						
Teucrium montanum																						
Trifolium cf *campestre* - chalice																						
Aquatic plants																						
Lemna sp.																						
Polygonum cf *amphibium*					2																	
Potamogeton sp.								1														
Sparganium sp.																						
Reed fields																						
Alisma plantago-aquatica																						
Carex sp.																						
Carex sp. - utriculus								1														
Carex sp. bicarpellate	1			2	2			1								2		3	3			
Carex sp. tricarpellate	2	3		2			3	3	3	3	3	1		1				2	3	3		
Cicuta virosa																						
Eleocharis palustris	1							2							2	2		3	3	1		
Galium cf *palustre*																						
Galium palustre																						
Glyceria sp.																						
Hippuris vulgaris						1							3	1								
Juncus sp.																						
Lycopus europaeus								1														
Mentha arvensis/aquatica																						
Nasturtium officinale																						
Oenanthe fistulosa								2	1													
Oenanthe sp.				2											2							
Poa palustris																						
Rorippa amphibia																						

Chronology				**Horizon 1**																		
Context				**Layer**																		
Structure	**73**	**140**	**140**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**71**	**71**	**72**	**72**	**72**
US	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	A	B	P26	35	37	07	08	08
Sample N°	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**
Rumex cf *aquaticus/hydrolapatum*																						
Salix sp. - veg. part		3																				
Schoenoplectus sp.																				1		
Riverbank plants (pioneer)																						
Alnus glutinosa - veg. part																						
Alnus sp. - veg. Part								1														
Cyperus flavescens																						
Cyperus fuscus																						
cf *Myosoton aquaticum*																						
Polygonum cf *hydropiper*																						
Polygonum hydropiper				1	1			2					3			3	1			2		
Polygonum hydropiper/mite										1		2										
Polygonum lapathifolium										1												
Polygonum minus																						
Polygonum mite/minus				2									2									
Ranunculus cf *flammula*																						
Ranunculus flammula																						
Ranunculus sardous									1													
Ranunculus sceleratus																						
Teucrium cf *scordium*						2							3	2								
Wet meadows																						
cf *Euphorbia palustris*													2									
Filipendula ulmaria																						
Linum catharticum																						
Lychnis flos-cuculi																						
Scirpus sylvaticus																						
Stachys officinalis																						
Forests, forest edges and clearings, hedges																						
Abies alba - needle														1								
Arctium cf *nemorosum*																						
Cornus sanguinea																						
Crataegus sp.		4																				
cf *Humulus lupulus*																						
Quercus sp. - veg. part																						
Rosa sp.																						
Solanum cf *dulcamara*								1	1													
Stellaria cf *nemorum*																						
Torilis cf *japonica*																						
Valeriana cf *tripteris*																						
Viburnum lantana																						
Viburnum opulus		3																				
Calamintha sylvatica																						
Galium verum																						
Hypericum perforatum																						
Saponaria cf *ocymoides*																						
Silene cf *nutans*																						
Silene nutans																						
Thalictrum minus																						
VARIA																						
Ajuga sp.																						
Allium sp.							2					1								1		
Apiaceae - fragments																						
Asteraceae					2		1			1	1	1							2			
Boraginaceae		3																				
Brassicaceae																						
Bromus sp.																						
Campanula sp.																						
Carduus sp.																						
Caryophyllaceae																						
Cerastium sp.																						
Chenopodiaceae																						
Chenopodiaceae/Amaranthaceae																						

Chronology				Horizon 1																	
Context				Layer																	
Structure	**73**	**140**	**140**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**71**	**71**	**72**	**72**	**72**
US	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	A	B	P26	35	37	07	08	08
Sample N°	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**
Chenopodium sp.																						
Cichorium sp.																						
Crepis sp.																						
Cuscuta sp.																						
Cyperaceae														2								
Epilobium sp.																						
Euphorbia sp.							1			1	1	1		2						1		
Euphorbia sp. - fruit																						
Euphorbia sp. - capsule																						
Fallopia sp.																						
Filipendula sp.																						
Galium sp.	1																					
Hypericum sp.																						
Inula sp.																						
Lamiaceae																		2	2			
Lamium sp.																						
Liliaceae																						
Malva sp.																						
cf *Matricaria* sp.																						
Papaver sp.																						
Physalis/Solanum																						
Phyteuma sp.																						
Plantago sp. - chalice																						
Plantago sp.																						
Poa sp.																						
Poaceae																			1			
Poaceae																2						
Polygonaceae																						
Polygonum sp.																						
Polygonum sp.									1													
Potentilla sp.				2			2			1												
Primulaceae																						
Ranunculaceae																						
Ranunculus sp.						2							2	2		2		2				
cf *Raphanus* sp.																						
Rosaceae - thorn																						
Rosaceae																						
Rosaceae - flower		1																				
Rumex sp. - tubercle																						
Rumex sp.																						
Rumex sp. - perianth															1				3			
Sambucus sp.		3								1												
Satureja sp.																						
Scabiosa sp.	1							1	1													
cf *Scandix* sp.																						
Scrophulariaceae																						
Silene alba/dioica																						
Silene sp.	1																					
Solanaceae																						
Solanum sp.																						
Sonchus sp.																						
Stachys sp.	1									1												
Stachys/Lamium						1							2	2	2							
Stellaria graminea/palustris																	1					
Stellaria sp.																						
Teucrium sp.																						
Torilis sp.																						
Veronica sp.																						
Vicia sp.																						
Viola sp. - capsule																						
Viola sp.	1					2	1		1	1			2	2						2		
Indeterminata - rhizome						3							3	3								
Indeterminata - fruitstem																						
Indeterminata - endocarp																						
Indeterminata						3							3						2			

Chronology				Horizon 1																		
Context				Layer																		
Structure	**73**	**140**	**140**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**71**	**71**	**72**	**72**	**72**
US	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	A	B	P26	35	37	07	08	08
Sample N°	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**
CHARRED																						
CEREALS _ grain																						
Avena sp.																						
Hordeum vulgare		3																				
Hordeum sp.																			2			
Triticum aestivum																						
Triticum aestivum/durum/turgidum																						
Triticum dicoccon																						
Triticum cf *dicoccon*																						
Triticum sp.									1													
Cerealia ohne Hirsen																						
Panicum miliaceum																2						
Setaria italica		3																				
Panicum/Setaria																						
CEREALS _ chaff																						
Hordeum vulgare - rachis																						
Hordeum sp. - rachis																						
Triticum dicoccon - spikelet fork																						
Triticum dicoccon - glume																						
Triticum monococcum - spikelet fork																						
Triticum monococcum - glume																						
Triticum spelta - spikelet fork																						
Triticum spelta - glume base																						
Triticum spelta - glume																						
Triticum sp. - spikelet fork																						
Triticum sp. - glume																						
Cerealia																						
NUTS																						
Corylus avellana		1																				
Juglans regia																						
PULSES																						
cf *Lathyrus* sp.																						
Lens culinaris																						
Pisum sativum																						
Vicia faba																						
Vicia/Lathyrus																						
Fabaceae																						
FRUITS																						
Vitis vinifera																						
WEEDS OF WINTER CEREALS																						
Galium aparine		3																				
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																						
Avena fatua																						
Galium spurium									1													
Vicia cf *angustifolia*																			2			
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																						
Chenopodium polyspermum																						
Thlaspi arvense																						
PERENNIAL RUDERALS																						
Rumex obtusifolius																						
MEADOWS AND PASTURES																						
Centaurea sp.																				1		
Festuca/Lolium																						
Plantago lanceolata																						
Plantago media																						
Trifolium sp.																						
Reed fields																						
cf *Alisma plantago-aquatica*																						
Carex sp. tricarpellate																						
Galium cf *palustre*																						
Riverbank plants (pioneer)																						
Teucrium scordium																						

Chronology				Horizon 1																	
Context				Layer																	
Structure	**73**	**140**	**140**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**71**	**71**	**72**	**72**	**72**
US	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	A	B	P26	35	37	07	08	08
Sample N°	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**
Forests, forest edges and clearings, hedges																						
Abies alba - needle																						
Galium verum																						
VARIA																						
Chenopodium sp.																						
Galium sp.																						
Poaceae																						
Vicia sp.																						
Indeterminata - amorphous object		5																				
Indeterminata - crusts																						
Indeterminata - seed/fruit																						
MINERALISED																						
CEREALS _ grain																						
Avena sp.																						
Hordeum vulgare																						
Triticum spelta																						
Triticum sp.																						
Panicum miliaceum																						
Setaria italica																						
Panicum/Setaria																						
Cerealia ohne Hirsen																						
CEREALS _ chaff																						
Hordeum vulgare - rachis																						
Triticum spelta - spikelet fork																						
Cerealia - ear																						
Cerealia - glume																						
Panicum miliaceum - glume																						
Setaria italica - glume																						
Panicum/Setaria - glume																						
PULSES																						
Lens culinaris		2																				
Pisum sativum																						
Vicia faba		1																				
Fabaceae - fruitflesh																						
Fabaceae		2																				
FRUITS																						
Cucumis melo																						
Cucumis melo/sativa																						
Ficus carica		4																				
Fragaria vesca																						
Malus domestica																						
Malus sylvestris/domestica																						
Pyrus sp.																						
Malus/Pyrus																						
Morus sp.																						
Physalis alkekengi		3																				
Prunus sp. - fragment		2																				
Rubus caesius																						
Rubus sp. - inner																						
Sambucus nigra/racemosa																						
Vitis vinifera - fruitflesh																						
Vitis vinifera - aborted seed																						
Vitis vinifera		5																				
SPICES																						
Anethum graveolens																						
Apium graveolens																						
Carum carvi																						
Coriandrum sativum																						
Foeniculum vulgare																						
Nigella cf *sativa*																						
VEGETABLES AND SALADS																						
Atriplex sp.																						
Beta vulgaris																						

Chronology				Horizon 1																	
Context				Layer																	
Structure	**73**	**140**	**140**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**71**	**71**	**72**	**72**	**72**
US	01 coupe n-s	02	02	01 4III	01 4IV	02 A	02B	02 1B	02 1F	02E	02H	02 II	02 IV	02 V	A	B	P26	35	37	07	08	08
Sample N°	**BK14159**	**BK25018**	**BK25031**	**BK14130**	**BK14131**	**BK14112**	**BK14113**	**BK14086**	**BK14090**	**BK14126**	**BK14118**	**BK14129**	**BK14135**	**BK14136**	**BK14175**	**BK14176**	**BK004026**	**BK14177**	**BK14178**	**BK14153**	**BK14163**	**BK14164**
Brassica sp.																						
Daucus carota																						
Lagenaria siceraria																						
OIL AND FIBRE PLANTS																						
Linum usitatissimum																						
Papaver somniferum																						
WEEDS OF WINTER CEREALS																						
Agrostemma githago																						
Buglossoides arvensis																						
Fallopia convolvulus																						
Galium aparine																						
cf *Veronica hederifolia*																						
Order Aperetalia_weeds of rather acidic/neutral soils																						
Camelina sativa																						
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																						
Caucalis platycarpos																						
Galium spurium																						
Vaccaria pyramidata																						
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																						
Galeopsis cf *speciosa*																						
Polygonum lapathifolium/persicaria																						
Solanum nigrum																						
Sonchus oleraceus																						
Stellaria media																						
Thlaspi arvense																						
PERENNIAL RUDERALS																						
Arctium sp.																						
Convolvulus arvensis																						
Hyoscyamus niger																						
Lapsana communis																						
MEADOWS AND PASTURES																						
Centaurea sp.																						
Rhinanthus sp.																						
Scabiosa sp.																						
Reed fields																						
Carex sp. tricarpellat																						
Galium palustre																						
Forests, forest edges and clearings, hedges																						
Rosa sp.																						
cf *Seseli libanotis*																						
VARIA																						
Apiaceae		3													2	2						
Asteraceae																						
Brassicaceae																						
Bromus sp.																						
Cannabinaceae																						
Chenopodium sp.																						
Galium sp.																						
Lamiaceae																						
Lolium sp.																						
Papaver sp.																						
Poaceae																						
Potentilla sp.																						
Rumex sp.																						
Indeterminata - endocarp																						
Indeterminata - fruitflesh																						
Indeterminata - coprolithes																			2			
Indeterminata - crusts																						
Indeterminata - seed/fruit																						

Civil East																							
Chronology																					**Horizon 2**		
Context																					**Pit**		
Structure	**72**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**	**67**	**78**	**78**	**78**		**38**	**38**	**38**
US	08	02 A	02A	02 B	02 B	02 D	03	03B	03 C	05 A	05C	01 A	01B	01 B	01 B	02	01	02	02		P30	02	02
Sample N°	**BK14180**	**BK24016**	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK14100**	**BK14107**
Volume	8000	10000	14000	10000	13000	10000	10000	9000	7000	7000	7000	11000	11000	6000	7000	7000	9000	10000	7000		7000	6000	7000
Analysis	RS	FU	FU	FU	FU	FU	FU	FU	FU	FU	RS	FU	RS	FU	FU	FU	FU	FU	FU		FU	RS	RS
WATERLOGGED																							
CEREALS _ grain																							
Avena sativa/fatua																							
Cerealia - Testa					4		3																
Panicum miliaceum																					2		
Setaria italica																							
Panicum/Setaria					4																		
CEREALS _ chaff																							
Hordeum vulgare - rachis																							
Hordeum sp. - rachis									4	3	2	3							3				
Triticum dicoccon - glume base																							
Triticum dicoccon - spikelet fork																					2		
Triticum dicoccon - glume				4			4		3	4	2					2	4		3				
Triticum cf *dicoccon* - glume		4												2									
Triticum dicoccon/spelta - glume				5	4					4									3				
Triticum monococcum - glume base																							
Triticum monococcum - spikelet fork																							
Triticum monococcum - glume							4			4		4					3		3				
Triticum cf *monococcum* - spikelet fork																					2		
Triticum cf *monococcum* - glume																							
Triticum spelta - glume base																							
Triticum spelta - spikelet fork																					3		
Triticum spelta - glume	1	4		5	4	4	5		4	4	3			3		3	4	1	4				
Triticum sp. - spikelet fork																							
Triticum sp. - glume						3		1	3	3	3							1					
Cerealia - rachis																							
Cerealia ohne Hirsen - glume				3			5												3				
Panicum miliaceum - glume		3	1			3	4	2	3	4	3	3					3		2				
Setaria italica - glume											1												
Panicum/Setaria - glume										2													
NUTS																							
Corylus avellana		1	1	3	1			1	1	1		3	2				3		1		1		
Juglans regia		1			1		1	2				1	2				1				1	2	2
PULSES																							
Lens culinaris																							
Pisum sativum										3													
Pisum cf *sativum*																							
Vicia faba																							
Fabaceae		3																					
SPICES																							
Anethum graveolens		3				3			3	3		4						1	2		4		
Apium graveolens			1			3			4	4											4		
Carum carvi																					2		
Coriandrum sativum		4	1	3	4	4	4		4	4	2	4				2	3				1		
Foeniculum vulgare										3													
Origanum vulgare																					2		
cf *Petroselinum crispum*																							
Pimpinella anisum																							
cf *Piper nigrum*																							
Piper nigrum																							
cf *Ruta graveolens*																							
Satureja hortensis					4	2				2													
VEGETABLES AND SALADS																							
Amaranthus sp.	2	3	2			3	4	2		4	2	4											
Atriplex sp. - perianth																							
Atriplex sp.		4				4	3	1	3	3	1	4				4							
Beta vulgaris	1							1	3	2			3										
Brassica cf *oleracea*																							
Brassica rapa/nigra																							
Brassica sp.						3					1										3		
Brassica/Sinapis																							

Chronology																					Horizon 2		
Context																					Pit		
Structure	72	55	55	55	55	55	55	55	55	55	55	64	64	65	67	67	78	78	78		38	38	38
US	08	02 A	02A	02 B	02 B	02 D	03	03B	03 C	05 A	05C	01 A	01B	01 B	01 B	02	01	02	02		P30	02	02
Sample N°	BK14180	BK24016	BK24023	BK24017	BK24024	BK24022	BK24026	BK24028	BK24029	BK24040	BK24042	BK24045	BK24046	BK24021	BK24032	BK24037	BK24035	BK24043	BK24044		BK004030	BK14100	BK14107
Daucus carota						3				3	2												
Lagenaria siceraria								1															
Pastinaca sativa						4	3																
Portulaca oleracea																							
FRUITS																							
Cucumis melo																							
Cucumis sativus																							
Cucumis melo/sativa																					5		
Ficus carica		3			4					4		5	2					1			2	2	
Fragaria vesca		3				2				3													
Malus domestica																					3		
Malus sylvestris/domestica																							
Malus/Pyrus - fragment																							
Malus/Pyrus - seed base																					2		
Malus/Pyrus - pericarp		1					1			1											5		
Malus/Pyrus		5	1		2	3	3		1	4	1	4									2		
Pyrus sp.										1													
Pyrus sp. - stone cells		1		1	1					1						1					1	3	
Pyrus sp. - flower						3				3			1								2		
Morus sp.										2											2	2	
Olea europaea		1																					
Physalis alkekengi						2																	
Prunus cf *avium*																							
Prunus avium/cerasus																						3	4
Prunus cf *domestica*																							
Prunus domestica																						1	
Prunus domestica/insititia																					3		
Prunus insititia										1									1			3	4
Prunus persica							1			3		2									1		1
Prunus cf *spinosa*																							
Prunus spinosa																					2	3	
Prunus sp.												1					3						
Rubus caesius																					4		
Rubus cf *fruticosus*																							
Rubus fruticosus																					4	2	
Rubus idaeus																					4		
Rubus sp.																							
Sambucus nigra/racemosa							3								2						3	4	
Vitis vinifera - aborted seed																							
Vitis vinifera		2		1	1	3			3				2								2		
OIL, DYE AND FIBRE PLANTS																							
Cannabis sativa				3			3																
cf *Isatis tinctoria*																							
Linum usitatissimum																					3		
Papaver cf *somniferum*																							
Papaver somniferum																					4		
WEEDS OF WINTER CEREALS																							
Adonis sp.				3																			
Agrostemma githago		5		4	5	3	5		4	4	2	3					3	2	4		2		
Anthemis arvensis				3		3				3							4						
Bromus arvensis Type																							
Buglossoides arvensis																							
Fallopia convolvulus		3	1			3					1							1					
Galium aparine					4	3				3							3						
Silene gallica																							
Stachys annua/arvensis																							
Valerianella locusta																	3						
Valerianella rimosa																							
Veronica hederifolia																					1		
Viola tricolor																							
Order Aperetalia_weeds of rather acidic/neutral soils																							
Aphanes arvensis																							
cf *Bromus secalinus*																							
Camelina sativa - pod					1																		

Chronology																					Horizon 2		
Context																					Pit		
Structure	72	55	55	55	55	55	55	55	55	55	55	64	64	65	67	67	78	78	78		38	38	38
US	08	02 A	02A	02 B	02 B	02 D	03	03B	03 C	05 A	05C	01 A	01B	01 B	01 B	02	01	02	02		P30	02	02
Sample N°	BK14180	BK24016	BK24023	BK24017	BK24024	BK24022	BK24026	BK24028	BK24029	BK24040	BK24042	BK24045	BK24046	BK24021	BK24032	BK24037	BK24035	BK24043	BK24044		BK004030	BK14100	BK14107
Camelina sativa																							
Camelina cf *sativa*																							
Centaurea cf *cyanus*																							
Centaurea cyanus										3													
Papaver argemone						2																	
Papaver dubium																							
Raphanus raphanistrum		3																					
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																							
Ajuga chamaepitys						3																	
Bupleurum rotundifolium																							
Caucalis platycarpos		3		3			2		4					2			3		2				
Galium spurium										2									2				
Glaucium corniculatum																							
Myagrum perfoliatum							2		2		2		2		3		3						
Myosoton aquaticum																							
Orlaya grandiflora			2							3	1		1										
Ranunculus arvensis																							
Scandix pecten-veneris									3														
Stachys annua						3		1		2	2												
Torilis arvensis																							
Vaccaria pyramidata					4	2																	
Valerianella dentata																					1		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																							
Aethusa cynapium																							
Anagallis arvensis/foemina					4	3							2										
Arenaria serpyllifolia						2				3													
Atriplex/Chenopodium																					2		
Capsella bursa-pastoris																							
Chenopodium album	2	4	3	4	4	5	4	2	4	4	2	4	2		3	2	3	2	3				
Chenopodium ficifolium						2																	
Chenopodium cf *ficifolium*																							
Chenopodium foliosum																							
Chenopodium hybridum			1			2		1		3	1												
Chenopodium murale																							
Chenopodium polyspermum																							
Echinochloa crus-galli																							
Euphorbia helioscopia													1										
Fumaria officinalis										2													
Fumaria sp.																							
Galeopsis bifida								1															
Galeopsis ladanum						3																	
Galeopsis sp.										2	2												
Heliotropium sp.																							
Lamium amplexicaule/purpureum																							
Lamium cf *purpureum*										2													
Malva sylvestris																							
Mercurialis annua																							
Poa annua						2																	
Polygonum lapathifolium/persicaria	2	3	1	3					3	4	2		2			4		2	4				
Polygonum persicaria							4		3	3		3							2				
Portulaca sp.																							
Setaria verticillata/viridis																							
Solanum nigrum	1		1	4	4	3	3	2		4	1					2	3	1	2		4		
Sonchus asper											1								2				
Sonchus asper/oleraceus										2		3						1					
Sonchus oleraceus										2													
Stachys cf *arvensis*																							
Stellaria media	3	4	2	3	4	4	4	2	3	5	2	4						2	3				
Thlaspi arvense		3		3		3	3			2	1												
Urtica urens								1		4	1												
Verbena officinalis																							
PERENNIAL RUDERALS																							
Agropyron repens										2													

Chronology																					Horizon 2		
Context																					Pit		
Structure	72	55	55	55	55	55	55	55	55	55	55	64	64	65	67	67	78	78	78		38	38	38
US	08	02 A	02A	02 B	02 B	02 D	03	03B	03 C	05 A	05C	01 A	01B	01 B	01 B	02	01	02	02		P30	02	02
Sample N°	BK14180	BK24016	BK24023	BK24017	BK24024	BK24022	BK24026	BK24028	BK24029	BK24040	BK24042	BK24045	BK24046	BK24021	BK24032	BK24037	BK24035	BK24043	BK24044		BK004030	BK14100	BK14107
Arctium lappa																							
Arctium minus																							
Arctium sp.											1												
Bryonia dioica																							
Carduus crispus																							
Cerastium arvense																							
Chelidonium majus																							
cf *Chondrilla juncea*									3														
Cirsium sp.						3				2	1												
Cirsium/Carduus										4	1												
Conium maculatum																							
Convolvulus arvensis																							
Cruciata laevipes																							
Dipsacus cf *fullonum*																			2				
Fallopia dumetorum																							
Hyoscyamus niger											1										1		
Lamium cf *album*																							
Lamium album																							
Lapsana communis											2												
cf *Marrubium vulgare*																							
Onopordum acanthium																							
Plantago major						2				2													
Poa compressa																							
Polygonum cf *aviculare*																							
Polygonum aviculare	1		1	3	4	4	4	1		4	2						3	2	3		1		
Potentilla anserina										3													
Ranunculus repens	2				4	3					3		1	2				2	3				
Reseda sp.																							
Rumex conglomeratus - perianth			1								2								2				
Rumex conglomeratus - tubercle										4													
Rumex cf *conglomeratus* - perianth																			3				
Rumex cf *crispus*										3													
Rumex crispus - perianth																							
Rumex crispus - tubercle										3													
Rumex obtusifolius - perianth																		1					
Rumex obtusifolius		4		4	4	3	4	2	3	4	4	4	2			3	3	2	4				
Sambucus cf *ebulus*				3			3												2				
Sambucus ebulus					4			1		2				3									
Saponaria officinalis																							
Saponaria cf *officinalis*																							
Silene alba						3																	
Urtica dioica										4		3											
MEADOWS AND PASTURES																							
Achillea millefolium																							
Agrostis sp.																							
Ajuga cf *reptans*																							
Ajuga reptans								1			1												
Anthriscus sp.																	3						
Bromus cf *commutatus*																							
Bromus hordeaceus																							
Centaurea cf *jacea*																							
Centaurea sp.	1									3	2												
Cichorium intybus										3													
Cirsium/Centaurea										3							3						
cf *Cynosurus* sp.																							
Dactylis glomerata																							
Deschampsia caespitosa																							
Dianthus cf *armeria*																							
Festuca rubra/ovina																							
Festuca/Lolium																							
Holcus lanatus																							
Leontodon autumnalis																							
Leontodon sp.																							
Leucanthemum vulgare										3													
Lolium perenne																							

Chronology																				Horizon 2		
Context																				Pit		
Structure	72	55	55	55	55	55	55	55	55	55	55	64	64	65	67	67	78	78	78		38	38	38
US	08	02 A	02A	02 B	02 B	02 D	03	03B	03 C	05 A	05C	01 A	01B	01 B	01 B	02	01	02	02		P30	02	02
Sample N°	BK14180	BK24016	BK24023	BK24017	BK24024	BK24022	BK24026	BK24028	BK24029	BK24040	BK24042	BK24045	BK24046	BK24021	BK24032	BK24037	BK24035	BK24043	BK24044		BK004030	BK14100	BK14107
Nardus stricta																							
Plantago lanceolata																							
Plantago media																							
Poa pratensis																							
Poa pratensis Type																							
Poa pratensis/trivialis																							
Potentilla cf *erecta*																							
Potentilla erecta																							
Prunella cf *vulgaris*																							
Prunella vulgaris		3			4	3				2	1								3				
Ranunculus cf *acris*																							
Ranunculus acris							3			4	1												
Rhinanthus sp.										2													
Rumex acetosa - perianth																							
Rumex acetosella																							
Silene vulgaris																							
Taraxacum officinale																			2				
Trifolium pratense - pod with seeds																							
Trifolium pratense - capsule																							
Trifolium sp. - chalice						3				2	1												
Open swards																							
Acinos arvensis										2													
Ajuga genevensis				3		3																	
Artemisia campestris																							
Centaurea scabiosa																							
Dianthus sp.																							
Euphorbia cf *seguieriana*																							
Euphrasia/Odontites						2																	
Gentiana cruciata																							
Medicago lupulina - pod with seed																							
Medicago lupulina - pod										3													
Medicago minima - pod						3		1		3	2												
Odontites sp.																							
Prunella grandiflora																							
Scabiosa columbaria																							
Stachys cf *recta*																			2				
Stachys recta						3																	
Teucrium botrys																		1					
Teucrium montanum																							
Trifolium cf *campestre* - chalice																							
Aquatic plants																							
Lemna sp.										4								1					
Polygonum cf *amphibium*																							
Potamogeton sp.											1							1					
Sparganium sp.						3				2													
Reed fields																							
Alisma plantago-aquatica		3			4	2				2									2				
Carex sp.																					1		
Carex sp. - utriculus							3			2													
Carex sp. bicarpellate						3	3			3	2						3	1	3				
Carex sp. tricarpellate	2	3	2	3	4	4	4			3	1	3	1	2					2				
Cicuta virosa																							
Eleocharis palustris				3	4	3	3	1		3	1								2				
Galium cf *palustre*																							
Galium palustre		3																					
Glyceria sp.										2													
Hippuris vulgaris																							
Juncus sp.										3													
Lycopus europaeus						3																	
Mentha arvensis/aquatica						2																	
Nasturtium officinale																							
Oenanthe fistulosa		3				3				3	3							1	3				
Oenanthe sp.																							
Poa palustris																							
Rorippa amphibia						2																	

Chronology																					Horizon 2		
Context																					Pit		
Structure	**72**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**	**67**	**78**	**78**	**78**		**38**	**38**	**38**
US	08	02 A	02A	02 B	02 B	02 D	03	03B	03 C	05 A	05C	01 A	01B	01 B	01 B	02	01	02	02		P30	02	02
Sample N°	**BK14180**	**BK24016**	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK14100**	**BK14107**
Rumex cf *aquaticus/hydrolapatum*		3																					
Salix sp. - veg. part																							
Schoenoplectus sp.				4	4	3				2	1												
Riverbank plants (pioneer)																							
Alnus glutinosa - veg. part										3													
Alnus sp. - veg. Part																							
Cyperus flavescens																							
Cyperus fuscus						2																	
cf *Myosoton aquaticum*																							
Polygonum cf *hydropiper*										4													
Polygonum hydropiper	1			4	4	3			4	4		4							3				
Polygonum hydropiper/mite		5	2		4	4	4	2	4	5	3	4	1				4	2	4				
Polygonum lapathifolium				4	2		4			4									2				
Polygonum minus		3					3			3						3			3				
Polygonum mite/minus																							
Ranunculus cf *flammula*											1												
Ranunculus flammula																							
Ranunculus sardous										2	1												
Ranunculus sceleratus										2													
Teucrium cf *scordium*																							
Wet meadows																							
cf *Euphorbia palustris*																							
Filipendula ulmaria						2																	
Linum catharticum										2													
Lychnis flos-cuculi										2			2										
Scirpus sylvaticus																							
Stachys officinalis																							
Forests, forest edges and clearings, hedges																							
Abies alba - needle									3														
Arctium cf *nemorosum*																							
Cornus sanguinea										2													
Crataegus sp.																							
cf *Humulus lupulus*																							
Quercus sp. - veg. part																							
Rosa sp.		3																			3		
Solanum cf *dulcamara*							3																
Stellaria cf *nemorum*						2																	
Torilis cf *japonica*																							
Valeriana cf *tripteris*																							
Viburnum lantana																							
Viburnum opulus																							
Calamintha sylvatica										2													
Galium verum																							
Hypericum perforatum																							
Saponaria cf *ocymoides*																							
Silene cf *nutans*																							
Silene nutans																							
Thalictrum minus								1															
VARIA																							
Ajuga sp.																							
Allium sp.		4								2													
Apiaceae - fragments						4																	
Asteraceae		3			4	3																	
Boraginaceae										2													
Brassicaceae																							
Bromus sp.																							
Campanula sp.																							
Carduus sp.			1																				
Caryophyllaceae										4													
Cerastium sp.																							
Chenopodiaceae						3																	
Chenopodiaceae/Amaranthaceae		3																					

Chronology																					Horizon 2		
Context																					Pit		
Structure	72	55	55	55	55	55	55	55	55	55	55	64	64	65	67	67	78	78	78		38	38	38
US	08	02 A	02A	02 B	02 B	02 D	03	03B	03 C	05 A	05C	01 A	01B	01 B	01 B	02	01	02	02		P30	02	02
Sample N°	BK14180	BK24016	BK24023	BK24017	BK24024	BK24022	BK24026	BK24028	BK24029	BK24040	BK24042	BK24045	BK24046	BK24021	BK24032	BK24037	BK24035	BK24043	BK24044		BK004030	BK14100	BK14107
Chenopodium sp.						3				4													
Cichorium sp.		3																					
Crepis sp.																							
Cuscuta sp.						2																	
Cyperaceae						3		1		3								1					
Epilobium sp.						2																	
Euphorbia sp.																							
Euphorbia sp. - fruit				4																			
Euphorbia sp. - capsule				4																			
Fallopia sp.																							
Filipendula sp.		3								2	1												
Galium sp.					4	3	3				1							1					
Hypericum sp.						2																	
Inula sp.																							
Lamiaceae		3				3																	
Lamium sp.											1												
Liliaceae																							
Malva sp.																							
cf *Matricaria* sp.																							
Papaver sp.						2				3													
Physalis/Solanum		4			4																		
Phyteuma sp.																							
Plantago sp. - chalice																							
Plantago sp.																							
Poa sp.						3				4													
Poaceae																							
Poaceae						3					1										3		
Polygonaceae						2																	
Polygonum sp.																							
Polygonum sp.		3			4	4	4		3	4		4				5			3				
Potentilla sp.	1					3				2													
Primulaceae																							
Ranunculaceae																							
Ranunculus sp.																							
cf *Raphanus* sp.											1												
Rosaceae - thorn																							
Rosaceae																							
Rosaceae - flower										3													
Rumex sp. - tubercle																							
Rumex sp.																							
Rumex sp. - perianth		4				3		1		4	2												
Sambucus sp.	1					3	3	1		2	2		2										
Satureja sp.																							
Scabiosa sp.	1	4				3					1								2				
cf *Scandix* sp.									4														
Scrophulariaceae						3																	
Silene alba/dioica																							
Silene sp.																					2		
Solanaceae						2																	
Solanum sp.						3																	
Sonchus sp.						2																	
Stachys sp.						2																	
Stachys/Lamium																							
Stellaria graminea/palustris						2																	
Stellaria sp.																							
Teucrium sp.																							
Torilis sp.																							
Veronica sp.																							
Vicia sp.							3																
Viola sp. - capsule																							
Viola sp.										2	1		1										
Indeterminata - rhizome																							
Indeterminata - fruitstem																					2		
Indeterminata - endocarp						4																	
Indeterminata						4																	

Chronology																					Horizon 2		
Context																					Pit		
Structure	**72**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**	**67**	**78**	**78**	**78**		**38**	**38**	**38**
US	08	02 A	02A	02 B	02 B	02 D	03	03B	03 C	05 A	05C	01 A	01B	01 B	01 B	02	01	02	02		P30	02	02
Sample N°	**BK14180**	**BK24016**	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK14100**	**BK14107**
CHARRED																							
CEREALS _ grain																							
Avena sp.															2								
Hordeum vulgare										2					3								
Hordeum sp.																						1	
Triticum aestivum																							
Triticum aestivum/durum/turgidum																							
Triticum dicoccon																2							
Triticum cf *dicoccon*																							
Triticum sp.															2								
Cerealia ohne Hirsen								1							4	2							
Panicum miliaceum															2								
Setaria italica																							
Panicum/Setaria																							
CEREALS _ chaff																							
Hordeum vulgare - rachis																	3						
Hordeum sp. - rachis																							
Triticum dicoccon - spikelet fork																							
Triticum dicoccon - glume															3	3							
Triticum monococcum - spikelet fork																							
Triticum monococcum - glume				4											2		3						
Triticum spelta - spikelet fork																							
Triticum spelta - glume base																							
Triticum spelta - glume							3								3	2					3		
Triticum sp. - spikelet fork																							
Triticum sp. - glume															3								
Cerealia																							
NUTS																							
Corylus avellana																							
Juglans regia																							
PULSES																							
cf *Lathyrus* sp.																							
Lens culinaris																							
Pisum sativum																							
Vicia faba																							2
Vicia/Lathyrus																							
Fabaceae																							
FRUITS																							
Vitis vinifera																							
WEEDS OF WINTER CEREALS																							
Galium aparine																							
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																							
Avena fatua																2							
Galium spurium																							
Vicia cf *angustifolia*																							
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																							
Chenopodium polyspermum																							
Thlaspi arvense			1																				
PERENNIAL RUDERALS																							
Rumex obtusifolius										2													
MEADOWS AND PASTURES																							
Centaurea sp.																							
Festuca/Lolium																							
Plantago lanceolata																							
Plantago media																							
Trifolium sp.																							
Reed fields																							
cf *Alisma plantago-aquatica*																							
Carex sp. tricarpellate																							
Galium cf *palustre*										3													
Riverbank plants (pioneer)																							
Teucrium scordium						2																	

Chronology																					Horizon 2		
Context																					Pit		
Structure	**72**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**	**67**	**78**	**78**	**78**		**38**	**38**	**38**
US	08	02 A	02A	02 B	02 B	02 D	03	03B	03 C	05 A	05C	01 A	01B	01 B	01 B	02	01	02	02		P30	02	02
Sample N°	**BK14180**	**BK24016**	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK14100**	**BK14107**
Forests, forest edges and clearings, hedges																							
Abies alba - needle																							
Galium verum																							
VARIA																							
Chenopodium sp.						2																	
Galium sp.										2					2								
Poaceae															2								
Vicia sp.													1										
Indeterminata - amorphous object																							
Indeterminata - crusts																							
Indeterminata - seed/fruit														2	2								
MINERALISED																							
CEREALS _ grain																							
Avena sp.																							
Hordeum vulgare																							
Triticum spelta																					2		
Triticum sp.																							
Panicum miliaceum																					5		
Setaria italica																							
Panicum/Setaria																							
Cerealia ohne Hirsen																2					4		
CEREALS _ chaff																							
Hordeum vulgare - rachis																							
Triticum spelta - spikelet fork																							
Cerealia - ear																							
Cerealia - glume																							
Panicum miliaceum - glume																							
Setaria italica - glume																							
Panicum/Setaria - glume																							
PULSES																							
Lens culinaris																					5		
Pisum sativum																							
Vicia faba																							
Fabaceae - fruitflesh																							
Fabaceae																							
FRUITS																							
Cucumis melo																							
Cucumis melo/sativa																							
Ficus carica																					5	4	
Fragaria vesca																							
Malus domestica																					4		
Malus sylvestris/domestica																						2	
Pyrus sp.																							
Malus/Pyrus																							
Morus sp.																					4		
Physalis alkekengi																							
Prunus sp. - fragment																							
Rubus caesius																							
Rubus sp. - inner																							
Sambucus nigra/racemosa																							
Vitis vinifera - fruitflesh																							
Vitis vinifera - aborted seed																							
Vitis vinifera																					5	4	4
SPICES																							
Anethum graveolens																							
Apium graveolens																							
Carum carvi																							
Coriandrum sativum																					4		
Foeniculum vulgare																							
Nigella cf *sativa*																							
VEGETABLES AND SALADS																							
Atriplex sp.																					4		
Beta vulgaris																							

Chronology																					Horizon 2		
Context																					Pit		
Structure	**72**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**55**	**64**	**64**	**65**	**67**	**67**	**78**	**78**	**78**		**38**	**38**	**38**
US	08	02 A	02A	02 B	02 B	02 D	03	03B	03 C	05 A	05C	01 A	01B	01 B	01 B	02	01	02	02		P30	02	02
Sample N°	**BK14180**	**BK24016**	**BK24023**	**BK24017**	**BK24024**	**BK24022**	**BK24026**	**BK24028**	**BK24029**	**BK24040**	**BK24042**	**BK24045**	**BK24046**	**BK24021**	**BK24032**	**BK24037**	**BK24035**	**BK24043**	**BK24044**		**BK004030**	**BK14100**	**BK14107**
Brassica sp.																							
Daucus carota																							
Lagenaria siceraria																							
OIL AND FIBRE PLANTS																							
Linum usitatissimum																							
Papaver somniferum																							
WEEDS OF WINTER CEREALS																							
Agrostemma githago																					5		
Buglossoides arvensis																							
Fallopia convolvulus																					3		
Galium aparine																							
cf *Veronica hederifolia*																							
Order Aperetalia_weeds of rather acidic/neutral soils																							
Camelina sativa																							
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																							
Caucalis platycarpos																							
Galium spurium																							
Vaccaria pyramidata																							
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																							
Galeopsis cf *speciosa*																							
Polygonum lapathifolium/persicaria																							
Solanum nigrum																							
Sonchus oleraceus																							
Stellaria media																							
Thlaspi arvense																							
PERENNIAL RUDERALS																							
Arctium sp.																							
Convolvulus arvensis																							
Hyoscyamus niger																							
Lapsana communis																							
MEADOWS AND PASTURES																							
Centaurea sp.																							
Rhinanthus sp.																					3		
Scabiosa sp.																							
Reed fields																							
Carex sp. tricarpellat																							
Galium palustre																							
Forests, forest edges and clearings, hedges																							
Rosa sp.																							
cf *Seseli libanotis*																							
VARIA																							
Apiaceae																					1		
Asteraceae																							
Brassicaceae																							
Bromus sp.																							
Cannabinaceae																							
Chenopodium sp.															2								
Galium sp.																							
Lamiaceae																							
Lolium sp.																							
Papaver sp.																							
Poaceae																					1		
Potentilla sp.																							
Rumex sp.																					3		
Indeterminata - endocarp																					3		
Indeterminata - fruitflesh																							
Indeterminata - coprolithes																							
Indeterminata - crusts																							
Indeterminata - seed/fruit																					5		

Civil East																							
Chronology																							
Context																							
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
US	02	02 09	02 09	01 2	04	04	08	09 06	09 10	09b 04	09b 05	09b 06	09b 07	09b 08	09b 09	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	**BK14115**	**BK14108**	**BK14110**	**BK14116**	**BK14123**	**BK14124**	**BK14132**	**BK14151**	**BK14155**	**BK14166**	**BK14167**	**BK14168**	**BK14169**	**BK14170**	**BK14171**	**BK14172**	**BK14181**	**BK14182**	**BK24001**	**BK24002**	**BK24003**	**BK24007**	**BK24008**
Volume	1000	1000	4000	24000	6000	8000	8000	6000	10000	5000	8000	5000	5000	10000	7000	10000	6000	6000	4000	4000	3000	4000	5000
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	FU	RS	RS	RS	FU	FU	RS	RS	FU	FU	FU	FU	FU
WATERLOGGED																							
CEREALS _ grain																							
Avena sativa/fatua																							
Cerealia - Testa				4		4		3		2	2	3	2			1	3	3					
Panicum miliaceum																							
Setaria italica											3					4							
Panicum/Setaria																							
CEREALS _ chaff																							
Hordeum vulgare - rachis																							
Hordeum sp. - rachis																							
Triticum dicoccon - glume base				2																			
Triticum dicoccon - spikelet fork																							
Triticum dicoccon - glume											3						1						
Triticum cf *dicoccon* - glume																							
Triticum dicoccon/spelta - glume																							
Triticum monococcum - glume base																							
Triticum monococcum - spikelet fork																							
Triticum monococcum - glume											3												
Triticum cf *monococcum* - spikelet fork																							
Triticum cf *monococcum* - glume																							
Triticum spelta - glume base				2		1																	
Triticum spelta - spikelet fork																							
Triticum spelta - glume											3					3	1						
Triticum sp. - spikelet fork																							
Triticum sp. - glume											2		2		4	4							
Cerealia - rachis																							
Cerealia ohne Hirsen - glume											3												
Panicum miliaceum - glume				4	1	1									4	3	2						
Setaria italica - glume																							
Panicum/Setaria - glume											2					2							
NUTS																							
Corylus avellana	2			2				2	1		3	2			1	3	1		2		2	3	3
Juglans regia				2	2	1		1		1	1		1		1	1						1	1
PULSES																							
Lens culinaris																3							
Pisum sativum																							
Pisum cf *sativum*																							
Vicia faba																							
Fabaceae											3												
SPICES																							
Anethum graveolens		1			2	2		1	1		4	2	2		3	3	2	3					
Apium graveolens	2			2	2				1	2	4			1	4	4	2	2					
Carum carvi																							
Coriandrum sativum				1		2		2			4		2	2	4	4	3	2					
Foeniculum vulgare															2								
Origanum vulgare																							
cf *Petroselinum crispum*																							
Pimpinella anisum																							
cf *Piper nigrum*																							
Piper nigrum																							
cf *Ruta graveolens*																							
Satureja hortensis										1	2	1		1	3	3							
VEGETABLES AND SALADS																							
Amaranthus sp.		1			1			2	1	2	4	2	2	2	4	4	2	2	2				
Atriplex sp. - perianth																2							
Atriplex sp.									1										2				
Beta vulgaris														1									
Brassica cf *oleracea*																							
Brassica rapa/nigra																							
Brassica sp.					1			1	1		3			1	2	3	1						
Brassica/Sinapis											2												

Chronology																							
Context																							
Structure	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	18	18	18	15	15
US	02	02 09	02 09	01 2	04	04	08	09 06	09 10	09b 04	09b 05	09b 06	09b 07	09b 08	09b 09	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	BK14115	BK14108	BK14110	BK14116	BK14123	BK14124	BK14132	BK14151	BK14155	BK14166	BK14167	BK14168	BK14169	BK14170	BK14171	BK14172	BK14181	BK14182	BK24001	BK24002	BK24003	BK24007	BK24008
Daucus carota																							
Lagenaria siceraria				2	2	2						1	1		1	3	1	1					
Pastinaca sativa																							
Portulaca oleracea											3				3	3		1					
FRUITS																							
Cucumis melo															4	4							
Cucumis sativus											3				3	4							
Cucumis melo/sativa			1	2	3	2		2	2		5	2	3	3	5	5	3	3					
Ficus carica	2	4	4		4	2	1	4	4	4	5	4	4	4	5	5	4	4					
Fragaria vesca											2				3	3	1						
Malus domestica																							
Malus sylvestris/domestica																							
Malus/Pyrus - fragment															5								
Malus/Pyrus - seed base									2		4				4								
Malus/Pyrus - pericarp				4	2	1		2	1		1		2	2		1	2	2					
Malus/Pyrus		2			3			3			4		3		4	5							
Pyrus sp.																							
Pyrus sp. - stone cells	4	1		4	3	4	3	2	3	3	1	3	3	3	2	1	3						
Pyrus sp. - flower		2			2			1	2	2	4	2	2	2	3	4	1	1					3
Morus sp.			2	1	3	4		2	3	3	4	3	3	2	4	4	3	3					
Olea europaea				3		4			2							2							
Physalis alkekengi		1		2	2				2	2	3			1	2	3		1					
Prunus cf *avium*																							
Prunus avium/cerasus	3	2		4	3	4		1	3	1	3	2	2	2	3	3	3	2					
Prunus cf *domestica*																							
Prunus domestica		2			3	1		2	2	2		2	2	2	3		3	2					
Prunus domestica/insititia											3				3	4							
Prunus insititia	3			4		4	1																
Prunus persica						1			1		1				3	1						1	1
Prunus cf *spinosa*																							
Prunus spinosa	3	2		3	2				2	2	3	2	1	1	1	3	1	1					
Prunus sp.									2		4					1				2			
Rubus caesius		1		1	3	3		2	3	3	4	1	3	2	4	4	3	3					
Rubus cf *fruticosus*																		2					
Rubus fruticosus		2			2					1	3			1	3	4	2						
Rubus idaeus														2			1						
Rubus sp.											2												
Sambucus nigra/racemosa		2		2					1				2	1			1	1	2	2	1		
Vitis vinifera - aborted seed																4							
Vitis vinifera		4	4					4	4	4	5	3		4		5		3				3	3
OIL, DYE AND FIBRE PLANTS																							
Cannabis sativa																							
cf *Isatis tinctoria*																							
Linum usitatissimum																2							
Papaver cf *somniferum*																							
Papaver somniferum				3							2				4	3							
WEEDS OF WINTER CEREALS																							
Adonis sp.																		1					
Agrostemma githago				4	3			1			5	2	2	1	5	5	3				1		
Anthemis arvensis											2				3								
Bromus arvensis Type																							
Buglossoides arvensis																							
Fallopia convolvulus					2			1	2			1	2	1	2	3	2						
Galium aparine					1						3				2	3							
Silene gallica				2																			
Stachys annua/arvensis																			2				
Valerianella locusta																							
Valerianella rimosa																							
Veronica hederifolia																							
Viola tricolor																							
Order Aperetalia_weeds of rather acidic/neutral soils																							
Aphanes arvensis																2							
cf *Bromus secalinus*																							
Camelina sativa - pod																							

Chronology																							
Context																							
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
US	02	02 09	02 09	01 2	04	04	08	09 06	09 10	09b 04	09b 05	09b 06	09b 07	09b 08	09b 09	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	**BK14115**	**BK14108**	**BK14110**	**BK14116**	**BK14123**	**BK14124**	**BK14132**	**BK14151**	**BK14155**	**BK14166**	**BK14167**	**BK14168**	**BK14169**	**BK14170**	**BK14171**	**BK14172**	**BK14181**	**BK14182**	**BK24001**	**BK24002**	**BK24003**	**BK24007**	**BK24008**
Camelina sativa					1											4		1					
Camelina cf *sativa*																							
Centaurea cf *cyanus*																							
Centaurea cyanus																							
Papaver argemone											2				2	3							
Papaver dubium											2												
Raphanus raphanistrum																							
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																							
Ajuga chamaepitys														1									
Bupleurum rotundifolium																							
Caucalis platycarpos					1											3							
Galium spurium											4												
Glaucium corniculatum																							
Myagrum perfoliatum																	1		3				3
Myosoton aquaticum																							
Orlaya grandiflora																	1						
Ranunculus arvensis					1						2					3							
Scandix pecten-veneris																							
Stachys annua			1					1	1		3	1			3	3							
Torilis arvensis																							
Vaccaria pyramidata				2	2	1					3		1	1	2	3							
Valerianella dentata					1						3				3	3							
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																							
Aethusa cynapium											3												
Anagallis arvensis/foemina				2					1	2	4			2	3	4							
Arenaria serpyllifolia											2				3	2							
Atriplex/Chenopodium	2			4																			
Capsella bursa-pastoris																							
Chenopodium album			2		2			2		2	3		2	1	4	4	2	1	2	3	1		
Chenopodium ficifolium																							
Chenopodium cf *ficifolium*																2							
Chenopodium foliosum																							
Chenopodium hybridum	2								1	2	3	1	1	2	2	3	1	1	2	2			
Chenopodium murale								1	2	1	4	2	1	2	4	4	1	2	2	2	1		
Chenopodium polyspermum																							
Echinochloa crus-galli																							
Euphorbia helioscopia																							
Fumaria officinalis																							
Fumaria sp.														1									
Galeopsis bifida																							
Galeopsis ladanum																							
Galeopsis sp.										1	3	1											
Heliotropium sp.																							
Lamium amplexicaule/purpureum																				4			
Lamium cf *purpureum*																							
Malva sylvestris					1						3				2				2				
Mercurialis annua																					1		
Poa annua															2	2							
Polygonum lapathifolium/persicaria					1	2		2									1						
Polygonum persicaria																							
Portulaca sp.															2								
Setaria verticillata/viridis																							
Solanum nigrum											4		3	2	4	4	3	3					
Sonchus asper											2					2							
Sonchus asper/oleraceus															2								
Sonchus oleraceus															2								
Stachys cf *arvensis*																							
Stellaria media				2						1	2		1	1	3	4		1					
Thlaspi arvense								1							2	3	1						
Urtica urens										2	3				3	4	1						
Verbena officinalis											2												
PERENNIAL RUDERALS																							
Agropyron repens																							

Chronology																							
Context																							
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
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Arctium lappa											3								4		2		
Arctium minus																							
Arctium sp.											3									1			
Bryonia dioica																							
Carduus crispus																							
Cerastium arvense																							
Chelidonium majus															2	3							
cf *Chondrilla juncea*																							
Cirsium sp.											3			1									
Cirsium/Carduus					1										3								
Conium maculatum														1						3	2		
Convolvulus arvensis																							
Cruciata laevipes																							
Dipsacus cf *fullonum*																							
Fallopia dumetorum																							
Hyoscyamus niger																				1			3
Lamium cf *album*																							
Lamium album																			2				
Lapsana communis											3										1		
cf *Marrubium vulgare*																							
Onopordum acanthium																							
Plantago major											2				2								
Poa compressa																							
Polygonum cf *aviculare*																							
Polygonum aviculare				2	1				1	1	3				4	3	2						
Potentilla anserina																							
Ranunculus repens																2							
Reseda sp.																							
Rumex conglomeratus - perianth																							
Rumex conglomeratus - tubercle																							
Rumex cf *conglomeratus* - perianth																							
Rumex cf *crispus*																							
Rumex crispus - perianth																							
Rumex crispus - tubercle																							
Rumex obtusifolius - perianth																							
Rumex obtusifolius					1						4		2	2	3	3	2		2				
Sambucus cf *ebulus*																							
Sambucus ebulus			1																2				
Saponaria officinalis																							
Saponaria cf *officinalis*																							
Silene alba																							
Urtica dioica											2				2	3							
MEADOWS AND PASTURES																							
Achillea millefolium																							
Agrostis sp.																							
Ajuga cf *reptans*																							
Ajuga reptans																							
Anthriscus sp.																							
Bromus cf *commutatus*																							
Bromus hordeaceus																							
Centaurea cf *jacea*																							
Centaurea sp.																							
Cichorium intybus																							
Cirsium/Centaurea																							
cf *Cynosurus* sp.																							
Dactylis glomerata																							
Deschampsia caespitosa																							
Dianthus cf *armeria*																							
Festuca rubra/ovina																							
Festuca/Lolium																							
Holcus lanatus																							
Leontodon autumnalis																							
Leontodon sp.																							
Leucanthemum vulgare															2								
Lolium perenne																							

Chronology																							
Context																							
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
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Nardus stricta																							
Plantago lanceolata																							
Plantago media																							
Poa pratensis																							
Poa pratensis Type																							
Poa pratensis/trivialis																							
Potentilla cf *erecta*																							
Potentilla erecta																							
Prunella cf *vulgaris*																							
Prunella vulgaris															2	3							
Ranunculus cf *acris*																							
Ranunculus acris																							
Rhinanthus sp.																							
Rumex acetosa - perianth																							
Rumex acetosella																							
Silene vulgaris																4							
Taraxacum officinale											3				2								
Trifolium pratense - pod with seeds																							
Trifolium pratense - capsule											3												
Trifolium sp. - chalice															2	3							
Open swards																							
Acinos arvensis											3												
Ajuga genevensis																							
Artemisia campestris																2							
Centaurea scabiosa																							
Dianthus sp.																							
Euphorbia cf *seguieriana*																							
Euphrasia/Odontites																							
Gentiana cruciata																							
Medicago lupulina - pod with seed																							
Medicago lupulina - pod																							
Medicago minima - pod															3								
Odontites sp.																							
Prunella grandiflora																							
Scabiosa columbaria																							
Stachys cf *recta*																							
Stachys recta																							
Teucrium botrys																							
Teucrium montanum					1												1						
Trifolium cf *campestre* - chalice																							
Aquatic plants																							
Lemna sp.																							
Polygonum cf *amphibium*																							
Potamogeton sp.																							
Sparganium sp.																							
Reed fields																							
Alisma plantago-aquatica																							
Carex sp.																							
Carex sp. - utriculus															2								
Carex sp. bicarpellate															3							3	3
Carex sp. tricarpellate			1	2	1						4	1	1		4	3	2	1	3			3	3
Cicuta virosa																							
Eleocharis palustris										1	3				3								
Galium cf *palustre*											3												
Galium palustre																							
Glyceria sp.																							
Hippuris vulgaris																							
Juncus sp.															2								
Lycopus europaeus																3							
Mentha arvensis/aquatica															2	3							
Nasturtium officinale											3												
Oenanthe fistulosa																		1					
Oenanthe sp.																							
Poa palustris																							
Rorippa amphibia																							

Chronology																							
Context																							
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
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Rumex cf *aquaticus/hydrolapatum*																							
Salix sp. - veg. part																							
Schoenoplectus sp.					1																		
Riverbank plants (pioneer)																							
Alnus glutinosa - veg. part																							
Alnus sp. - veg. Part																							
Cyperus flavescens																							
Cyperus fuscus											2												
cf *Myosoton aquaticum*																							
Polygonum cf *hydropiper*																							
Polygonum hydropiper																							
Polygonum hydropiper/mite											3								2				
Polygonum lapathifolium											3												
Polygonum minus																							
Polygonum mite/minus																							
Ranunculus cf *flammula*																							
Ranunculus flammula																							
Ranunculus sardous																							
Ranunculus sceleratus											3												
Teucrium cf *scordium*																							
Wet meadows																							
cf *Euphorbia palustris*																							
Filipendula ulmaria																2							
Linum catharticum																							
Lychnis flos-cuculi																							
Scirpus sylvaticus																							
Stachys officinalis																							
Forests, forest edges and clearings, hedges																							
Abies alba - needle					1																		
Arctium cf *nemorosum*																							
Cornus sanguinea																							
Crataegus sp.																							
cf *Humulus lupulus*																							3
Quercus sp. - veg. part																							
Rosa sp.		1			1			1		2	4	2	1	1	1	4	2	3					
Solanum cf *dulcamara*																							
Stellaria cf *nemorum*																							
Torilis cf *japonica*																							
Valeriana cf *tripteris*																							
Viburnum lantana																							
Viburnum opulus																							
Calamintha sylvatica																							
Galium verum																							
Hypericum perforatum											2				2								
Saponaria cf *ocymoides*																							
Silene cf *nutans*																							
Silene nutans																							
Thalictrum minus																							
VARIA																							
Ajuga sp.																							
Allium sp.																							
Apiaceae - fragments											4					3							
Asteraceae											2					2							
Boraginaceae																							
Brassicaceae															2								
Bromus sp.																							
Campanula sp.																							
Carduus sp.																							
Caryophyllaceae											2				3								
Cerastium sp.																							
Chenopodiaceae											4				2								
Chenopodiaceae/Amaranthaceae																			2		2	3	

Chronology																							
Context																							
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
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Chenopodium sp.											3				3								
Cichorium sp.																							
Crepis sp.																							
Cuscuta sp.																							
Cyperaceae																		1					
Epilobium sp.																							
Euphorbia sp.																							
Euphorbia sp. - fruit																							
Euphorbia sp. - capsule																							
Fallopia sp.											2												
Filipendula sp.																							
Galium sp.					1						2				3	3							
Hypericum sp.																							
Inula sp.																							
Lamiaceae				2											3		1						
Lamium sp.																							
Liliaceae																							
Malva sp.																			3	2			
cf *Matricaria* sp.											3												
Papaver sp.										1	3	2		1	3	3							
Physalis/Solanum																							
Phyteuma sp.																							
Plantago sp. - chalice																							
Plantago sp.																							
Poa sp.											2				2	2							
Poaceae																							
Poaceae															3	3							
Polygonaceae																							
Polygonum sp.																							
Polygonum sp.											2				3	2	1						
Potentilla sp.											2												
Primulaceae																							
Ranunculaceae																							
Ranunculus sp.				2															2				
cf *Raphanus* sp.																							
Rosaceae - thorn																							
Rosaceae																							
Rosaceae - flower																							
Rumex sp. - tubercle																							
Rumex sp.																							
Rumex sp. - perianth				2			1									3							
Sambucus sp.					1						3	1				3				1	1		3
Satureja sp.																							
Scabiosa sp.																							
cf *Scandix* sp.																							
Scrophulariaceae																							
Silene alba/dioica																							
Silene sp.								1			3		1		3			1					
Solanaceae																2							
Solanum sp.										1	2	1								2			3
Sonchus sp.																							
Stachys sp.																							
Stachys/Lamium																3							
Stellaria graminea/palustris											2												
Stellaria sp.																							
Teucrium sp.																							
Torilis sp.																							
Veronica sp.																							
Vicia sp.																							
Viola sp. - capsule																							
Viola sp.																							
Indeterminata - rhizome																							
Indeterminata - fruitstem																							
Indeterminata - endocarp											2					4							
Indeterminata				3							1					4							

Chronology																							
Context																							
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
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CHARRED																							
CEREALS _ grain																							
Avena sp.																							
Hordeum vulgare																			2				3
Hordeum sp.																							
Triticum aestivum																							
Triticum aestivum/durum/turgidum																							3
Triticum dicoccon																							
Triticum cf *dicoccon*																			2				
Triticum sp.																							
Cerealia ohne Hirsen							1																3
Panicum miliaceum	1																						
Setaria italica																						3	
Panicum/Setaria																			2				
CEREALS _ chaff																							
Hordeum vulgare - rachis																							
Hordeum sp. - rachis													1										
Triticum dicoccon - spikelet fork																							
Triticum dicoccon - glume											2								2				3
Triticum monococcum - spikelet fork																							
Triticum monococcum - glume																							
Triticum spelta - spikelet fork																							
Triticum spelta - glume base																							
Triticum spelta - glume																						3	
Triticum sp. - spikelet fork																							
Triticum sp. - glume																							
Cerealia																							
NUTS																							
Corylus avellana																							
Juglans regia							1																
PULSES																							
cf *Lathyrus* sp.																							
Lens culinaris			1																			3	
Pisum sativum																							
Vicia faba				1																			1
Vicia/Lathyrus													1										
Fabaceae																							
FRUITS																							
Vitis vinifera																							
WEEDS OF WINTER CEREALS																							
Galium aparine																						3	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																							
Avena fatua																							
Galium spurium																						3	
Vicia cf *angustifolia*																							
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																							
Chenopodium polyspermum											2												
Thlaspi arvense																							
PERENNIAL RUDERALS																							
Rumex obtusifolius							1															3	
MEADOWS AND PASTURES																							
Centaurea sp.																							
Festuca/Lolium																							
Plantago lanceolata																							
Plantago media																							
Trifolium sp.																							
Reed fields																							
cf *Alisma plantago-aquatica*																							
Carex sp. tricarpellate																		1					
Galium cf *palustre*																							
Riverbank plants (pioneer)																							
Teucrium scordium																							

Chronology																							
Context																							
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
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Forests, forest edges and clearings, hedges																							
Abies alba - needle																							
Galium verum																							
VARIA																							
Chenopodium sp.																							
Galium sp.			1										1				1						
Poaceae																							3
Vicia sp.																							
Indeterminata - amorphous object																							3
Indeterminata - crusts																							
Indeterminata - seed/fruit																			2				
MINERALISED																							
CEREALS _ grain																							
Avena sp.																							
Hordeum vulgare										1	3				1								
Triticum spelta																							
Triticum sp.					1									1									
Panicum miliaceum					3			1	1	4	5	2	4	4	5	5	3	3					
Setaria italica											3				1	4							
Panicum/Setaria											3				2								
Cerealia ohne Hirsen				2									1		4								
CEREALS _ chaff																							
Hordeum vulgare - rachis																							
Triticum spelta - spikelet fork																							
Cerealia - ear											1												
Cerealia - glume															2								
Panicum miliaceum - glume																2							
Setaria italica - glume											2												
Panicum/Setaria - glume											2												
PULSES																							
Lens culinaris			2	1	3	4			1	3	5	3	3	3	5	5	4	4					
Pisum sativum																							
Vicia faba				1	1					1	3	1	1	1	2	3	1	1					
Fabaceae - fruitflesh					4					4		4	4	4			4						
Fabaceae																							
FRUITS																							
Cucumis melo															4	4							
Cucumis melo/sativa				4	2	4				2	4	2	2	2	4	4		2					
Ficus carica	4					4	1																
Fragaria vesca											3												
Malus domestica																							
Malus sylvestris/domestica				4		4																	
Pyrus sp.																							
Malus/Pyrus			2		3					2	3	3	3	4	3		2	2					
Morus sp.												1											
Physalis alkekengi							2																
Prunus sp. - fragment																							
Rubus caesius					2										2								
Rubus sp. - inner																							
Sambucus nigra/racemosa										1													
Vitis vinifera - fruitflesh				4																			
Vitis vinifera - aborted seed					2						4				4								
Vitis vinifera	4	3	2	4	5	4	1			4	4	4	4	4	5		4	4					
SPICES																							
Anethum graveolens				2	2					2		2	1	1	3			1					
Apium graveolens						3					2	2			2	3							
Carum carvi				2		2																	
Coriandrum sativum					2					3	3		2		3	3							
Foeniculum vulgare															3	3							
Nigella cf *sativa*										1					3								
VEGETABLES AND SALADS																							
Atriplex sp.																							
Beta vulgaris										1													

Chronology																							
Context																							
Structure	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**18**	**18**	**18**	**15**	**15**
US	02	02 09	02 09	01 2	04	04	08	09 06	09 10	09b 04	09b 05	09b 06	09b 07	09b 08	09b 09	09B 10	09b 11	09b 12	01	01 Nord	01 Sud	01 A	01 B
Sample N°	**BK14115**	**BK14108**	**BK14110**	**BK14116**	**BK14123**	**BK14124**	**BK14132**	**BK14151**	**BK14155**	**BK14166**	**BK14167**	**BK14168**	**BK14169**	**BK14170**	**BK14171**	**BK14172**	**BK14181**	**BK14182**	**BK24001**	**BK24002**	**BK24003**	**BK24007**	**BK24008**
Brassica sp.			1																				
Daucus carota									1						1								
Lagenaria siceraria										1	2				2			1					
OIL AND FIBRE PLANTS																							
Linum usitatissimum			1						1		3					1	1						
Papaver somniferum											3					4							
WEEDS OF WINTER CEREALS																							
Agrostemma githago													1	1			1						
Buglossoides arvensis																							
Fallopia convolvulus																							
Galium aparine				3					1		3					4							
cf *Veronica hederifolia*																3							
Order Aperetalia_weeds of rather acidic/neutral soils																							
Camelina sativa										2			2										
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																							
Caucalis platycarpos																							
Galium spurium																							
Vaccaria pyramidata				2																			
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																							
Galeopsis cf *speciosa*															2								
Polygonum lapathifolium/persicaria				2																			
Solanum nigrum										1	3												3
Sonchus oleraceus															2								
Stellaria media																							
Thlaspi arvense																							
PERENNIAL RUDERALS																							
Arctium sp.																							
Convolvulus arvensis					1																		
Hyoscyamus niger																							
Lapsana communis																							
MEADOWS AND PASTURES																							
Centaurea sp.																							
Rhinanthus sp.																							
Scabiosa sp.																							
Reed fields																							
Carex sp. tricarpellat																							
Galium palustre											3												
Forests, forest edges and clearings, hedges																							
Rosa sp.												1											
cf *Seseli libanotis*											3												
VARIA																							
Apiaceae				1		2					2				3	1						3	
Asteraceae											3												
Brassicaceae																							
Bromus sp.																		1					
Cannabinaceae																							
Chenopodium sp.																							
Galium sp.																							
Lamiaceae																							
Lolium sp.																							
Papaver sp.											3				2	4							
Poaceae										1	4				2	3							
Potentilla sp.																							
Rumex sp.																							
Indeterminata - endocarp																							
Indeterminata - fruitflesh															3	1							
Indeterminata - coprolithes																							
Indeterminata - crusts																							
Indeterminata - seed/fruit				3																			

Civil East														
Chronology									**Roman, not specified**					
Context														
Structure	**15**	**15**	**15**	**15**	**42**	**42**	**42**	**53**	**40**	**40**	**40**	**1004**	**Tr 1**	**Tr 1**
US	03 A	03 B	03 C	03 D	02 A	02 B	02 A	P34	02 1	02 2	03			
Sample N°	**BK24009**	**BK24010**	**BK24011**	**BK24012**	**BK24013**	**BK24014**	**BK24015**	**BK004034**	**BK24004**	**BK24005**	**BK24034**	**BK24036**	**BK28001**	**BK28002**
Volume	4000	6000	5000	6000	4000	2000	2000	8000	5000	6000	6000	14000	3000	10000
Analysis	FU	FU	FU	FU	FU	FU	FU	FU	FU	FU	FU	FU	FU	FU
WATERLOGGED														
CEREALS _ grain														
Avena sativa/fatua														
Cerealia - Testa														
Panicum miliaceum								3						
Setaria italica														
Panicum/Setaria		3												
CEREALS _ chaff														
Hordeum vulgare - rachis														
Hordeum sp. - rachis														
Triticum dicoccon - glume base														
Triticum dicoccon - spikelet fork														
Triticum dicoccon - glume	3	4	4										2	3
Triticum cf *dicoccon* - glume														
Triticum dicoccon/spelta - glume														4
Triticum monococcum - glume base														
Triticum monococcum - spikelet fork														
Triticum monococcum - glume														
Triticum cf *monococcum* - spikelet fork														
Triticum cf *monococcum* - glume	3		3											
Triticum spelta - glume base														
Triticum spelta - spikelet fork								1						
Triticum spelta - glume		3	3		1						2		2	
Triticum sp. - spikelet fork			3											
Triticum sp. - glume			4											
Cerealia - rachis			2											
Cerealia ohne Hirsen - glume			3											
Panicum miliaceum - glume			4											3
Setaria italica - glume														
Panicum/Setaria - glume														
NUTS														
Corylus avellana	3	3	3	3		1		3	2	3	2	1	1	
Juglans regia	3	3	3	3				1		3				
PULSES														
Lens culinaris								2						
Pisum sativum														
Pisum cf *sativum*														
Vicia faba								2						
Fabaceae														
SPICES														
Anethum graveolens								3			2			
Apium graveolens		4	5					3						4
Carum carvi														
Coriandrum sativum			3					1						
Foeniculum vulgare														
Origanum vulgare														
cf *Petroselinum crispum*														
Pimpinella anisum														
cf *Piper nigrum*			1											
Piper nigrum														
cf *Ruta graveolens*														
Satureja hortensis	3		3											3
VEGETABLES AND SALADS														
Amaranthus sp.	4	4	4	3	2		3						3	3
Atriplex sp. - perianth														
Atriplex sp.			2							3			2	4
Beta vulgaris														
Brassica cf *oleracea*														
Brassica rapa/nigra	3	4	3							3			3	
Brassica sp.			3											
Brassica/Sinapis														

Chronology										**Roman, not specified**					
Context															
Structure	**15**	**15**	**15**	**15**	**42**	**42**	**42**	**53**		**40**	**40**	**40**	**1004**	**Tr 1**	**Tr 1**
US	03 A	03 B	03 C	03 D	02 A	02 B	02 A	P34		02 1	02 2	03			
Sample N°	**BK24009**	**BK24010**	**BK24011**	**BK24012**	**BK24013**	**BK24014**	**BK24015**	**BK004034**		**BK24004**	**BK24005**	**BK24034**	**BK24036**	**BK28001**	**BK28002**
Daucus carota			4												
Lagenaria siceraria					1										
Pastinaca sativa															
Portulaca oleracea			3												
FRUITS															
Cucumis melo															
Cucumis sativus															
Cucumis melo/sativa															
Ficus carica	3	3	3	3	2	2		5							
Fragaria vesca			4									2			
Malus domestica								4							
Malus sylvestris/domestica															
Malus/Pyrus - fragment															
Malus/Pyrus - seed base															
Malus/Pyrus - pericarp		2	1					1							
Malus/Pyrus															
Pyrus sp.															
Pyrus sp. - stone cells			1	1											
Pyrus sp. - flower			1									2			
Morus sp.															
Olea europaea		3	2	3											
Physalis alkekengi															
Prunus cf *avium*															
Prunus avium/cerasus		2	1					3							
Prunus cf *domestica*															
Prunus domestica															
Prunus domestica/insititia								2							
Prunus insititia	1			2				1							
Prunus persica	1	1	3	1				2						2	
Prunus cf *spinosa*															
Prunus spinosa								2							
Prunus sp.								4						2	
Rubus caesius															
Rubus cf *fruticosus*															
Rubus fruticosus								3							
Rubus idaeus															
Rubus sp.															
Sambucus nigra/racemosa	3			3	2	1									
Vitis vinifera - aborted seed															
Vitis vinifera	3		2	2			2	5						2	
OIL, DYE AND FIBRE PLANTS															
Cannabis sativa		3	3		1									2	
cf *Isatis tinctoria*															
Linum usitatissimum		3													
Papaver cf *somniferum*															
Papaver somniferum															
WEEDS OF WINTER CEREALS															
Adonis sp.		3	3		1									2	
Agrostemma githago	3	4	3	3										3	
Anthemis arvensis		4	4												
Bromus arvensis Type															
Buglossoides arvensis															
Fallopia convolvulus		3						1							4
Galium aparine			3												
Silene gallica															
Stachys annua/arvensis															
Valerianella locusta															
Valerianella rimosa															
Veronica hederifolia															
Viola tricolor															
Order Aperetalia_weeds of rather acidic/neutral soils															
Aphanes arvensis															
cf *Bromus secalinus*															
Camelina sativa - pod															

Chronology										Roman, not specified					
Context															
Structure	15	15	15	15	42	42	42	53		40	40	40	1004	Tr 1	Tr 1
US	03 A	03 B	03 C	03 D	02 A	02 B	02 A	P34		02 1	02 2	03			
Sample N°	BK24009	BK24010	BK24011	BK24012	BK24013	BK24014	BK24015	BK004034		BK24004	BK24005	BK24034	BK24036	BK28001	BK28002
Camelina sativa															
Camelina cf *sativa*															
Centaurea cf *cyanus*							2								
Centaurea cyanus															
Papaver argemone			4												
Papaver dubium															
Raphanus raphanistrum															
Order Secalietalia, Caucalion															
alliance_weeds of calcareous soils															
Ajuga chamaepitys															
Bupleurum rotundifolium															
Caucalis platycarpos			3												
Galium spurium			4												
Glaucium corniculatum						1									
Myagrum perfoliatum			2		2	3	2			3	3				
Myosoton aquaticum			3												4
Orlaya grandiflora			3												
Ranunculus arvensis	3														
Scandix pecten-veneris															
Stachys annua		3	2		2										
Torilis arvensis															
Vaccaria pyramidata															
Valerianella dentata			3												
WEEDS OF SUMMER CROPS AND															
ANNUAL RUDERALS															
Aethusa cynapium										2					
Anagallis arvensis/foemina	3	3	3		1									2	3
Arenaria serpyllifolia			3												
Atriplex/Chenopodium								1							
Capsella bursa-pastoris			3												
Chenopodium album	4	3	4		2	1	2			3	3	3		2	4
Chenopodium ficifolium															
Chenopodium cf *ficifolium*															
Chenopodium foliosum			3												
Chenopodium hybridum			3		2	1	2	1			3	2		2	
Chenopodium murale															
Chenopodium polyspermum	3														3
Echinochloa crus-galli															
Euphorbia helioscopia					1						3			2	
Fumaria officinalis															
Fumaria sp.															
Galeopsis bifida															
Galeopsis ladanum															
Galeopsis sp.			2												3
Heliotropium sp.															
Lamium amplexicaule/purpureum			3				2								4
Lamium cf *purpureum*															
Malva sylvestris															3
Mercurialis annua															
Poa annua			3												
Polygonum lapathifolium/persicaria	3		3	3	2	2	3								
Polygonum persicaria					2										
Portulaca sp.															
Setaria verticillata/viridis			3												
Solanum nigrum	4	4	4	3										3	5
Sonchus asper			3											2	4
Sonchus asper/oleraceus			2												
Sonchus oleraceus															4
Stachys cf *arvensis*															
Stellaria media			4		1			2						2	5
Thlaspi arvense	3	4	3	3			2	1						2	
Urtica urens			3												4
Verbena officinalis			4												3
PERENNIAL RUDERALS															
Agropyron repens															

Chronology										**Roman, not specified**					
Context															
Structure	**15**	**15**	**15**	**15**	**42**	**42**	**42**	**53**		**40**	**40**	**40**	**1004**	**Tr 1**	**Tr 1**
US	03 A	03 B	03 C	03 D	02 A	02 B	02 A	P34		02 1	02 2	03			
Sample N°	**BK24009**	**BK24010**	**BK24011**	**BK24012**	**BK24013**	**BK24014**	**BK24015**	**BK004034**		**BK24004**	**BK24005**	**BK24034**	**BK24036**	**BK28001**	**BK28002**
Arctium lappa	3														
Arctium minus							2								
Arctium sp.								1							
Bryonia dioica															
Carduus crispus					1										
Cerastium arvense															3
Chelidonium majus			2												
cf *Chondrilla juncea*															
Cirsium sp.			4									2			
Cirsium/Carduus															
Conium maculatum															
Convolvulus arvensis															
Cruciata laevipes															
Dipsacus cf *fullonum*															
Fallopia dumetorum															
Hyoscyamus niger			2					1							
Lamium cf *album*															
Lamium album					1		2							3	3
Lapsana communis		3													3
cf *Marrubium vulgare*															
Onopordum acanthium															
Plantago major			3												3
Poa compressa			3												
Polygonum cf *aviculare*											3				
Polygonum aviculare					1			1				2			3
Potentilla anserina					1										
Ranunculus repens	3		4											2	
Reseda sp.															
Rumex conglomeratus - perianth				3											
Rumex conglomeratus - tubercle															
Rumex cf *conglomeratus* - perianth															
Rumex cf *crispus*															
Rumex crispus - perianth															
Rumex crispus - tubercle															
Rumex obtusifolius - perianth															
Rumex obtusifolius	3	4	4	3	2	2	2			3	3	2		2	4
Sambucus cf *ebulus*										2					
Sambucus ebulus															
Saponaria officinalis															
Saponaria cf *officinalis*															
Silene alba			3	3											
Urtica dioica			4												4
MEADOWS AND PASTURES															
Achillea millefolium															
Agrostis sp.			3												
Ajuga cf *reptans*					1										
Ajuga reptans															
Anthriscus sp.															
Bromus cf *commutatus*															
Bromus hordeaceus															
Centaurea cf *jacea*															
Centaurea sp.															
Cichorium intybus															
Cirsium/Centaurea		3	2												
cf *Cynosurus* sp.															
Dactylis glomerata															
Deschampsia caespitosa															
Dianthus cf *armeria*															
Festuca rubra/ovina															
Festuca/Lolium			2												
Holcus lanatus															
Leontodon autumnalis															
Leontodon sp.															
Leucanthemum vulgare			3												
Lolium perenne															

Chronology										Roman, not specified					
Context															
Structure	15	15	15	15	42	42	42	53		40	40	40	1004	Tr 1	Tr 1
US	03 A	03 B	03 C	03 D	02 A	02 B	02 A	P34		02 1	02 2	03			
Sample N°	BK24009	BK24010	BK24011	BK24012	BK24013	BK24014	BK24015	BK004034		BK24004	BK24005	BK24034	BK24036	BK28001	BK28002
Nardus stricta															
Plantago lanceolata					1										
Plantago media															
Poa pratensis															
Poa pratensis Type			4												
Poa pratensis/trivialis															
Potentilla cf *erecta*															
Potentilla erecta															
Prunella cf *vulgaris*															
Prunella vulgaris		3	4												
Ranunculus cf *acris*															
Ranunculus acris	3	3	3		2										
Rhinanthus sp.			3												
Rumex acetosa - perianth															
Rumex acetosella															
Silene vulgaris			3												
Taraxacum officinale															
Trifolium pratense - pod with seeds															
Trifolium pratense - capsule															
Trifolium sp. - chalice			2												
Open swards															
Acinos arvensis															
Ajuga genevensis															
Artemisia campestris															
Centaurea scabiosa															
Dianthus sp.															
Euphorbia cf *seguieriana*															
Euphrasia/Odontites															
Gentiana cruciata															
Medicago lupulina - pod with seed															
Medicago lupulina - pod															
Medicago minima - pod															
Odontites sp.															
Prunella grandiflora															
Scabiosa columbaria															
Stachys cf *recta*															
Stachys recta															
Teucrium botrys															
Teucrium montanum															
Trifolium cf *campestre* - chalice															
Aquatic plants															
Lemna sp.															
Polygonum cf *amphibium*															
Potamogeton sp.															
Sparganium sp.															
Reed fields															
Alisma plantago-aquatica			3												
Carex sp.								1							
Carex sp. - utriculus	3	3	3	3											3
Carex sp. bicarpellate	3	3	4	3			2			2	3	2			3
Carex sp. tricarpellate	4	4	4	3	3	2	3			3	3	3		3	3
Cicuta virosa															
Eleocharis palustris	3	4	3		1										
Galium cf *palustre*															
Galium palustre															
Glyceria sp.															
Hippuris vulgaris															
Juncus sp.			3												
Lycopus europaeus															
Mentha arvensis/aquatica			4												
Nasturtium officinale															4
Oenanthe fistulosa	3		3				3							2	
Oenanthe sp.															
Poa palustris															
Rorippa amphibia															

Chronology										Roman, not specified									
Context																			
Structure	15	15	15	15	42	42	42	53		40	40	40	1004	Tr 1	Tr 1				
US	03 A	03 B	03 C	03 D	02 A	02 B	02 A	P34		02 1	02 2	03							
Sample N°	BK24009	BK24010	BK24011	BK24012	BK24013	BK24014	BK24015	BK004034		BK24004	BK24005	BK24034	BK24036	BK28001	BK28002				
Rumex cf *aquaticus/hydrolapatum*																			
Salix sp. - veg. part																			
Schoenoplectus sp.	3		3																
Riverbank plants (pioneer)																			
Alnus glutinosa - veg. part																			
Alnus sp. - veg. Part																			
Cyperus flavescens																			
Cyperus fuscus			3																
cf *Myosoton aquaticum*																			
Polygonum cf *hydropiper*																			
Polygonum hydropiper																			
Polygonum hydropiper/mite				3									2	2					
Polygonum lapathifolium	3	4	4			1													
Polygonum minus				3															
Polygonum mite/minus																			
Ranunculus cf *flammula*																			
Ranunculus flammula																			
Ranunculus sardous	3																		
Ranunculus sceleratus			3												3				
Teucrium cf *scordium*																			
Wet meadows																			
cf *Euphorbia palustris*																			
Filipendula ulmaria																			
Linum catharticum			3																
Lychnis flos-cuculi																			
Scirpus sylvaticus																			
Stachys officinalis																			
Forests, forest edges and clearings, hedges																			
Abies alba - needle																			
Arctium cf *nemorosum*														2					
Cornus sanguinea																			
Crataegus sp.													1						
cf *Humulus lupulus*																			
Quercus sp. - veg. part																			
Rosa sp.																			
Solanum cf *dulcamara*		3																	
Stellaria cf *nemorum*																			
Torilis cf *japonica*																			
Valeriana cf *tripteris*																			
Viburnum lantana																			
Viburnum opulus													1						
Calamintha sylvatica																			
Galium verum																			
Hypericum perforatum			3																
Saponaria cf *ocymoides*																			
Silene cf *nutans*																			
Silene nutans																			
Thalictrum minus																			
VARIA																			
Ajuga sp.																			
Allium sp.																			
Apiaceae - fragments																			
Asteraceae														2					
Boraginaceae																			
Brassicaceae		3																	
Bromus sp.																			
Campanula sp.																			
Carduus sp.																			
Caryophyllaceae																			
Cerastium sp.			3																
Chenopodiaceae			3																
Chenopodiaceae/Amaranthaceae	3	3			2									2	3				

Chronology										Roman, not specified									
Context																			
Structure	15	15	15	15	42	42	42	53		40	40	40	1004	Tr 1	Tr 1				
US	03 A	03 B	03 C	03 D	02 A	02 B	02 A	P34		02 1	02 2	03							
Sample N°	BK24009	BK24010	BK24011	BK24012	BK24013	BK24014	BK24015	BK004034		BK24004	BK24005	BK24034	BK24036	BK28001	BK28002				
Chenopodium sp.			4																
Cichorium sp.																			
Crepis sp.																			
Cuscuta sp.																			
Cyperaceae																			
Epilobium sp.																			
Euphorbia sp.																			
Euphorbia sp. - fruit																			
Euphorbia sp. - capsule																			
Fallopia sp.																			
Filipendula sp.																			
Galium sp.																			
Hypericum sp.																			
Inula sp.																			
Lamiaceae			4					1		2									
Lamium sp.			3																
Liliaceae																			
Malva sp.																			
cf *Matricaria* sp.																			
Papaver sp.			3																
Physalis/Solanum															3				
Phyteuma sp.																			
Plantago sp. - chalice			3																
Plantago sp.			4																
Poa sp.			4																
Poaceae																			
Poaceae			4																
Polygonaceae			3																
Polygonum sp.																			
Polygonum sp.	3			3			2					2			3				
Potentilla sp.		3	4												3				
Primulaceae																			
Ranunculaceae																			
Ranunculus sp.															4				
cf *Raphanus* sp.																			
Rosaceae - thorn																			
Rosaceae			3																
Rosaceae - flower																			
Rumex sp. - tubercle																			
Rumex sp.																			
Rumex sp. - perianth		3												2	4				
Sambucus sp.		3	3		1	2					3			2	3				
Satureja sp.																			
Scabiosa sp.		3																	
cf *Scandix* sp.																			
Scrophulariaceae																			
Silene alba/dioica																			
Silene sp.			3																
Solanaceae			3																
Solanum sp.																			
Sonchus sp.																			
Stachys sp.																			
Stachys/Lamium	3																		
Stellaria graminea/palustris			3																
Stellaria sp.																			
Teucrium sp.																			
Torilis sp.																			
Veronica sp.																			
Vicia sp.			2																
Viola sp. - capsule			2																
Viola sp.														2					
Indeterminata - rhizome																			
Indeterminata - fruitstem																			
Indeterminata - endocarp																			
Indeterminata																			

Chronology										Roman, not specified					
Context															
Structure	15	15	15	15	42	42	42	53		40	40	40	1004	Tr 1	Tr 1
US	03 A	03 B	03 C	03 D	02 A	02 B	02 A	P34		02 1	02 2	03			
Sample N°	BK24009	BK24010	BK24011	BK24012	BK24013	BK24014	BK24015	BK004034		BK24004	BK24005	BK24034	BK24036	BK28001	BK28002
CHARRED															
CEREALS _ grain															
Avena sp.			3												
Hordeum vulgare					2						3				
Hordeum sp.															
Triticum aestivum															
Triticum aestivum/durum/turgidum										2					
Triticum dicoccon															
Triticum cf *dicoccon*															
Triticum sp.															
Cerealia ohne Hirsen					2	1	2								
Panicum miliaceum	3														
Setaria italica			3												
Panicum/Setaria															
CEREALS _ chaff															
Hordeum vulgare - rachis											3				
Hordeum sp. - rachis															
Triticum dicoccon - spikelet fork															
Triticum dicoccon - glume					2	2	2					2			
Triticum monococcum - spikelet fork															
Triticum monococcum - glume															
Triticum spelta - spikelet fork								3							
Triticum spelta - glume base								1							
Triticum spelta - glume					1	1					3				
Triticum sp. - spikelet fork			2												
Triticum sp. - glume												2			
Cerealia															
NUTS															
Corylus avellana															
Juglans regia											3				
PULSES															
cf *Lathyrus* sp.				1											
Lens culinaris															
Pisum sativum															
Vicia faba		1													
Vicia/Lathyrus															
Fabaceae															
FRUITS															
Vitis vinifera															
WEEDS OF WINTER CEREALS															
Galium aparine															
Order Secalietalia, Caucalion alliance_weeds of calcareous soils															
Avena fatua															
Galium spurium															
Vicia cf *angustifolia*															
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS															
Chenopodium polyspermum															
Thlaspi arvense															
PERENNIAL RUDERALS															
Rumex obtusifolius												2			
MEADOWS AND PASTURES															
Centaurea sp.															
Festuca/Lolium			2												
Plantago lanceolata							2								
Plantago media															
Trifolium sp.												2			
Reed fields															
cf *Alisma plantago-aquatica*			3												
Carex sp. tricarpellate															
Galium cf *palustre*															
Riverbank plants (pioneer)															
Teucrium scordium															

Chronology										Roman, not specified									
Context																			
Structure	15	15	15	15	42	42	42	53		40	40	40	1004	Tr 1	Tr 1				
US	03 A	03 B	03 C	03 D	02 A	02 B	02 A	P34		02 1	02 2	03							
Sample N°	BK24009	BK24010	BK24011	BK24012	BK24013	BK24014	BK24015	BK004034		BK24004	BK24005	BK24034	BK24036	BK28001	BK28002				
Forests, forest edges and clearings, hedges																			
Abies alba - needle											3								
Galium verum					1														
VARIA																			
Chenopodium sp.																			
Galium sp.			2		1		2												
Poaceae			3		2	2					3								
Vicia sp.																			
Indeterminata - amorphous object										2									
Indeterminata - crusts																			
Indeterminata - seed/fruit												2							
MINERALISED																			
CEREALS _ grain																			
Avena sp.							2												
Hordeum vulgare																			
Triticum spelta																			
Triticum sp.																			
Panicum miliaceum							2												
Setaria italica																			
Panicum/Setaria																			
Cerealia ohne Hirsen								3											
CEREALS _ chaff																			
Hordeum vulgare - rachis																			
Triticum spelta - spikelet fork																			
Cerealia - ear																			
Cerealia - glume								1											
Panicum miliaceum - glume																			
Setaria italica - glume																			
Panicum/Setaria - glume																			
PULSES																			
Lens culinaris																			
Pisum sativum																			
Vicia faba																			
Fabaceae - fruitflesh																			
Fabaceae																			
FRUITS																			
Cucumis melo																			
Cucumis melo/sativa																			
Ficus carica																			
Fragaria vesca																			
Malus domestica																			
Malus sylvestris/domestica																			
Pyrus sp.																			
Malus/Pyrus																			
Morus sp.																			
Physalis alkekengi																			
Prunus sp. - fragment																			
Rubus caesius																			
Rubus sp. - inner																			
Sambucus nigra/racemosa																			
Vitis vinifera - fruitflesh																			
Vitis vinifera - aborted seed																			
Vitis vinifera																			
SPICES																			
Anethum graveolens																			
Apium graveolens																			
Carum carvi																			
Coriandrum sativum																			
Foeniculum vulgare																			
Nigella cf *sativa*																			
VEGETABLES AND SALADS																			
Atriplex sp.																			
Beta vulgaris																			

Chronology										Roman, not specified									
Context																			
Structure	**15**	**15**	**15**	**15**	**42**	**42**	**42**	**53**		**40**	**40**	**40**	**1004**	**Tr 1**	**Tr 1**				
US	03 A	03 B	03 C	03 D	02 A	02 B	02 A	P34		02 1	02 2	03							
Sample N°	**BK24009**	**BK24010**	**BK24011**	**BK24012**	**BK24013**	**BK24014**	**BK24015**	**BK004034**		**BK24004**	**BK24005**	**BK24034**	**BK24036**	**BK28001**	**BK28002**				
Brassica sp.																			
Daucus carota																			
Lagenaria siceraria																			
OIL AND FIBRE PLANTS																			
Linum usitatissimum																			
Papaver somniferum																			
WEEDS OF WINTER CEREALS																			
Agrostemma githago							2												
Buglossoides arvensis																			
Fallopia convolvulus																			
Galium aparine																			
cf *Veronica hederifolia*																			
Order Aperetalia_weeds of rather acidic/neutral soils																			
Camelina sativa																			
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																			
Caucalis platycarpos																			
Galium spurium																			
Vaccaria pyramidata																			
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																			
Galeopsis cf *speciosa*																			
Polygonum lapathifolium/persicaria																			
Solanum nigrum	3		2																
Sonchus oleraceus																			
Stellaria media																			
Thlaspi arvense																			
PERENNIAL RUDERALS																			
Arctium sp.																			
Convolvulus arvensis																			
Hyoscyamus niger																			
Lapsana communis																			
MEADOWS AND PASTURES																			
Centaurea sp.																			
Rhinanthus sp.																			
Scabiosa sp.																			
Reed fields																			
Carex sp. tricarpellat																			
Galium palustre																			
Forests, forest edges and clearings, hedges																			
Rosa sp.																			
cf *Seseli libanotis*																			
VARIA																			
Apiaceae																			
Asteraceae																			
Brassicaceae																			
Bromus sp.																			
Cannabinaceae																			
Chenopodium sp.																			
Galium sp.																			
Lamiaceae																			
Lolium sp.																			
Papaver sp.																			
Poaceae																			
Potentilla sp.																			
Rumex sp.																			
Indeterminata - endocarp																			
Indeterminata - fruitflesh																			
Indeterminata - coprolithes																			
Indeterminata - crusts																			
Indeterminata - seed/fruit								4											

Table 2.b Semi-quantitative data of the main archaeobotanical analysis of the Roman civil agglomeration Oedenburg/Biesheim-Kunheim. Temple complex.

Temple complex																		
Chronology	**Phase 1**																	
Context	**LAYER**																	
Structure	**56**	**56**	**56**	**56**	**56**	**56**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**32**	**32**	**32**	**17**
US	07	07	08	09	10	10	01	03	04	14	15	16	17	18	02	08	01	21 D
Sample N°	BK35012FA	BK35014FA	BK35015FA	BK35016FA	BK35030FA	BK35034FA	BK35013FA	BK35007FA	BK35008FA	BK35029FA	BK35027FA	BK35028FA	BK35017FA	BK35018FA	BK45001FA	BK45003FA	BK45007FA	BK45024FA
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS
Volume sample	7000	5000	8000	4000	2000	6000	10000	4000	4000	3000	6000	6000	7000	9000	3000	3000	3000	7000
WATERLOGGED																		
CEREALS _ chaff																		
Hordeum sp. - rachis																		
Triticum monococcum - glume																		
Triticum spelta - glume																		
Cerealia - glume																		
Cerealia - rachis																		
Panicum miliaceum - glume																		
NUTS																		
Corylus avellana				1				1	2				1					
Juglans regia																		
SPICES																		
Apium graveolens																		
Coriandrum sativum																		
VEGETABLES AND SALADS																		
Amaranthus sp.																		
Atriplex sp.								1										
Beta vulgaris																1		
Brassica sp.			1															
Daucus carota									1									
Lagenaria siceraria									1									
FRUITS																		
Ficus carica													1			1		
Pyrus sp. - flower								1										
Physalis alkekengi											1							
Prunus domestica/insititia																		
Prunus persica								1					1					
Prunus sp.																		
Rubus caesius									1									
Rubus fruticosus																		
Rubus sp.											1							
Sambucus nigra/racemosa	1	1						1	1	1	1	1	1			1		
Vitis vinifera								2	1		1							
OIL, DYE AND FIBRE PLANTS																		
Cannabis sativa														1				
WEEDS OF WINTER CEREALS																		
Agrostemma githago																		
Anthemis arvensis																		
Fallopia convolvulus																		
Galium aparine																		
Order Aperetalia_weeds of rather acidic/neutral soils																		
Scleranthus sp. - capsule																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Ajuga chamaepitys										1	1							
Caucalis platycarpos										1								
Glaucium corniculatum																		
Myagrum perfoliatum	1		1					1	1		1		1			1		
Orlaya grandiflora							1											
Ranunculus arvensis																		
Valerianella dentata																		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		
Anagallis arvensis/foemina																		
Chenopodium album								1	1	1								
Chenopodium hybridum								1	1	1	1							
Chenopodium polyspermum									1									
Euphorbia helioscopia																		
Fumaria sp.								1	1									
Galeopsis tetrahit																		
Mercurialis annua										1								

Chronology	Phase 1																	
Context	LAYER																	
Structure	**56**	**56**	**56**	**56**	**56**	**56**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**32**	**32**	**32**	**17**
US	07	07	08	09	10	10	01	03	04	14	15	16	17	18	02	08	01	21 D
Sample N°	BK35012FA	BK35014FA	BK35015FA	BK35016FA	BK35030FA	BK35034FA	BK35013FA	BK35007FA	BK35008FA	BK35029FA	BK35027FA	BK35028FA	BK35017FA	BK35018FA	BK45001FA	BK45003FA	BK45007FA	BK45024FA
Polygonum lapathifolium/persicaria										1	1	1	1			1		
Polygonum persicaria								3										
Solanum nigrum								2	1			1	1			2		
Stachys cf *arvensis*													1					
Stellaria media								1		1			1					
Thlaspi arvense									1									
Urtica urens							1		1				1					
PERENNIAL RUDERALS																		
Arctium sp.																		
Chelidonium majus																		
Cirsium/Carduus						1										1		
Hyoscyamus niger									1	1								
Lapsana communis										1								
Plantago major																		
Polygonum aviculare																1		
Ranunculus repens				1	1		1	1		1				1		1		
Rumex obtusifolius							1	1	1	1		1						
Sambucus ebulus	1	1						1		1						1		
Urtica dioica																		
MEADOWS AND PASTURES																		
Ajuga reptans								1		1						1		
Centaurea sp.																		
Prunella vulgaris																1		
Ranunculus acris																1		
Open swards																		
Medicago lupulina - pod																1		
Scabiosa columbaria																		
Aquatic plants																		
Potamogeton sp.				1		1												
Sparganium sp.								1	1			1		1				
Reed fields																		
Carex sp. - utriculus									1							1		
Carex sp. bicarpellate				1			1		1			1	1			1		
Carex sp. tricarpellate			1		1	1	1		1	1	1		1	1		1		
Eleocharis palustris				2		1	1			1			1	1				
Iris cf *pseudacorus*																		
Lycopus europaeus													1					
Oenanthe fistulosa								1										
Schoenoplectus lacustris																		
Schoenoplectus sp.																		
Riverbank plants (pioneer)																		
Bidens tripartita							1											
Polygonum hydropiper										1								
Polygonum hydropiper/mite										1								
Polygonum lapathifolium																		
Polygonum mite/minus																		
Ranunculus sardous																		
Ranunculus sceleratus																		
Wet meadows																		
Lychnis flos-cuculi																		
Forests, forest edges and clearings, hedges																		
Abies alba - needle																		
Humulus lupulus																		
Rosa sp.											1							
Solanum cf *dulcamara*													1					
Calamintha sylvatica																		
VARIA																		
Ajuga sp.																1		
Cannabinaceae									1									
Carduus sp.																		
Chenopodium sp.											1					1		
Cyperaceae			1	1				1		1	1			1				
Euphorbia sp.																		

Chronology	Phase 1																	
Context	LAYER																	
Structure	**56**	**56**	**56**	**56**	**56**	**56**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**32**	**32**	**32**	**17**
US	07	07	08	09	10	10	01	03	04	14	15	16	17	18	02	08	01	21 D
Sample N°	BK35012FA	BK35014FA	BK35015FA	BK35016FA	BK35030FA	BK35034FA	BK35013FA	BK35007FA	BK35008FA	BK35029FA	BK35027FA	BK35028FA	BK35017FA	BK35018FA	BK45001FA	BK45003FA	BK45007FA	BK45024FA
Galium sp.																		
Lamiaceae									1									
Lamium sp.																		
Physalis/Solanum																		
Poaceae							1											
Polygonaceae																		
Polygonum sp.				1	1		1									1		
Potentilla sp.										1								
Rumex sp. - perianth								1		1								
Sambucus sp.			1												1		1	
Silene sp.																		
Solanum sp.																		
Stachys sp.								1	1	1	1							
Stellaria graminea/palustris																		
Viola sp.									1	1	1		1			1		
CHARRED																		
CEREALS _ grain																		
Avena sp.											1							
Hordeum vulgare								1										
Hordeum sp.									1									
Secale cereale																		
Triticum aestivum/durum/turgidum																		
Triticum sp.									1									
Cerealia ohne Hirsen																		
Panicum miliaceum											1							
Setaria italica									1									
CEREALS _ chaff																		
Hordeum vulgare - rachis																		
NUTS																		
Corylus avellana																		
Juglans regia																		
Pinus pinea - cone fragment																		
Pinus pinea																		
Pinus pinea - scale																		
Pinus pinea - nut fragment																		
PULSES																		
Lathyrus sp.																		
Lens culinaris																		
Pisum sativum																		
Vicia faba																		
Fabaceae									1									
VEGETABLES AND SALADS																		
Allium sativum																		
cf *Allium sativum*																		
Atriplex sp.																		
FRUITS																		
Ficus carica																		
Ficus carica - fruitflesh																		
Phoenix dactylifera - fruit																		
Phoenix dactylifera - stone																		
Phoenix dactylifera - fruitflesh																		
Phoenix dactylifera - stone fragment																		
Prunus persica																		
Sambucus nigra/racemosa																		
Vitis vinifera																		
WEEDS OF WINTER CEREALS																		
Galium aparine											1							
Veronica hederifolia																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Galium cf *spurium*																		
Myagrum perfoliatum																		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		

Chronology	**Phase 1**																	
Context	**LAYER**																	
Structure	**56**	**56**	**56**	**56**	**56**	**56**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**53**	**32**	**32**	**32**	**17**
US	07	07	08	09	10	10	01	03	04	14	15	16	17	18	02	08	01	21 D
Sample N°	BK35012FA	BK35014FA	BK35015FA	BK35016FA	BK35030FA	BK35034FA	BK35013FA	BK35007FA	BK35008FA	BK35029FA	BK35027FA	BK35028FA	BK35017FA	BK35018FA	BK45001FA	BK45003FA	BK45007FA	BK45024FA
Chenopodium album																		
PERENNIAL RUDERALS																		
Cruciata laevipes																		
Rumex obtusifolius	1							1										
Silene alba																		
MEADOWS AND PASTURES																		
Galium boreale																		
Plantago media																		
Aquatic plants																		
Sparganium sp.																		
VARIA																		
Asperula sp.								1										
Chenopodiaceae																		
Galium sp.																		1
Poaceae										1								
Rumex sp.																		
Vicia sp.																		
Indeterminata - bud																		
Indeterminata - amorphous object																		
Indeterminata - fruitflesh																		
Indeterminata - endocarp																		1
Indeterminata - seed/fruit																		

Temple complex																			
Chronology									**Phase 1**										
Context									**DITCH**										
Structure	**17**	**17**	**17**	**17**	**19**	**19**	**19**		**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**
US	21 C	21 B	21 A	30	24	19	18		02	01	03	05	08	04	02	10	09	33	34
Sample N°	BK45025FA	BK45026FA	BK45027FA	BK45063FA	BK45064FA	BK45045FA	BK45046FA		BK45002FA	BK45004FA	BK45005FA	BK45006FA	BK45008FA	BK45010FA	BK45013FA	BK45050FA	BK45053FA	BK55016FA	BK55017FA
Analysis	RS	RS	RS	RS	RS	RS	RS		RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS
Volume sample	9000	6000	6000	8000	7000	7000	8000		3000	2000	3000	5000	5000	4000	5000	3000	4000	10000	11000
WATERLOGGED																			
CEREALS _ chaff																			
Hordeum sp. - rachis																1			
Triticum monococcum - glume																			
Triticum spelta - glume													1					1	
Cerealia - glume													1						
Cerealia - rachis													1						
Panicum miliaceum - glume													2		1				
NUTS																			
Corylus avellana									1	1		2	1	2	2	2	1	3	3
Juglans regia													1		1			2	1
SPICES																			
Apium graveolens																		1	
Coriandrum sativum																			
VEGETABLES AND SALADS																			
Amaranthus sp.																			
Atriplex sp.																			
Beta vulgaris																			
Brassica sp.																			
Daucus carota										1			1					1	
Lagenaria siceraria																			
FRUITS																			
Ficus carica											1	1	1	1		1			1
Pyrus sp. - flower															1				
Physalis alkekengi																	1		
Prunus domestica/insititia																		1	2
Prunus persica												1		1	1	1	1		2
Prunus sp.															1				
Rubus caesius												1	1					2	1
Rubus fruticosus																			
Rubus sp.									1							1	1		
Sambucus nigra/racemosa									2	2	1	1	1	2	3	2		4	2
Vitis vinifera										1							1		
OIL, DYE AND FIBRE PLANTS																			
Cannabis sativa													1		1	2	1		
WEEDS OF WINTER CEREALS																			
Agrostemma githago													2					1	1
Anthemis arvensis																		1	
Fallopia convolvulus													1					1	
Galium aparine																			
Order Aperetalia_weeds of rather acidic/neutral soils																			
Scleranthus sp. - capsule															1				
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																			
Ajuga chamaepitys															1				
Caucalis platycarpos															1				1
Glaucium corniculatum																			
Myagrum perfoliatum									1	1	1	1	1	1			1		
Orlaya grandiflora																			
Ranunculus arvensis													1						
Valerianella dentata													1		1				
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																			
Anagallis arvensis/foemina																1			
Chenopodium album											1	1	1	1	2	2	1	3	2
Chenopodium hybridum									1		1	1	2	1	1	2	1	1	
Chenopodium polyspermum																			
Euphorbia helioscopia														1					
Fumaria sp.									1	1		1	1	1		1	1		
Galeopsis tetrahit													1						
Mercurialis annua																			

Chronology								Phase 1										
Context								DITCH										
Structure	17	17	17	17	19	19	19	49	49	49	49	49	49	49	49	49	49	49
US	21 C	21 B	21 A	30	24	19	18	02	01	03	05	08	04	02	10	09	33	34
Sample N°	BK45025FA	BK45026FA	BK45027FA	BK45063FA	BK45064FA	BK45045FA	BK45046FA	BK45002FA	BK45004FA	BK45005FA	BK45006FA	BK45008FA	BK45010FA	BK45013FA	BK45050FA	BK45053FA	BK55016FA	BK55017FA
Polygonum lapathifolium/persicaria											1			1				
Polygonum persicaria																		
Solanum nigrum									1		2				2	1	4	2
Stachys cf *arvensis*																		
Stellaria media																	3	
Thlaspi arvense												1	1	1	1		1	1
Urtica urens												1		1			2	
PERENNIAL RUDERALS																		
Arctium sp.											1							
Chelidonium majus													1					
Cirsium/Carduus												2						1
Hyoscyamus niger											1					1	1	
Lapsana communis																		
Plantago major																		1
Polygonum aviculare											1	1		1			2	1
Ranunculus repens											2	2	1	2	2		2	2
Rumex obtusifolius												2					2	
Sambucus ebulus								1					1				2	
Urtica dioica																		
MEADOWS AND PASTURES																		
Ajuga reptans													1					
Centaurea sp.																	1	
Prunella vulgaris												1		1				
Ranunculus acris																		
Open swards																		
Medicago lupulina - pod																		
Scabiosa columbaria																		
Aquatic plants																		
Potamogeton sp.																		
Sparganium sp.																		
Reed fields																		
Carex sp. - utriculus											1							
Carex sp. bicarpellate											1	1					1	
Carex sp. tricarpellate								1			1	2	1	1	1	1	2	1
Eleocharis palustris												1		1			2	
Iris cf *pseudacorus*														1				
Lycopus europaeus																		
Oenanthe fistulosa								1		1	1			1	1			
Schoenoplectus lacustris																		
Schoenoplectus sp.								1						1				
Riverbank plants (pioneer)																		
Bidens tripartita																		
Polygonum hydropiper												2		1	2		2	
Polygonum hydropiper/mite																	2	
Polygonum lapathifolium																		
Polygonum mite/minus																		
Ranunculus sardous																		
Ranunculus sceleratus																	1	
Wet meadows																		
Lychnis flos-cuculi																	1	
Forests, forest edges and clearings, hedges																		
Abies alba - needle																	1	
Humulus lupulus																	2	2
Rosa sp.																		
Solanum cf *dulcamara*												2						
Calamintha sylvatica																		
VARIA																		
Ajuga sp.																		
Cannabinaceae																		
Carduus sp.														1				
Chenopodium sp.								1	1									
Cyperaceae																		
Euphorbia sp.																		

Chronology								Phase 1										
Context								**DITCH**										
Structure	**17**	**17**	**17**	**17**	**19**	**19**	**19**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**
US	21 C	21 B	21 A	30	24	19	18	02	01	03	05	08	04	02	10	09	33	34
Sample N°	BK45025FA	BK45026FA	BK45027FA	BK45063FA	BK45064FA	BK45045FA	BK45046FA	BK45002FA	BK45004FA	BK45005FA	BK45006FA	BK45008FA	BK45010FA	BK45013FA	BK45050FA	BK45053FA	BK55016FA	BK55017FA
Galium sp.													1			1		
Lamiaceae									1		1			1			1	
Lamium sp.																	2	1
Physalis/Solanum										1			1	3				
Poaceae																		
Polygonaceae																		
Polygonum sp.									1			1	1					
Potentilla sp.																		
Rumex sp. - perianth																		
Sambucus sp.					1			1	1		1	2				1		
Silene sp.															1			
Solanum sp.								1									1	
Stachys sp.								1	1			1	1		1	1		
Stellaria graminea/palustris																	1	
Viola sp.								1	1				1					
CHARRED																		
CEREALS _ grain																		
Avena sp.																		
Hordeum vulgare																		
Hordeum sp.																		
Secale cereale																		
Triticum aestivum/durum/turgidum																		
Triticum sp.																		
Cerealia ohne Hirsen						1										1		
Panicum miliaceum																		
Setaria italica																		
CEREALS _ chaff																		
Hordeum vulgare - rachis																		
NUTS																		
Corylus avellana			1	1		1										1		
Juglans regia																		
Pinus pinea - cone fragment																		
Pinus pinea																		
Pinus pinea - scale																		
Pinus pinea - nut fragment																		
PULSES																		
Lathyrus sp.																		
Lens culinaris																		
Pisum sativum																		
Vicia faba																	1	
Fabaceae																		
VEGETABLES AND SALADS																		
Allium sativum																		
cf *Allium sativum*																		
Atriplex sp.																		
FRUITS																		
Ficus carica																		
Ficus carica - fruitflesh																		
Phoenix dactylifera - fruit																		
Phoenix dactylifera - stone																		
Phoenix dactylifera - fruitflesh																		
Phoenix dactylifera - stone fragment																		
Prunus persica																		
Sambucus nigra/racemosa																		
Vitis vinifera														1				
WEEDS OF WINTER CEREALS																		
Galium aparine																		
Veronica hederifolia																		
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																		
Galium cf *spurium*																		
Myagrum perfoliatum																		
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																		

Chronology									Phase 1										
Context									DITCH										
Structure	**17**	**17**	**17**	**17**	**19**	**19**	**19**		**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**	**49**
US	21 C	21 B	21 A	30	24	19	18		02	01	03	05	08	04	02	10	09	33	34
Sample N°	BK45025FA	BK45026FA	BK45027FA	BK45063FA	BK45064FA	BK45045FA	BK45046FA		BK45002FA	BK45004FA	BK45005FA	BK45006FA	BK45008FA	BK45010FA	BK45013FA	BK45050FA	BK45053FA	BK55016FA	BK55017FA
Chenopodium album																			
PERENNIAL RUDERALS																			
Cruciata laevipes																			
Rumex obtusifolius																			
Silene alba																			
MEADOWS AND PASTURES																			
Galium boreale																			
Plantago media																			
Aquatic plants																			
Sparganium sp.																			
VARIA																			
Asperula sp.																			
Chenopodiaceae																			
Galium sp.	1	1	1		1		2												
Poaceae																			
Rumex sp.																			
Vicia sp.																			
Indeterminata - bud																			
Indeterminata - amorphous object																			
Indeterminata - fruitflesh																			
Indeterminata - endocarp																			
Indeterminata - seed/fruit																			

Temple complex																	
Chronology		**Phase 1**	**Phase 1**		**Phase 2**				**Phase 2**								
Context		**VESSEL**	**POSTHOLE**		**LAYER**				**POSTHOLE**								
Structure	**49**	**180**	**138**	**139**	**75**	**75**	**2**	**211**	**65**	**63**	**80**	**83**	**84**	**86**	**88**	**123**	**135**
US	20	35	01	01	01	01	04	01	01	1	01	01	01	01	01	01	01
Sample N°	BK55021FA	BK55013FA	BK45069FA	BK45067FA	BK35038FA	BK35522FA	BK45012FA	BK55014FA	BK35031FA	BK45020FA	BK45043FA	BK45035FA	BK45031FA	BK45032FA	BK45038FA	BK45062FA	BK45070FA
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS
Volume sample	10000	7000	6000	4000	6000	0	5000	9800	5500	6000	6000	4000	5000	8000	1000	9000	8000
WATERLOGGED																	
CEREALS _ chaff																	
Hordeum sp. - rachis																	
Triticum monococcum - glume					1												
Triticum spelta - glume																	
Cerealia - glume																	
Cerealia - rachis																	
Panicum miliaceum - glume																	
NUTS																	
Corylus avellana							1										
Juglans regia																	
SPICES																	
Apium graveolens																	
Coriandrum sativum					1	1											
VEGETABLES AND SALADS																	
Amaranthus sp.					1												
Atriplex sp.																	
Beta vulgaris																	
Brassica sp.					1												
Daucus carota					1		1										
Lagenaria siceraria						1											
FRUITS																	
Ficus carica	1																
Pyrus sp. - flower																	
Physalis alkekengi					1												
Prunus domestica/insititia																	
Prunus persica																	
Prunus sp.																	
Rubus caesius																	
Rubus fruticosus																	
Rubus sp.																	
Sambucus nigra/racemosa	3				1			6	1								
Vitis vinifera																	
OIL, DYE AND FIBRE PLANTS																	
Cannabis sativa					1												
WEEDS OF WINTER CEREALS																	
Agrostemma githago						1											
Anthemis arvensis							1										
Fallopia convolvulus	1		1		1												
Galium aparine					1												
Order Aperetalia_weeds of rather acidic/neutral soils																	
Scleranthus sp. - capsule																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Ajuga chamaepitys							1										
Caucalis platycarpos					1		1										
Glaucium corniculatum					1												
Myagrum perfoliatum			1		1		1	2									
Orlaya grandiflora																	
Ranunculus arvensis																	
Valerianella dentata																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Anagallis arvensis/foemina					1												
Chenopodium album	2		1	1		1	1										
Chenopodium hybridum																	
Chenopodium polyspermum																	
Euphorbia helioscopia																	
Fumaria sp.				1													
Galeopsis tetrahit																	
Mercurialis annua			1														

Chronology		**Phase 1**	**Phase 1**		**Phase 2**				**Phase 2**								
Context		**VESSEL**	**POSTHOLE**		**LAYER**				**POSTHOLE**								
Structure	**49**	**180**	**138**	**139**	**75**	**75**	**2**	**211**	**65**	**63**	**80**	**83**	**84**	**86**	**88**	**123**	**135**
US	20	35	01	01	01	01	04	01	01	1	01	01	01	01	01	01	01
Sample N°	BK55021FA	BK55013FA	BK45069FA	BK45067FA	BK35038FA	BK35522FA	BK45012FA	BK55014FA	BK35031FA	BK45020FA	BK45043FA	BK45035FA	BK45031FA	BK45032FA	BK45038FA	BK45062FA	BK45070FA
Polygonum lapathifolium/persicaria																	
Polygonum persicaria																	
Solanum nigrum	4				1	1	1										
Stachys cf *arvensis*																	
Stellaria media	1																
Thlaspi arvense					1												
Urtica urens																	
PERENNIAL RUDERALS																	
Arctium sp.																	
Chelidonium majus																	
Cirsium/Carduus																	
Hyoscyamus niger																	
Lapsana communis																	
Plantago major																	
Polygonum aviculare					1												
Ranunculus repens					2	1	1										
Rumex obtusifolius																	
Sambucus ebulus					1				1								
Urtica dioica																	
MEADOWS AND PASTURES																	
Ajuga reptans				1													
Centaurea sp.					1	1											
Prunella vulgaris						1											
Ranunculus acris																	
Open swards																	
Medicago lupulina - pod																	
Scabiosa columbaria					1												
Aquatic plants																	
Potamogeton sp.						1											
Sparganium sp.																	
Reed fields																	
Carex sp. - utriculus					1												
Carex sp. bicarpellate					2												
Carex sp. tricarpellate	2		1	1	2	1	1										
Eleocharis palustris					1	1	1										
Iris cf *pseudacorus*																	
Lycopus europaeus																	
Oenanthe fistulosa					1												
Schoenoplectus lacustris																	
Schoenoplectus sp.					1												
Riverbank plants (pioneer)																	
Bidens tripartita																	
Polygonum hydropiper	2					1											
Polygonum hydropiper/mite					1	1											
Polygonum lapathifolium																	
Polygonum mite/minus																	
Ranunculus sardous					1												
Ranunculus sceleratus																	
Wet meadows																	
Lychnis flos-cuculi																	
Forests, forest edges and clearings, hedges																	
Abies alba - needle	1																
Humulus lupulus	2																
Rosa sp.																	
Solanum cf *dulcamara*																	
Calamintha sylvatica																	
VARIA																	
Ajuga sp.																	
Cannabinaceae																	
Carduus sp.																	
Chenopodium sp.																	
Cyperaceae					2												
Euphorbia sp.																	

Chronology		Phase 1	Phase 1		Phase 2				Phase 2								
Context		VESSEL	POSTHOLE		LAYER				POSTHOLE								
Structure	49	180	138	139	75	75	2	211	65	63	80	83	84	86	88	123	135
US	20	35	01	01	01	01	04	01	01	1	01	01	01	01	01	01	01
Sample N°	BK55021FA	BK55013FA	BK45069FA	BK45067FA	BK35038FA	BK35522FA	BK45012FA	BK55014FA	BK35031FA	BK45020FA	BK45043FA	BK45035FA	BK45031FA	BK45032FA	BK45038FA	BK45062FA	BK45070FA
Galium sp.																	
Lamiaceae																	
Lamium sp.																	
Physalis/Solanum																	
Poaceae																	
Polygonaceae																	
Polygonum sp.			1														
Potentilla sp.																	
Rumex sp. - perianth					1												
Sambucus sp.			1				1										
Silene sp.																	
Solanum sp.																	
Stachys sp.					1		1										
Stellaria graminea/palustris	1																
Viola sp.			1		1		1										
CHARRED																	
CEREALS _ grain																	
Avena sp.																	
Hordeum vulgare								2									
Hordeum sp.																	
Secale cereale																	
Triticum aestivum/durum/turgidum																	
Triticum sp.																	
Cerealia ohne Hirsen										1	1						
Panicum miliaceum																	
Setaria italica																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
NUTS																	
Corylus avellana								1		1							1
Juglans regia																	
Pinus pinea - cone fragment																	
Pinus pinea		3															
Pinus pinea - scale																	
Pinus pinea - nut fragment																	
PULSES																	
Lathyrus sp.																	
Lens culinaris																	
Pisum sativum																	
Vicia faba																	
Fabaceae																1	
VEGETABLES AND SALADS																	
Allium sativum																	
cf *Allium sativum*																	
Atriplex sp.																	
FRUITS																	
Ficus carica																	
Ficus carica - fruitflesh																	
Phoenix dactylifera - fruit																	
Phoenix dactylifera - stone																	
Phoenix dactylifera - fruitflesh																	
Phoenix dactylifera - stone fragment																	
Prunus persica																	
Sambucus nigra/racemosa								14									
Vitis vinifera								2									
WEEDS OF WINTER CEREALS																	
Galium aparine																	
Veronica hederifolia																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Galium cf *spurium*																	
Myagrum perfoliatum								2									
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	

Chronology			**Phase 1**		**Phase 1**			**Phase 2**					**Phase 2**								
Context			**VESSEL**		**POSTHOLE**			**LAYER**					**POSTHOLE**								
Structure	**49**		**180**		**138**	**139**		**75**	**75**	**2**	**211**		**65**	**63**	**80**	**83**	**84**	**86**	**88**	**123**	**135**
US	20		35		01	01		01	01	04	01		01	1	01	01	01	01	01	01	01
Sample N°	BK55021FA		BK55013FA		BK45069FA	BK45067FA		BK35038FA	BK35522FA	BK45012FA	BK55014FA		BK35031FA	BK45020FA	BK45043FA	BK45035FA	BK45031FA	BK45032FA	BK45038FA	BK45062FA	BK45070FA
Chenopodium album																					
PERENNIAL RUDERALS																					
Cruciata laevipes																					
Rumex obtusifolius																					
Silene alba																					
MEADOWS AND PASTURES																					
Galium boreale																					
Plantago media																					
Aquatic plants																					
Sparganium sp.																					
VARIA																					
Asperula sp.																					
Chenopodiaceae																					
Galium sp.																	1		1		1
Poaceae																					
Rumex sp.																					
Vicia sp.																					
Indeterminata - bud																					
Indeterminata - amorphous object			19																		
Indeterminata - fruitflesh																					
Indeterminata - endocarp																1					
Indeterminata - seed/fruit																		1			

Temple complex																	
Chronology	**Phase 2-3**			**Phase 3**											**Phase 3**		
Context	**LAYER**			**LAYER**											**POSTHOLE**		
Structure	**17**	**17**	**19**	**50**	**50**	**50**	**50**	**50**	**50**	**50**	**181**	**180**	**38**	**39**	**106**	**106**	**106**
US	06	07	08	02	02	07	05	10	13	12	01	48	05	11	03	04	05
Sample N°	BK45018FA	BK45019FA	BK45017FA	BK45009PB	BK45011PB	BK45030PB	BK45034PB	BK45044PB	BK45059PB	BK45060PB	BK55006FA	BK55012FA	BK35004FA	BK35033FA	BK45052FA	BK45055FA	BK45056FA
Analysis	RS	RS	RS	FU	FU	FU	FU	FU	FU	FU	FU	RS	RS	RS	RS	RS	RS
Volume sample	6000	6000	6000	9000	9000	3000	6000	2000	47000	227000	16000	6000	8000	5000	4000	2000	2200
WATERLOGGED																	
CEREALS _ chaff																	
Hordeum sp. - rachis																	
Triticum monococcum - glume																	
Triticum spelta - glume																	
Cerealia - glume																	
Cerealia - rachis																	
Panicum miliaceum - glume																	
NUTS																	
Corylus avellana													1				
Juglans regia																	
SPICES																	
Apium graveolens																	
Coriandrum sativum																	
VEGETABLES AND SALADS																	
Amaranthus sp.																	
Atriplex sp.																	
Beta vulgaris																	
Brassica sp.																	
Daucus carota																	
Lagenaria siceraria																	
FRUITS																	
Ficus carica														1			
Pyrus sp. - flower																	
Physalis alkekengi																	
Prunus domestica/insititia																	
Prunus persica																	
Prunus sp.																	
Rubus caesius																	
Rubus fruticosus																	
Rubus sp.																	
Sambucus nigra/racemosa													1				
Vitis vinifera													1				
OIL, DYE AND FIBRE PLANTS																	
Cannabis sativa																	
WEEDS OF WINTER CEREALS																	
Agrostemma githago																	
Anthemis arvensis																	
Fallopia convolvulus																	
Galium aparine																	
Order Aperetalia_weeds of rather acidic/neutral soils																	
Scleranthus sp. - capsule																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Ajuga chamaepitys																	
Caucalis platycarpos																	
Glaucium corniculatum																	
Myagrum perfoliatum													1				
Orlaya grandiflora																	
Ranunculus arvensis																	
Valerianella dentata																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	
Anagallis arvensis/foemina																	
Chenopodium album																	
Chenopodium hybridum														1			
Chenopodium polyspermum																	
Euphorbia helioscopia																	
Fumaria sp.													1				
Galeopsis tetrahit																	
Mercurialis annua		1		1						8							

Chronology		Phase 2-3				Phase 3												Phase 3		
Context		LAYER				LAYER												POSTHOLE		
Structure		17	17	19		50	50	50	50	50	50	50	181	180	38	39		106	106	106
US		06	07	08		02	02	07	05	10	13	12	01	48	05	11		03	04	05
Sample N°		BK45018FA	BK45019FA	BK45017FA		BK45009PB	BK45011PB	BK45030PB	BK45034PB	BK45044PB	BK45059PB	BK45060PB	BK55006FA	BK55012FA	BK35004FA	BK35033FA		BK45052FA	BK45055FA	BK45056FA
Polygonum lapathifolium/persicaria																				
Polygonum persicaria																				
Solanum nigrum																				
Stachys cf *arvensis*																				
Stellaria media																				
Thlaspi arvense																				
Urtica urens																				
PERENNIAL RUDERALS																				
Arctium sp.																				
Chelidonium majus																				
Cirsium/Carduus																				
Hyoscyamus niger																				
Lapsana communis																				
Plantago major																				
Polygonum aviculare																				
Ranunculus repens																1				
Rumex obtusifolius																				
Sambucus ebulus															1					
Urtica dioica																				
MEADOWS AND PASTURES																				
Ajuga reptans																				
Centaurea sp.																				
Prunella vulgaris																				
Ranunculus acris																				
Open swards																				
Medicago lupulina - pod																				
Scabiosa columbaria																				
Aquatic plants																				
Potamogeton sp.																				
Sparganium sp.															1					
Reed fields																				
Carex sp. - utriculus																				
Carex sp. bicarpellate																				
Carex sp. tricarpellate															2	1				
Eleocharis palustris															1	1				
Iris cf *pseudacorus*																				
Lycopus europaeus																				
Oenanthe fistulosa																				
Schoenoplectus lacustris																				
Schoenoplectus sp.																				
Riverbank plants (pioneer)																				
Bidens tripartita																				
Polygonum hydropiper																1				
Polygonum hydropiper/mite																				
Polygonum lapathifolium																				
Polygonum mite/minus																				
Ranunculus sardous																				
Ranunculus sceleratus															1					
Wet meadows																				
Lychnis flos-cuculi																				
Forests, forest edges and clearings, hedges																				
Abies alba - needle																				
Humulus lupulus																				
Rosa sp.																				
Solanum cf *dulcamara*																				
Calamintha sylvatica																				
VARIA																				
Ajuga sp.																				
Cannabinaceae																				
Carduus sp.																				
Chenopodium sp.															1					
Cyperaceae																				
Euphorbia sp.																				

Chronology	Phase 2-3			Phase 3											Phase 3		
Context	LAYER			LAYER											POSTHOLE		
Structure	17	17	19	50	50	50	50	50	50	50	181	180	38	39	106	106	106
US	06	07	08	02	02	07	05	10	13	12	01	48	05	11	03	04	05
Sample N°	BK45018FA	BK45019FA	BK45017FA	BK45009PB	BK45011PB	BK45030PB	BK45034PB	BK45044PB	BK45059PB	BK45060PB	BK55006FA	BK55012FA	BK35004FA	BK35033FA	BK45052FA	BK45055FA	BK45056FA
Galium sp.																	
Lamiaceae																	
Lamium sp.																	
Physalis/Solanum																	
Poaceae																	
Polygonaceae																	
Polygonum sp.																	
Potentilla sp.																	
Rumex sp. - perianth																	
Sambucus sp.	1													1			
Silene sp.																	
Solanum sp.														1			
Stachys sp.													1	1			
Stellaria graminea/palustris																	
Viola sp.														1			
CHARRED																	
CEREALS _ grain																	
Avena sp.																	
Hordeum vulgare				1	2	2			2	2	2						
Hordeum sp.														1			
Secale cereale																	
Triticum aestivum/durum/turgidum									2								
Triticum sp.						1								1			
Cerealia ohne Hirsen	1			2	2	2		1	3	3							1
Panicum miliaceum					1					2							
Setaria italica				1													
CEREALS _ chaff																	
Hordeum vulgare - rachis		1															
NUTS																	
Corylus avellana		1		1	2	2	2		3	4	2						
Juglans regia				2		1			3	4	2						
Pinus pinea - cone fragment																	
Pinus pinea																	
Pinus pinea - scale						1			2	2							
Pinus pinea - nut fragment																	
PULSES																	
Lathyrus sp.				2					2								
Lens culinaris				1	2				2	2							
Pisum sativum										1							
Vicia faba									1	1							
Fabaceae	1				1	2	2		2	3					1		
VEGETABLES AND SALADS																	
Allium sativum									1								
cf *Allium sativum*																	
Atriplex sp.																	
FRUITS																	
Ficus carica																	
Ficus carica - fruitflesh					1		2		2	3							
Phoenix dactylifera - fruit																	
Phoenix dactylifera - stone																	
Phoenix dactylifera - fruitflesh										2							
Phoenix dactylifera - stone fragment										2							
Prunus persica										1							
Sambucus nigra/racemosa																	
Vitis vinifera				2	2												
WEEDS OF WINTER CEREALS																	
Galium aparine																	
Veronica hederifolia									2	4	2						
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Galium cf *spurium*				1	1				2								
Myagrum perfoliatum																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	

Chronology		Phase 2-3				Phase 3												Phase 3		
Context		**LAYER**				**LAYER**												**POSTHOLE**		
Structure		**17**	**17**	**19**		**50**	**50**	**50**	**50**	**50**	**50**	**50**	**181**	**180**	**38**	**39**		**106**	**106**	**106**
US		06	07	08		02	02	07	05	10	13	12	01	48	05	11		03	04	05
Sample N°		BK45018FA	BK45019FA	BK45017FA		BK45009PB	BK45011PB	BK45030PB	BK45034PB	BK45044PB	BK45059PB	BK45060PB	BK55006FA	BK55012FA	BK35004FA	BK35033FA		BK45052FA	BK45055FA	BK45056FA
Chenopodium album				1															1	
PERENNIAL RUDERALS																				
Cruciata laevipes													2							
Rumex obtusifolius						1	1				2	2				1				
Silene alba												3								
MEADOWS AND PASTURES																				
Galium boreale								2												
Plantago media																				
Aquatic plants																				
Sparganium sp.							1				2									
VARIA																				
Asperula sp.																				
Chenopodiaceae								1			2	3								
Galium sp.			2	1									2						1	
Poaceae			1								2									
Rumex sp.				1																
Vicia sp.											2									
Indeterminata - bud						2	2				2									
Indeterminata - amorphous object													1	5						
Indeterminata - fruitflesh						2	2	2	2	2	2	2								
Indeterminata - endocarp		1	1					2			2	3								
Indeterminata - seed/fruit						2	2			2	3	3								

Temple complex																				
Chronology				**Phase 3**		**Phase 4**										**Phases 3 to 5**				
Context				**DITCH**		**PIT**										**DITCH**				
Structure	**106**	**174**		**137**		**160**	**160**	**160**	**160**	**219**	**219**	**219**	**219**	**219**		**16**	**16**	**16**	**16**	**16**
US	06	04		01		06	07	08	09	04	05	06	07	07		03	07	10	09	08
Sample N°	BK45057FA	BK55008FA		BK45071FA		BK55001PB	BK55002PB	BK55003PB	BK55004PB	BK55009PB	BK55010PB	BK55011PB	BK55018PB	BK55019PB		BK35002FA	BK35005FA	BK35006FA	BK35009FA	BK35010FA
Analysis	RS	RS		RS		FU	FU	FU	FU	FU	FU	FU	FU	FU		RS	RS	RS	RS	RS
Volume sample	8000	12000		6000		26000	31500	8000	15000	13000	3000	22500	14000	7000		9000	9000	7000	8000	8000
WATERLOGGED																				
CEREALS _ chaff																				
Hordeum sp. - rachis																				
Triticum monococcum - glume																				
Triticum spelta - glume																				
Cerealia - glume																				
Cerealia - rachis																				
Panicum miliaceum - glume																				
NUTS																				
Corylus avellana																				
Juglans regia																				
SPICES																				
Apium graveolens																		1		
Coriandrum sativum																				
VEGETABLES AND SALADS																				
Amaranthus sp.							2													
Atriplex sp.																				
Beta vulgaris																				
Brassica sp.																				
Daucus carota																	1			
Lagenaria siceraria																				
FRUITS																				
Ficus carica																				
Pyrus sp. - flower																				
Physalis alkekengi																		1		
Prunus domestica/insititia																				
Prunus persica																				
Prunus sp.																				
Rubus caesius																				
Rubus fruticosus																				
Rubus sp.																				
Sambucus nigra/racemosa																1	1	1	1	1
Vitis vinifera																	1			
OIL, DYE AND FIBRE PLANTS																				
Cannabis sativa																				
WEEDS OF WINTER CEREALS																				
Agrostemma githago																				
Anthemis arvensis																				
Fallopia convolvulus							2													
Galium aparine																				
Order Aperetalia_weeds of rather acidic/neutral soils																				
Scleranthus sp. - capsule																				
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																				
Ajuga chamaepitys																		1		
Caucalis platycarpos																	1			
Glaucium corniculatum																				
Myagrum perfoliatum																	1	1		
Orlaya grandiflora																				
Ranunculus arvensis																				
Valerianella dentata																				
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																				
Anagallis arvensis/foemina																				
Chenopodium album																	1			
Chenopodium hybridum																	1	1		
Chenopodium polyspermum																				
Euphorbia helioscopia																				
Fumaria sp.																	1			
Galeopsis tetrahit																				
Mercurialis annua																1			1	1

Chronology				Phase 3		Phase 4										Phases 3 to 5				
Context				**DITCH**		**PIT**										**DITCH**				
Structure	**106**	**174**		**137**		**160**	**160**	**160**	**160**	**219**	**219**	**219**	**219**	**219**		**16**	**16**	**16**	**16**	**16**
US	06	04		01		06	07	08	09	04	05	06	07	07		03	07	10	09	08
Sample N°	BK45057FA	BK55008FA		BK45071FA		BK55001PB	BK55002PB	BK55003PB	BK55004PB	BK55009PB	BK55010PB	BK55011PB	BK55018PB	BK55019PB		BK35002FA	BK35005FA	BK35006FA	BK35009FA	BK35010FA
Polygonum lapathifolium/persicaria																				
Polygonum persicaria																	1			
Solanum nigrum																	1	1		
Stachys cf *arvensis*																				
Stellaria media																				
Thlaspi arvense																				
Urtica urens																				
PERENNIAL RUDERALS																				
Arctium sp.																				
Chelidonium majus																				
Cirsium/Carduus																				
Hyoscyamus niger																		1		
Lapsana communis																				
Plantago major																				
Polygonum aviculare																				
Ranunculus repens																	1	1		
Rumex obtusifolius																				
Sambucus ebulus																1	1	1	1	1
Urtica dioica																				
MEADOWS AND PASTURES																				
Ajuga reptans																				
Centaurea sp.																				
Prunella vulgaris																				
Ranunculus acris																				
Open swards																				
Medicago lupulina - pod																				
Scabiosa columbaria																				
Aquatic plants																				
Potamogeton sp.																1				
Sparganium sp.																			1	1
Reed fields																				
Carex sp. - utriculus																				
Carex sp. bicarpellate																		1		
Carex sp. tricarpellate																				
Eleocharis palustris																				
Iris cf *pseudacorus*																				
Lycopus europaeus																				
Oenanthe fistulosa																				
Schoenoplectus lacustris																				
Schoenoplectus sp.																3		1	2	1
Riverbank plants (pioneer)																				
Bidens tripartita																				
Polygonum hydropiper																				
Polygonum hydropiper/mite																		1		
Polygonum lapathifolium																		1		
Polygonum mite/minus																				
Ranunculus sardous																				
Ranunculus sceleratus																				
Wet meadows																				
Lychnis flos-cuculi																				
Forests, forest edges and clearings, hedges																				
Abies alba - needle																				
Humulus lupulus																				
Rosa sp.																				
Solanum cf *dulcamara*																				
Calamintha sylvatica																				
VARIA																				
Ajuga sp.																1				
Cannabinaceae																				
Carduus sp.																				
Chenopodium sp.																		1		
Cyperaceae																	1	1	1	
Euphorbia sp.																				

Chronology			Phase 3	Phase 4									Phases 3 to 5				
Context			**DITCH**	**PIT**									**DITCH**				
Structure	**106**	**174**	**137**	**160**	**160**	**160**	**160**	**219**	**219**	**219**	**219**	**219**	**16**	**16**	**16**	**16**	**16**
US	06	04	01	06	07	08	09	04	05	06	07	07	03	07	10	09	08
Sample N°	BK45057FA	BK55008FA	BK45071FA	BK55001PB	BK55002PB	BK55003PB	BK55004PB	BK55009PB	BK55010PB	BK55011PB	BK55018PB	BK55019PB	BK35002FA	BK35005FA	BK35006FA	BK35009FA	BK35010FA
Galium sp.																	
Lamiaceae														1			
Lamium sp.																	
Physalis/Solanum																	
Poaceae																	
Polygonaceae																	
Polygonum sp.																	
Potentilla sp.																	
Rumex sp. - perianth																	
Sambucus sp.	1																
Silene sp.																	
Solanum sp.																	
Stachys sp.															1		
Stellaria graminea/palustris																	
Viola sp.														1	1		
CHARRED																	
CEREALS _ grain																	
Avena sp.																	
Hordeum vulgare					2		2		1	2	1	2			1		
Hordeum sp.																	
Secale cereale								2			1						
Triticum aestivum/durum/turgidum				3	2		3	3	3	2	4	2					
Triticum sp.							3		1		1	3					
Cerealia ohne Hirsen				3	2	1	4	3	2	3	4	3		1			
Panicum miliaceum							3			3	3	2					
Setaria italica											2						
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
NUTS																	
Corylus avellana	1	1								2	2						
Juglans regia										2	1						
Pinus pinea - cone fragment								1									
Pinus pinea											2	1					
Pinus pinea - scale							3	2		2	2	2					
Pinus pinea - nut fragment				3	3		4	3	3	4	4	4					
PULSES																	
Lathyrus sp.																	
Lens culinaris				3			2										
Pisum sativum																	
Vicia faba																	
Fabaceae					2		3	2	1						1		
VEGETABLES AND SALADS																	
Allium sativum																	
cf *Allium sativum*												2					
Atriplex sp.																	
FRUITS																	
Ficus carica										3	4	2					
Ficus carica - fruitflesh				3	2		2	3	1	2	4	2					
Phoenix dactylifera - fruit											1						
Phoenix dactylifera - stone				1													
Phoenix dactylifera - fruitflesh					2						2	2					
Phoenix dactylifera - stone fragment					2		2			1	2						
Prunus persica																	
Sambucus nigra/racemosa										2							
Vitis vinifera							3			2		2					
WEEDS OF WINTER CEREALS																	
Galium aparine															1		
Veronica hederifolia						1						2					
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Galium cf *spurium*																	
Myagrum perfoliatum																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	

Chronology				Phase 3		Phase 4										Phases 3 to 5				
Context				DITCH		PIT										DITCH				
Structure	106	174		137		160	160	160	160	219	219	219	219	219		16	16	16	16	16
US	06	04		01		06	07	08	09	04	05	06	07	07		03	07	10	09	08
Sample N°	BK45057FA	BK55008FA		BK45071FA		BK55001PB	BK55002PB	BK55003PB	BK55004PB	BK55009PB	BK55010PB	BK55011PB	BK55018PB	BK55019PB		BK35002FA	BK35005FA	BK35006FA	BK35009FA	BK35010FA
Chenopodium album																				
PERENNIAL RUDERALS																				
Cruciata laevipes																				
Rumex obtusifolius									2	2								1		
Silene alba																				
MEADOWS AND PASTURES																				
Galium boreale																				
Plantago media																	1			
Aquatic plants																				
Sparganium sp.								1												
VARIA																				
Asperula sp.																				
Chenopodiaceae																				
Galium sp.				1																
Poaceae																		1		
Rumex sp.																				
Vicia sp.											1									
Indeterminata - bud																				
Indeterminata - amorphous object																				
Indeterminata - fruitflesh						2	2		2	2	1	2	2	2						
Indeterminata - endocarp						2	2		4	2	2	2	3							
Indeterminata - seed/fruit						2	2		4	3	3	2	3	3						

Temple complex														
Chronology											**Phases 1 to 5**			
Context											**DITCH**		**LAYER**	
Structure	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**92**	**12**	**66**	**70**
US	14	12	11	13	15	16	17	18	20	21	01	04	02	02
Sample N°	BK35019FA	BK35020FA	BK35021FA	BK35022FA	BK35023FA	BK35024FA	BK35025FA	BK35026FA	BK35032FA	BK35037FA	BK45036FA	BK45022FA	BK45021FA	BK45023FA
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS
Volume sample	6000	5000	5000	8000	7500	5000	6000	7000	16000	18000	4000	6000	4000	4000
WATERLOGGED														
CEREALS _ chaff														
Hordeum sp. - rachis														
Triticum monococcum - glume														
Triticum spelta - glume														
Cerealia - glume														
Cerealia - rachis														
Panicum miliaceum - glume	1													
NUTS														
Corylus avellana							1							
Juglans regia														
SPICES														
Apium graveolens														
Coriandrum sativum										1				
VEGETABLES AND SALADS														
Amaranthus sp.						1		1						
Atriplex sp.														
Beta vulgaris														
Brassica sp.														
Daucus carota														
Lagenaria siceraria														
FRUITS														
Ficus carica														
Pyrus sp. - flower														
Physalis alkekengi	1					1	1							
Prunus domestica/insititia														
Prunus persica														
Prunus sp.														
Rubus caesius														
Rubus fruticosus					1									
Rubus sp.														
Sambucus nigra/racemosa	1	1	1	2	2	2	1	1	2	1				
Vitis vinifera						1	1							
OIL, DYE AND FIBRE PLANTS														
Cannabis sativa														
WEEDS OF WINTER CEREALS														
Agrostemma githago														
Anthemis arvensis														
Fallopia convolvulus														
Galium aparine	1													
Order Aperetalia_weeds of rather acidic/neutral soils														
Scleranthus sp. - capsule														
Order Secalietalia, Caucalion alliance_weeds of calcareous soils														
Ajuga chamaepitys														
Caucalis platycarpos														
Glaucium corniculatum														
Myagrum perfoliatum								1						
Orlaya grandiflora														
Ranunculus arvensis														
Valerianella dentata						1								
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS														
Anagallis arvensis/foemina														
Chenopodium album							1							
Chenopodium hybridum								1						
Chenopodium polyspermum														
Euphorbia helioscopia														
Fumaria sp.						1	1	1	1					
Galeopsis tetrahit						1								
Mercurialis annua	1		1		1		1		1			1		

Chronology												Phases 1 to 5					
Context												DITCH			LAYER		
Structure	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**		**92**	**12**		**66**	**70**	
US	14	12	11	13	15	16	17	18	20	21		01	04		02	02	
Sample N°	BK35019FA	BK35020FA	BK35021FA	BK35022FA	BK35023FA	BK35024FA	BK35025FA	BK35026FA	BK35032FA	BK35037FA		BK45036FA	BK45022FA		BK45021FA	BK45023FA	
Polygonum lapathifolium/persicaria										1							
Polygonum persicaria																	
Solanum nigrum						1											
Stachys cf *arvensis*																	
Stellaria media						1											
Thlaspi arvense																	
Urtica urens																	
PERENNIAL RUDERALS																	
Arctium sp.																	
Chelidonium majus																	
Cirsium/Carduus																	
Hyoscyamus niger									1								
Lapsana communis																	
Plantago major																	
Polygonum aviculare							1										
Ranunculus repens	1				1	2	1	1	1	1							
Rumex obtusifolius	1					1			1								
Sambucus ebulus	1		1	2	2	1	1		1								
Urtica dioica										1							
MEADOWS AND PASTURES																	
Ajuga reptans																	
Centaurea sp.																	
Prunella vulgaris																	
Ranunculus acris																	
Open swards																	
Medicago lupulina - pod																	
Scabiosa columbaria																	
Aquatic plants																	
Potamogeton sp.		1			1	2			1	1							
Sparganium sp.	1	1	1	1	1	2			2								
Reed fields																	
Carex sp. - utriculus																	
Carex sp. bicarpellate																	
Carex sp. tricarpellate	1					1	1	1									
Eleocharis palustris																	
Iris cf *pseudacorus*																	
Lycopus europaeus								1		1							
Oenanthe fistulosa																	
Schoenoplectus lacustris	1																
Schoenoplectus sp.		1	1	2	1	1	1		2	1							
Riverbank plants (pioneer)																	
Bidens tripartita																	
Polygonum hydropiper																	
Polygonum hydropiper/mite					1	1			1	1							
Polygonum lapathifolium																	
Polygonum mite/minus								1									
Ranunculus sardous																	
Ranunculus sceleratus						1	1		1								
Wet meadows																	
Lychnis flos-cuculi																	
Forests, forest edges and clearings, hedges																	
Abies alba - needle																	
Humulus lupulus																	
Rosa sp.																	
Solanum cf *dulcamara*																	
Calamintha sylvatica										1							
VARIA																	
Ajuga sp.																	
Cannabinaceae																	
Carduus sp.					1												
Chenopodium sp.																	
Cyperaceae	1	1		1	2	1	1	1	1								
Euphorbia sp.								1									

Chronology												**Phases 1 to 5**					
Context												**DITCH**			**LAYER**		
Structure	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**		**92**	**12**		**66**	**70**	
US	14	12	11	13	15	16	17	18	20	21		01	04		02	02	
Sample N°	BK35019FA	BK35020FA	BK35021FA	BK35022FA	BK35023FA	BK35024FA	BK35025FA	BK35026FA	BK35032FA	BK35037FA		BK45036FA	BK45022FA		BK45021FA	BK45023FA	
Galium sp.																	
Lamiaceae																	
Lamium sp.																	
Physalis/Solanum		1								1							
Poaceae																	
Polygonaceae										1							
Polygonum sp.																	
Potentilla sp.									1								
Rumex sp. - perianth																	
Sambucus sp.	1												1			1	
Silene sp.																	
Solanum sp.			1					1									
Stachys sp.					1		1		1								
Stellaria graminea/palustris																	
Viola sp.							1			1							
CHARRED																	
CEREALS _ grain																	
Avena sp.																	
Hordeum vulgare													1				
Hordeum sp.																	
Secale cereale																	
Triticum aestivum/durum/turgidum																	
Triticum sp.																	
Cerealia ohne Hirsen												1			1	1	
Panicum miliaceum																	
Setaria italica																	
CEREALS _ chaff																	
Hordeum vulgare - rachis																	
NUTS																	
Corylus avellana															1	1	
Juglans regia																	
Pinus pinea - cone fragment																	
Pinus pinea																	
Pinus pinea - scale																	
Pinus pinea - nut fragment																	
PULSES																	
Lathyrus sp.																	
Lens culinaris																	
Pisum sativum																	
Vicia faba																	
Fabaceae															1		
VEGETABLES AND SALADS																	
Allium sativum																	
cf *Allium sativum*																	
Atriplex sp.																1	
FRUITS																	
Ficus carica																	
Ficus carica - fruitflesh																	
Phoenix dactylifera - fruit																	
Phoenix dactylifera - stone																	
Phoenix dactylifera - fruitflesh																	
Phoenix dactylifera - stone fragment																	
Prunus persica																	
Sambucus nigra/racemosa																	
Vitis vinifera																	
WEEDS OF WINTER CEREALS																	
Galium aparine																	
Veronica hederifolia																	
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																	
Galium cf *spurium*																	
Myagrum perfoliatum																	
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																	

Chronology												Phases 1 to 5					
Context												DITCH			LAYER		
Structure	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**		**92**	**12**		**66**	**70**	
US	14	12	11	13	15	16	17	18	20	21		01	04		02	02	
Sample N°	BK35019FA	BK35020FA	BK35021FA	BK35022FA	BK35023FA	BK35024FA	BK35025FA	BK35026FA	BK35032FA	BK35037FA		BK45036FA	BK45022FA		BK45021FA	BK45023FA	
Chenopodium album																	
PERENNIAL RUDERALS																	
Cruciata laevipes																	
Rumex obtusifolius																	
Silene alba																	
MEADOWS AND PASTURES																	
Galium boreale																	
Plantago media																	
Aquatic plants																	
Sparganium sp.																	
VARIA																	
Asperula sp.																	
Chenopodiaceae																	
Galium sp.	1															1	
Poaceae							1										
Rumex sp.																	
Vicia sp.																	
Indeterminata - bud																	
Indeterminata - amorphous object																	
Indeterminata - fruitflesh																	
Indeterminata - endocarp																	
Indeterminata - seed/fruit																	

Table 2.c Semi-quantitative data of the main archaeobotanical analysis of the Roman civil agglomeration Oedenburg/Biesheim-Kunheim. Surroundings of the temple complex.

Surroundings of the temple complex																											
Chronology	**1st Cent. AD**											**Roman not specified**															
Context	**PIT**				**LAYER**							**PIT**				**LAYER**											
Structure	**29**	**193**	**194**	**194**	**168**	**212**	**310**	**163**	**166**	**166**	**166**	**89**	**90**	**129**	**161**	**67**	**74**	**74**	**74**	**74**	**74**	**74**	**74**	**151**	**151**	**151**	**151**
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	10	02	03 1	03 2	03 3	03 4	03 5	03	03	01 1	01 2	01 3	11
Sample N°	BK3900	BK39053	BK39054	BK39056	BK510010	BK39059	BK51003	BK39048	BK39057A	BK39057B	BK39057	BK39009	BK39010	BK39047	BK51003	BK39032	BK3901	BK39012	BK39013	BK39014	BK39030	BK39030	BK39034	BK39041	BK39042	BK39043	BK39060
Context	Pit	Pit	Pit	Pit	layer	layer	drain	floor	floor	floor	floor	pit	pit	pit	well	layer	layer	layer	layer	layer	layer	layer	layer	layer	layer	layer	layer
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	FU	RS	RS	RS	RS	RS
Volume sample	8000	6000	6000	6000	10000	5000	8000	20500	9000	8000	10000	22500	4500	5000	30000	3000	6000	7000	8000	7000	5000	5000	2000	5000	5500	5500	7000
WATERLOGGED																											
CEREALS _ grain																											
Cerealia - Testa																											4
CEREALS _ chaff																											
Hordeum sp. - rachis						1		2	1	1	3																
Secale cereale - rachis											2																
Triticum cf aestivum/durum/turgidum - rachis																					1						
Triticum dicoccon - glume								1																			
Triticum cf *dicoccon* - glume										1																	
Triticum spelta - glume														1				1			1						1
Triticum sp. - rachis																											
Triticum sp. - glume						1																3					
Cerealia - glume								1										1					1				
Cerealia - rachis								1		1												2					
Panicum miliaceum - glume						1		3	3	3	3			1							1	3	1	2			
Setaria italica - glume									1																		
Panicum/Setaria - glume																											
NUTS																											
Corylus avellana		1	1	1		2	3	1		1				1	4	2	2	1	3	2	2	2	1			1	
Juglans regia															2		1	1			1	2	1				
Pinus pinea																											
PULSES																											
Fabaceae																1											
SPICES																											
Anethum graveolens			1	1				1									1	1	1		1	3					
Apium graveolens			1				1	1									1	1	1		1	5	1				1
Coriandrum sativum			1	1	1	1											1		1		2	4	1			1	1
Foeniculum vulgare																						1					
Satureja hortensis																						4					1
VEGETABLES AND SALADS																											
Amaranthus sp.							1							1				1			1	4	1			1	
Atriplex sp.							1													1	1	2					
Beta vulgaris															1												
Brassica sp.							1												1			4					
Daucus carota						1	2								1		1		1			2					
Lagenaria siceraria																	2				1	2	1				
Portulaca oleracea																						3					
FRUITS																											
Cucumis melo																						2					
Cucumis melo/sativa - fragment																											
Cucumis melo/sativa						1												1			2	1	1				
Ficus carica						1					1			1			1	1	1	1	2	4	2	2	3	3	2
Fragaria vesca																						3					
Pyrus sp. - stone cells																									1	1	
Pyrus sp. - flower																	1				1	2				1	
Malus/Pyrus - pericarp																					1						4
Malus/Pyrus														1			2					3	1	2	2	2	4
Morus sp.														1													
Olea europaea																					1	1					
Physalis alkekengi						1								1												1	1
Prunus avium/cerasus						1												1						1	1	2	
Prunus domestica														1			1	1					1	1	1	1	
Prunus domestica/insititia															1												
Prunus persica															2						1	1					
Prunus spinosa							1																				
Prunus sp.						1																	1	2	2	2	
Rubus caesius														1	1								1			1	
Rubus fruticosus																							1	1	1		
Rubus sp.														1	1									1			
Sambucus nigra/racemosa				1	1		1					1		1	3		1	1		1			1	2		1	

Chronology	1st Cent. AD											Roman not specified															
Context	PIT				LAYER							PIT				LAYER											
Structure	29	193	194	194	168	212	310	163	166	166	166	89	90	129	161	67	74	74	74	74	74	74	74	151	151	151	151
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	10	02	03 1	03 2	03 3	03 4	03 5	03	03	01 1	01 2	01 3	11
Sample N°	BK3900	BK3905	BK3905	BK3905	BK510010	BK3905	BK51003	BK3904	BK39057	BK39057	BK39057	BK3900	BK3901	BK3904	BK51003	BK39032	BK3901	BK3901	BK3901	BK3901	BK3903	BK3903	BK39034	BK3904	BK39042	BK39043	BK39060
Vitis vinifera														1	1	1	2				1	3			3		
OIL, DYE AND FIBRE PLANTS																											
Cannabis sativa									1								1										
Carthamus tinctorius																						4					
WEEDS OF WINTER CEREALS																											
cf *Adonis* sp.																						3					
Agrostemma githago				1		1	2	2	1	1	3							1			1	2	1			1	1
Anthemis arvensis					1		2	1	1	1	2						1	1				4	1				
Buglossoides arvensis																											
Fallopia convolvulus						1		1	1	1	1				1		1	1	1		2	3	1			1	
Galium aparine											1										1	3	1		1		1
Valerianella cf *rimosa*																											
Valerianella rimosa																											
Valerianella sp.														1													
Order Aperetalia_weeds of rather acidic/neutral soils																											
Camelina sativa				1				1		1																	
Papaver argemone							1				2											4					
Papaver dubium											2																
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																											
Ajuga chamaepitys			1		1									1					1	1			1				
Caucalis platycarpos				1		1			1	1	2						2				3	4	3				
Euphorbia exigua																						2					
Galium spurium																						3					
Glaucium corniculatum																				1		2					
Myagrum perfoliatum		1	1	1		1	1		1			1	1		1		2	1	1	1	2	4	2				
Nigella arvensis							1																1				
Orlaya grandiflora											1																
Ranunculus arvensis																							1				
Silene cf *dichotoma*																						2					
Stachys annua							2															4					
Thymelaea passerina																1											
cf *Vaccaria pyramidata*															1												
Valerianella dentata								1										1	1								
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																											
Aethusa cynapium																		1							1		
Anagallis arvensis/foemina						1			1	1									1		1	4	1				
Arenaria serpyllifolia							1															4					
Capsella bursa-pastoris																											
Chenopodium album			1	1	1		3	2	1	1	1			1	3		1			1	1	5	2	1	1		1
Chenopodium hybridum		1	1	1		2	1	1	1	1	2		1	1		1	1		1		1	3	1	1	1	1	
Chenopodium murale																									1	1	
Euphorbia helioscopia																	1	1									
Euphorbia platyphyllos																			1								
Fumaria sp.				1		1			1						1	1	1	1									
Galeopsis cf *bifida*															1												
Galeopsis bifida																											
Galeopsis sp.							1	1	1		2						1				1	1					
Galeopsis cf *speciosa*							1																				
Galeopsis ladanum/segetum																						4					
cf *Heliotropium europaeum*																											
Lamium cf *purpureum*																						2					
Malva sylvestris																											
Mercurialis annua																											
Polygonum lapathifolium/persicaria						1	1			1	1			1	2							3	1			1	
Polygonum persicaria																	1										
Portulaca sp.																											
Setaria verticillata/viridis							1				2				1			1									
Setaria cf *viridis* - glume																											
Solanum nigrum					2	1	3	1		1	2				2		1	1	1	1	1	4		1	1	1	
Sonchus asper																						3					
Sonchus asper/oleraceus											1																
Sonchus oleraceus																						2					

Chronology	1st Cent. AD											Roman not specified															
Context	PIT				LAYER							PIT				LAYER											
Structure	29	193	194	194	168	212	310	163	166	166	166	89	90	129	161	67	74	74	74	74	74	74	74	151	151	151	151
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	10	02	03 1	03 2	03 3	03 4	03 5	03	03	01 1	01 2	01 3	11
Sample N°	BK3900	BK3905	BK3905	BK3905	BK510010	BK3905	BK51003	BK3904	BK39057	BK39057	BK39057	BK3900	BK3901	BK3904	BK51003	BK39032	BK3901	BK3901	BK3901	BK3901	BK3903	BK3903	BK39034	BK3904	BK39042	BK3904	BK39060
Stellaria cf *media*																											
Stellaria media					1		3	1						1			1	1			1	4	1		1		1
Thlaspi arvense		1		1	1	2	1			1	1						1	1	1		2	2					
Urtica urens						1											1	1			1	4	1				
Verbena officinalis							2								3						1	4	1				
Xanthium strumarium											1																
PERENNIAL RUDERALS																											
Arctium sp.																											
Bryonia dioica																											
Chelidonium majus													1	1											1		
Cirsium sp.																		1	1		1	3					
Cirsium/Carduus						1	1								1								1				
Conium maculatum					2												1										
Hyoscyamus niger			1	1				1								1			1	1	1	3	1				
Lactuca serriola																						2					
Lapsana communis						1	1														1	2					
Onopordum acanthium						1													1								
Plantago major							1								1							2					
Polygonum aviculare					1		2		1					1	2				1		1	3	1			1	
Potentilla anserina															1												
Ranunculus repens					1	1	3							1	2			1	1		1						
Rumex conglomeratus - perianth																											
Rumex crispus - perianth											1																
Rumex obtusifolius - perianth																											
Rumex obtusifolius			1		1	1	2	1	1	1	2			1	3		1	1	1	1	1	4	1	1		1	1
Sambucus ebulus	1				1								1		3		1		1	1	2	3					
Urtica dioica					1	1		1										1			1	4					
MEADOWS AND PASTURES																											
Ajuga reptans																			1								
Centaurea sp.							2															2	1				
Cichorium intybus							1																				
Cirsium/Centaurea								1																			
Leontodon autumnalis							1																				
Leucanthemum vulgare								1		1												2					
Plantago lanceolata																						2					
Plantago cf *media*																							1				
Plantago media																						2					
Potentilla erecta																					1						
Prunella vulgaris							2	1	1	1	1										1	4	1				1
Ranunculus acris														1			1										
Rhinanthus sp.							2																				
Scabiosa sp.																						2					
Taraxacum officinale																											
Trifolium sp. - chalice																											
Trifolium sp.										1																	
Open swards																											
cf *Acinos arvensis*																											
Ajuga genevensis							1																				
Medicago lupulina - pod							1																				
Medicago lupulina - pod with seeds																											
Medicago minima - pod							1														1						
cf *Petrorhagia prolifera*																											
Teucrium botrys																					1						
Teucrium cf *chamaedrys*															1												
Aquatic plants																											
Ceratophyllum cf *submersum*															2												
Lemna sp.																											
Potamogeton sp.															1												
Ranunculus aquatilis																											
Sparganium sp.														1	3												
Zannichellia palustris					2																						
Reed fields																											
Alisma plantago-aquatica							1	1							2							4					
Carex sp. - utriculus									1										1			1					
Carex sp. bicarpellate				1		1	2	1			1			1								4					

Chronology	1st Cent. AD											Roman not specified															
Context	**PIT**				**LAYER**							**PIT**				**LAYER**											
Structure	**29**	**193**	**194**	**194**	**168**	**212**	**310**	**163**	**166**	**166**	**166**	**89**	**90**	**129**	**161**	**67**	**74**	**74**	**74**	**74**	**74**	**74**	**74**	**151**	**151**	**151**	**151**
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	10	02	03 1	03 2	03 3	03 4	03 5	03	03	01 1	01 2	01 3	11
Sample N°	BK3900	BK39053	BK3905	BK3905	BK510010	BK3905	BK51003	BK3904	BK39057	BK39057	BK39057	BK3900	BK3901	BK3904	BK51003	BK39032	BK3901	BK3901	BK3901	BK3901	BK3903	BK3903	BK39034	BK3904	BK39042	BK39043	BK3906
Carex sp. tricarpellate		1	1	1	2	1	2	1			1			1	3	1	1	1	1	1	1	4	1				1
Cicuta virosa																											
Eleocharis palustris				1	1	1	2	1	1		1								1		1	3					
Glyceria sp.					1										2												
Juncus sp.																						4					
Lycopus europaeus						1	2	1							2							4					
Mentha arvensis/aquatica							1				1											4					
Nasturtium officinale					1		1								1												
Oenanthe fistulosa			1	1			2						1														
Schoenoplectus sp.					1										2					1							
Riverbank plants (pioneer)																											
Bidens tripartita								2																			
Cyperus fuscus							1															3					
Cyperus sp.										1																	
Polygonum hydropiper					2																						
Polygonum hydropiper/mite						1			1						3						1				1		
Polygonum lapathifolium																		1									
Polygonum minus							1																				
Ranunculus sardous																			1								
Ranunculus sceleratus					1			1										1				4					
Wet meadows																											
Linum catharticum																						3					
Lychnis flos-cuculi								1	1						1												
Forests, forest edges and clearings, hedges																											
Abies alba - needle																	1				1		1				
Acer sp. - veg. part														1													
Betula pendula - veg. part																											
Cornus sanguinea															2												
Crataegus sp.																							1		1	2	
Humulus lupulus															1						1						
Quercus sp.								1	1	1	2																
Rosa sp.																	1				1						
Solanum cf *dulcamara*																											
Torilis cf *japonica*																											
Viburnum lantana															1												
Hypericum perforatum																											
Thalictrum minus																											
VARIA																											
Apiaceae			1																			3					
Asteraceae										1																	
Brassicaceae																						2					
Campanula sp.																						3					
Cannabinaceae																											
Carduus sp.																											
Cerastium sp.																						3					
Chenopodium sp.						2										1		1	1			4				1	
Crepis sp.																											
Cuscuta sp.							1																				
Cyperaceae	1			1		1								1				1	1	1				1			1
Euphorbia sp.														1								2	1			1	
Filipendula sp.																						3					
Galium sp.													1				1					2	1			1	
Lamiaceae							1															3					
Lamium sp.			1						1	1				1	1		1		1			3	1				
Malva sp.																					1						
Papaver sp.									1													4					
Physalis/Solanum													1														
Poaceae							1			1	2			1							1	3	1				
Polygonaceae	1		1																								1
Polygonum sp.						1																3					
Potentilla sp.							2															3					
Primulaceae																								1			
Rosaceae																	1		1								

Chronology	1st Cent. AD											Roman not specified															
Context	**PIT**				**LAYER**							**PIT**				**LAYER**											
Structure	**29**	**193**	**194**	**194**	**168**	**212**	**310**	**163**	**166**	**166**	**166**	**89**	**90**	**129**	**161**	**67**	**74**	**74**	**74**	**74**	**74**	**74**	**74**	**151**	**151**	**151**	**151**
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	10	02	03 1	03 2	03 3	03 4	03 5	03	03	01 1	01 2	01 3	11
Sample N°	BK3900	BK39053	BK3905	BK3905	BK510010	BK3905	BK51003	BK3904	BK39057	BK3905	BK39057	BK3900	BK3901	BK3904	BK51003	BK39032	BK3901	BK3901	BK3901	BK3901	BK3903	BK3903	BK39034	BK3904	BK39042	BK3904	BK3906
Rumex sp. - perianth					1	1	1	1	1	1				1	2						1	2	1				
Sambucus sp.		1	1			1																			1		
Silene sp.			1		1	1					1				1		1				1		1				
Solanaceae															1												
Solanum sp.			1											1									1				
Stachys sp.				1		1		1	1	1		1		1		1	1	1	1	1	2		1			1	
Stellaria graminea/palustris																						2					
Stellaria sp.															1							4					
Teucrium sp.						1																					
Tilia sp. - fruit																											
Torilis sp.							1																				
Veronica sp.																						3					
Viola sp.		1	1		1															1							
Indeterminata																						1					
CHARRED																											
CEREALS _ grain																											
Avena sp.			1														1					2					
Hordeum vulgare															2		1					4					
Hordeum sp.	1	1		1								1		1				1									
Triticum aestivum	1													1													
Triticum cf *aestivum*										1																	
Triticum aestivum/durum/turgidum											1				3							2					
Triticum dicoccon			1																								
Triticum spelta																								1			
Triticum sp.				1								1				1	2		1		1						
Cerealia ohne Hirsen			1			1							1	1		1	1	1			2	3		1	1		
Panicum miliaceum				1						1					2		1			1							
Setaria italica																	1					2					
CEREALS _ chaff																											
Hordeum vulgare - rachis																						2					
Hordeum sp. - rachis			1	1		1																					
Secale cereale - rachis															1												
Triticum aestivum - rachis															3												
Triticum spelta - glume			1	1																1							
Triticum sp. - glume														1													
PULSES																											
Lens culinaris															1												
Vicia faba															1						1	2					
Fabaceae			1																	1		2					
SPICES																											
Apium graveolens																						2					
Satureja hortensis																											
VEGETABLES AND SALADS																											
Brassica sp.																						2	1				
FRUITS																											
Ficus carica																					1						
Prunus domestica/insititia																						1					
WEEDS OF WINTER CEREALS																											
Galium aparine		1	1	1																		2	1				
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																											
Caucalis platycarpos																						1					
Glaucium corniculatum																				1							
Myagrum perfoliatum																						1					
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																											
Galeospis ladanum/segetum																						2					
cf *Solanum nigrum*																						2					
PERENNIAL RUDERALS																											
Rumex obtusifolius			1												2		1					3			1		
MEADOWS AND PASTURES																											
Plantago lanceolata																					1						
Reed fields																											

Chronology	1st Cent. AD											Roman not specified															
Context	**PIT**				**LAYER**							**PIT**				**LAYER**											
Structure	**29**	**193**	**194**	**194**	**168**	**212**	**310**	**163**	**166**	**166**	**166**	**89**	**90**	**129**	**161**	**67**	**74**	**74**	**74**	**74**	**74**	**74**	**74**	**151**	**151**	**151**	**151**
US	1	01	01 A	01 C	02 A	01	01	02	02	02	02	01	02	01	10	02	03 1	03 2	03 3	03 4	03 5	03	03	01 1	01 2	01 3	11
Sample N°	BK3900	BK3905	BK3905	BK3905	BK510010	BK3905	BK51003	BK3904	BK39057	BK39057	BK39057	BK3900	BK3901	BK39047	BK51003	BK39032	BK3901	BK3901	BK3901	BK3901	BK3903	BK3903	BK39034	BK3904	BK39042	BK3904	BK3906
Carex sp. tricarpellate		1																									
Forests, forest edges and clearings, hedges																											
cf *Humulus lupulus*																						1					
VARIA																											
Bromus sp.																	1										
Galium sp.		1		1													1				1	3					
Poaceae	1																				1	3	1				
Indeterminata - seed/fruit																							1				
MINERALISED																											
CEREALS _ grain																											
cf *Avena* sp.																								1			
Panicum miliaceum																									2	2	
PULSES																											
Lens culinaris																								3	1	3	
Vicia faba																								1	2	2	
FRUITS																											
Cucumis melo/sativa																									1	1	
Ficus carica																										1	
Malus/Pyrus																									1	1	
Prunus sp. - fragment																											1
Vitis vinifera																								3		3	
SPICES																											
Anethum graveolens																										1	1
VARIA																											
Apiaceae																	1							1			
Chenopodium sp.																									1		
Papaver sp.																									1		

Surroundings of the temple complex																											
Chronology																											
Context																					**BASIN**						
Structure	**151**	**215**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 27**	**Son 27**	**149**	**149**	**308**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**
US	10		C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 2	40	41	C26	C27-28	04	02 C	01 A	A	B	C	D	E	F	G
Sample N°	BK3906	BK3905	BK3901	BK3901	BK3901	BK39022	BK3902	BK39024	BK3902	BK3902	BK39033E	BK39033H	BK39036	BK3903	BK39044	BK3903	BK3903	BK51001	BK51003	BK510041	BK5100	BK51000	BK51000	BK51000	BK51000	BK51000	BK51000
Context	layer	layer	trench	trench	trench	trench	trench	trench	trench	trench	trench	trench	trench	trench	trench	trench	trench	drain	drain	palaeochan	basin	basin	basin	basin	basin	basin	basin
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS	RS
Volume sample	9000	0	4000	4000	3000	8000	3500	1500	6000	4000	9000	7000	7000	5000	13000	7000	6000	30000	10000	12000	6000	6000	8000	7200	6000	7000	6000
WATERLOGGED																											
CEREALS _ grain																											
Cerealia - Testa	2	1					1				1																
CEREALS _ chaff																											
Hordeum sp. - rachis								3	3	1	3	3		1	1	1	2										
Secale cereale - rachis									2	1		2															
Triticum cf aestivum/durum/turgidum - rachis																											
Triticum dicoccon - glume									2	1	1	2															
Triticum cf *dicoccon* - glume																	1										
Triticum spelta - glume		1				1		1	3	1	1	3	1			1	1										
Triticum sp. - rachis										1																	
Triticum sp. - glume								1			1			1													
Cerealia - glume							1			3																	
Cerealia - rachis											3		1	3	1		1										
Panicum miliaceum - glume	1		1				1	3	4	1	1	4	1	1	3	1	2	1									
Setaria italica - glume											1	2															
Panicum/Setaria - glume																											
NUTS																											
Corylus avellana		1	2				1			1			1		1			3	1	2							
Juglans regia	1																	3						1			
Pinus pinea																		1									
PULSES																											
Fabaceae																											
SPICES																											
Anethum graveolens		1					1			1																	
Apium graveolens	1	1																1									
Coriandrum sativum										1			1		1					1							
Foeniculum vulgare	1																										
Satureja hortensis	1																	1									
VEGETABLES AND SALADS																											
Amaranthus sp.	1					1	1						1				1	2	2			2	1				
Atriplex sp.									1		1	1	1														
Beta vulgaris																		1									
Brassica sp.																											
Daucus carota													1														
Lagenaria siceraria																		2									
Portulaca oleracea	1																										
FRUITS																											
Cucumis melo																											
Cucumis melo/sativa - fragment																		1									
Cucumis melo/sativa																											
Ficus carica	2	1						1							1												
Fragaria vesca																											
Pyrus sp. - stone cells	1																										
Pyrus sp. - flower																		2									
Malus/Pyrus - pericarp	2	4																									
Malus/Pyrus	3	3																1									
Morus sp.																											
Olea europaea																											
Physalis alkekengi																		1			1						
Prunus avium/cerasus																		2									
Prunus domestica																											
Prunus domestica/insititia																		2									
Prunus persica																		2									
Prunus spinosa																		1									
Prunus sp.										2																	
Rubus caesius																	1										1
Rubus fruticosus																											
Rubus sp.										1																	
Sambucus nigra/racemosa			1															3	3	1	2	1					

Chronology																											
Context																					BASIN						
Structure	151	215	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 27	Son 27	149	149	308	Son 19	Son 19	Son 19	Son 19	Son 19	Son 19	Son 19
US	10		C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 2	40	41	C26	C27-28	04	02 C	01 A	A	B	C	D	E	F	G
Sample N°	BK3906	BK3905	BK3901	BK3901	BK3901	BK39022	BK39023	BK39024	BK3902	BK3902	BK39033	BK39033	BK39036	BK3903	BK39044	BK3903	BK3903	BK51001	BK51003	BK510041	BK5100	BK51000	BK51000	BK51000	BK51000	BK51000	BK51000
Vitis vinifera													1					1	1								
OIL, DYE AND FIBRE PLANTS																											
Cannabis sativa						1																					
Carthamus tinctorius																											
WEEDS OF WINTER CEREALS																											
cf *Adonis* sp.																											
Agrostemma githago	1	1					1	3	3	3	1	4	1	2	1	1	3	1									
Anthemis arvensis	1							2	2	1	1	2	1		1		1										
Buglossoides arvensis												1															
Fallopia convolvulus	1	1				1	1		1	1	1	1	1			1		2	2								
Galium aparine	1						1		1	1	1		1				1										
Valerianella cf *rimosa*																	1										
Valerianella rimosa									2																		
Valerianella sp.																											
Order Aperetalia_weeds of rather acidic/neutral soils																											
Camelina sativa									2		1																
Papaver argemone								1	2			2															
Papaver dubium									1			2															
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																											
Ajuga chamaepitys						1	1			1	1	1															
Caucalis platycarpos								2	2	1		3	1	1	1	2	1										
Euphorbia exigua																											
Galium spurium												1															
Glaucium corniculatum																											
Myagrum perfoliatum			1		1	1							2														
Nigella arvensis																											
Orlaya grandiflora	1									1		2															
Ranunculus arvensis																	1										
Silene cf *dichotoma*																											
Stachys annua									2			2						2			1						
Thymelaea passerina																											
cf *Vaccaria pyramidata*																											
Valerianella dentata							1	2	2	1	1		1								1						
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																											
Aethusa cynapium					1																						
Anagallis arvensis/foemina							1					2			1			1									
Arenaria serpyllifolia												1															
Capsella bursa-pastoris																											
Chenopodium album	1					2	1	2	3	1	1	2	1	1	1	1	1	2	1	2	1	1					
Chenopodium hybridum	1		1		1	2	1	1	2	1	1	2			1	1		1	1		1						
Chenopodium murale																											
Euphorbia helioscopia												1									1						
Euphorbia platyphyllos																											
Fumaria sp.						1				1	1						1		1								
Galeopsis cf *bifida*																											
Galeopsis bifida								1	1																		
Galeopsis sp.								1			1	1	1				1	1		1							1
Galeopsis cf *speciosa*																											
Galeopsis ladanum/segetum																											
cf *Heliotropium europaeum*																			1								
Lamium cf *purpureum*																											
Malva sylvestris									1																		
Mercurialis annua																			1		1						
Polygonum lapathifolium/persicaria	1								2		1		1	1	1	1	1	2									
Polygonum persicaria																											
Portulaca sp.																		1									
Setaria verticillata/viridis									1																		
Setaria cf *viridis* - glume															1												
Solanum nigrum								2	3	1	1	3		1			1	3	2								
Sonchus asper																											
Sonchus asper/oleraceus																											
Sonchus oleraceus																											

Chronology																											
Context																					BASIN						
Structure	151	215	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 26	Son 27	Son 27	149	149	308	Son 19	Son 19	Son 19	Son 19	Son 19	Son 19	Son 19
US	10		C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 2	40	41	C26	C27-28	04	02 C	01 A	A	B	C	D	E	F	G
Sample N°	BK3906	BK3905	BK3901	BK3901	BK3901	BK39022	BK39023	BK39024	BK39026	BK39027	BK39033E	BK39033H	BK39036	BK3903	BK39044	BK3903	BK3903	BK51001	BK51003	BK510041	BK5100	BK51000	BK51000	BK51000	BK51000	BK51000	BK51000
Stellaria cf *media*															1												
Stellaria media	2						1	2			1	1	1			1		2									
Thlaspi arvense						2			2		1	2			1			1									
Urtica urens													1			1		1									
Verbena officinalis	1								2			2	1			1											1
Xanthium strumarium												1	1	1													
PERENNIAL RUDERALS																											
Arctium sp.																											
Bryonia dioica													1														
Chelidonium majus																											
Cirsium sp.							1	1	1			1															
Cirsium/Carduus													1			1											
Conium maculatum																				2	2	1		2	2		1
Hyoscyamus niger			1			1			2	1		1						1	2								
Lactuca serriola																											
Lapsana communis	1									1							1										
Onopordum acanthium																											
Plantago major	1																										
Polygonum aviculare								2	1		1	1	1				1	2						1			2
Potentilla anserina								1												1							
Ranunculus repens		1					1	2					1		1	1	1	3	2	2	1			1			
Rumex conglomeratus - perianth								1																			
Rumex crispus - perianth																											
Rumex obtusifolius - perianth									2			1															
Rumex obtusifolius	1	1					1	1	2	1	1	2	1		1	1	2	3	1	2							
Sambucus ebulus			1									1							2		3	2					
Urtica dioica	1												1	1				2									
MEADOWS AND PASTURES																											
Ajuga reptans																											
Centaurea sp.	1							1												1							
Cichorium intybus													1														
Cirsium/Centaurea																											
Leontodon autumnalis																											
Leucanthemum vulgare											1		1														
Plantago lanceolata																											
Plantago cf *media*																											
Plantago media																											
Potentilla erecta																											
Prunella vulgaris	2						1	1					1	1	1	1				1							
Ranunculus acris																										1	
Rhinanthus sp.										1			1													1	
Scabiosa sp.																					1						
Taraxacum officinale																	1										
Trifolium sp. - chalice												1															
Trifolium sp.							1				1		1		1												
Open swards																											
cf *Acinos arvensis*												1															
Ajuga genevensis																											
Medicago lupulina - pod																											
Medicago lupulina - pod with seeds													2														
Medicago minima - pod																											
cf *Petrorhagia prolifera*												1															
Teucrium botrys																											
Teucrium cf *chamaedrys*												1	1														
Aquatic plants																											
Ceratophyllum cf *submersum*																					2					3	2
Lemna sp.																											1
Potamogeton sp.								1										2								2	3
Ranunculus aquatilis																											
Sparganium sp.																		2			4	3	2	2	1	2	3
Zannichellia palustris																				1							
Reed fields																											
Alisma plantago-aquatica																		1		2		2		1			2
Carex sp. - utriculus													1				1										
Carex sp. bicarpellate	1							2				1	1	1						1	1	1	2	2	1	2	

Chronology																											
Context																					**BASIN**						
Structure	**151**	**215**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 27**	**Son 27**	**149**	**149**	**308**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**
US	10		C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 2	40	41	C26	C27-28	04	02 C	01 A	A	B	C	D	E	F	G
Sample N°	BK3906	BK3905	BK3901	BK3901	BK3901	BK39022	BK39023	BK39024	BK39026	BK39027	BK39033E	BK39033H	BK39036	BK3903	BK39044	BK3903	BK39037	BK51001	BK51003	BK510041	BK5100	BK51000	BK51000	BK51000	BK51000	BK51000	BK51000
Carex sp. tricarpellate	1			1			1	2	1	1			1	1	1	1		1	1	3	3	1	2	2		2	
Cicuta virosa																						2					
Eleocharis palustris							1	1					1	1	1		1		1	2							
Glyceria sp.																		2		3							
Juncus sp.																											
Lycopus europaeus							1											3		2							2
Mentha arvensis/aquatica																											
Nasturtium officinale																		2				1	1	3	3	3	2
Oenanthe fistulosa																					2						
Schoenoplectus sp.								1									1	1	1		3				1	2	3
Riverbank plants (pioneer)																											
Bidens tripartita	1																										
Cyperus fuscus																											
Cyperus sp.																											
Polygonum hydropiper	1											1						2		3		2			2		
Polygonum hydropiper/mite	1							1					1			1		3			1			1	2		
Polygonum lapathifolium													1														
Polygonum minus												1				1										1	
Ranunculus sardous								1																			
Ranunculus sceleratus													1	1						1		2	2	1	1	1	
Wet meadows																											
Linum catharticum																											
Lychnis flos-cuculi	1												1	1													
Forests, forest edges and clearings, hedges																											
Abies alba - needle										1				1													
Acer sp. - veg. part																											
Betula pendula - veg. part																											
Cornus sanguinea																											
Crataegus sp.																											
Humulus lupulus																		1									
Quercus sp.														1	3												
Rosa sp.																											
Solanum cf *dulcamara*							1																				
Torilis cf *japonica*									2																		
Viburnum lantana																											
Hypericum perforatum												1															
Thalictrum minus								1																			
VARIA																											
Apiaceae																											
Asteraceae																											
Brassicaceae																											
Campanula sp.																											
Cannabinaceae									1																		
Carduus sp.								1								1											
Cerastium sp.																											
Chenopodium sp.	1		1	1		2				1																	
Crepis sp.												1															
Cuscuta sp.																											
Cyperaceae			1			1	1				1						1										
Euphorbia sp.										1																	
Filipendula sp.																											
Galium sp.		1					1						1				1										1
Lamiaceae															1												
Lamium sp.	1							1		1		1	1					1		1	1						
Malva sp.																1											
Papaver sp.										1	1				1												
Physalis/Solanum																											
Poaceae	1							2	2	1		3	1	1	1	1	1										
Polygonaceae																											
Polygonum sp.																					1						
Potentilla sp.	1						1	1			1		1					1									1
Primulaceae																											
Rosaceae																											

Chronology																											
Context																					**BASIN**						
Structure	**151**	**215**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 27**	**Son 27**	**149**	**149**	**308**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**
US	10		C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 2	40	41	C26	C27-28	04	02 C	01 A	A	B	C	D	E	F	G
Sample N°	BK39061	BK39058	BK39015	BK39018	BK39019	BK39022	BK39023	BK39024	BK39026	BK39027	BK39033E	BK39033H	BK39036	BK39039	BK39044	BK39035	BK39037	BK51001	BK51003	BK510041	BK51000	BK51000	BK51000	BK51000	BK51000	BK51000	BK51000
Rumex sp. - perianth	1						1			1		2	1	1	1		1			1							
Sambucus sp.	1				1	1																					
Silene sp.						1					1	1									1						
Solanaceae																											
Solanum sp.							1						1			1											
Stachys sp.			1	1	1	2	2			1	1									1		1					
Stellaria graminea/palustris							1		1				1														
Stellaria sp.												1						1									
Teucrium sp.																											
Tilia sp. - fruit																		1									
Torilis sp.										1																	
Veronica sp.																											
Viola sp.							1	1								1			1								
Indeterminata																											
CHARRED																											
CEREALS _ grain																											
Avena sp.																											
Hordeum vulgare																											
Hordeum sp.												1															
Triticum aestivum																											
Triticum cf *aestivum*																											
Triticum aestivum/durum/turgidum																			1								
Triticum dicoccon																											
Triticum spelta																											
Triticum sp.																		1	1								
Cerealia ohne Hirsen								1																			
Panicum miliaceum																			1								
Setaria italica																											
CEREALS _ chaff																											
Hordeum vulgare - rachis																											
Hordeum sp. - rachis																											
Secale cereale - rachis																											
Triticum aestivum - rachis																											
Triticum spelta - glume																											
Triticum sp. - glume																											
PULSES																											
Lens culinaris																											
Vicia faba																											
Fabaceae																											
SPICES																											
Apium graveolens																											
Satureja hortensis		1																									
VEGETABLES AND SALADS																											
Brassica sp.	1																										
FRUITS																											
Ficus carica																											
Prunus domestica/insititia																											
WEEDS OF WINTER CEREALS																											
Galium aparine						1							1														
Order Secalietalia, Caucalion alliance_weeds of calcareous soils																											
Caucalis platycarpos																											
Glaucium corniculatum																											
Myagrum perfoliatum																											
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS																											
Galeospis ladanum/segetum																											
cf *Solanum nigrum*																											
PERENNIAL RUDERALS																											
Rumex obtusifolius																											
MEADOWS AND PASTURES																											
Plantago lanceolata																											
Reed fields																											

Chronology																											
Context																					**BASIN**						
Structure	**151**	**215**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 26**	**Son 27**	**Son 27**	**149**	**149**	**308**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**
US	10		C26A	C26D	C26E	C26H	C39A	C39B	C39D	C39E	c 27	sous 39	Horizon 2	40	41	C26	C27-28	04	02 C	01 A	A	B	C	D	E	F	G
Sample N°	BK39061	BK39058	BK39015	BK39018	BK39019	BK39022	BK39023	BK39024	BK39026	BK39027	BK39033E	BK39033H	BK39036	BK39039	BK39044	BK39035	BK39037	BK51001	BK51003	BK510041	BK51000	BK51000	BK51000	BK51000	BK51000	BK51000	BK51000
Carex sp. tricarpellate																											
Forests, forest edges and clearings, hedges																											
cf *Humulus lupulus*																											
VARIA																											
Bromus sp.																											
Galium sp.																											
Poaceae																											
Indeterminata - seed/fruit																											
MINERALISED																											
CEREALS _ grain																											
cf *Avena* sp.			1																								
Panicum miliaceum																											
PULSES																											
Lens culinaris																											
Vicia faba																											
FRUITS																											
Cucumis melo/sativa																											
Ficus carica			1				1			1																	
Malus/Pyrus																											
Prunus sp. - fragment																											
Vitis vinifera																											
SPICES																											
Anethum graveolens																											
VARIA																											
Apiaceae																											
Chenopodium sp.																											
Papaver sp.																											

Surroundings of the temple complex									
Chronology									
Context							**VESSEL**	**TRENCH**	
Structure	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**400**	**Son 2**	**Son 5**
US	H	I	J	K	L	M			20
Sample N°	BK51000	BK51000	BK51004	BK51004	BK51004	BK51004	BK510040	BK39001	BK39008
Context	basin	basin	basin	basin	basin	basin	pot conten	trench	trench
Analysis	RS	RS	RS	RS	RS	RS	RS	RS	RS
Volume sample	3000	2000	3000	1600	6000	4000	14000	5000	19000
WATERLOGGED									
CEREALS _ grain									
Cerealia - Testa									
CEREALS _ chaff									
Hordeum sp. - rachis								1	
Secale cereale - rachis									
Triticum cf aestivum/durum/turgidum - rachis									
Triticum dicoccon - glume									
Triticum cf *dicoccon* - glume									
Triticum spelta - glume									
Triticum sp. - rachis									
Triticum sp. - glume									
Cerealia - glume									
Cerealia - rachis									
Panicum miliaceum - glume		1			1			2	
Setaria italica - glume									
Panicum/Setaria - glume			1						
NUTS									
Corylus avellana			2		1			1	1
Juglans regia			1	2	1	1		1	
Pinus pinea									
PULSES									
Fabaceae									
SPICES									
Anethum graveolens									
Apium graveolens									
Coriandrum sativum									
Foeniculum vulgare									
Satureja hortensis									
VEGETABLES AND SALADS									
Amaranthus sp.				2				1	1
Atriplex sp.									
Beta vulgaris									
Brassica sp.									
Daucus carota				1					
Lagenaria siceraria									
Portulaca oleracea									
FRUITS									
Cucumis melo									
Cucumis melo/sativa - fragment									
Cucumis melo/sativa									
Ficus carica							2		
Fragaria vesca					1	1			
Pyrus sp. - stone cells			1						
Pyrus sp. - flower			2	1		2			
Malus/Pyrus - pericarp									
Malus/Pyrus						1			
Morus sp.									
Olea europaea									
Physalis alkekengi									
Prunus avium/cerasus									
Prunus domestica									
Prunus domestica/insititia				1		1			
Prunus persica									
Prunus spinosa									
Prunus sp.									
Rubus caesius				1					
Rubus fruticosus									
Rubus sp.									1
Sambucus nigra/racemosa	1	1	1	1	2	2	3		

Chronology										
Context							**VESSEL**	**TRENCH**		
Structure	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**400**	**Son 2**	**Son 5**	
US	H	I	J	K	L	M			20	
Sample N°	BK51000	BK51000	BK51004	BK51004	BK51004	BK51004	BK51004(	BK39001	BK39008	
Vitis vinifera				1	1					
OIL, DYE AND FIBRE PLANTS										
Cannabis sativa										
Carthamus tinctorius										
WEEDS OF WINTER CEREALS										
cf *Adonis* sp.										
Agrostemma githago		1			1			1		
Anthemis arvensis										
Buglossoides arvensis										
Fallopia convolvulus								1	1	
Galium aparine										
Valerianella cf *rimosa*										
Valerianella rimosa										
Valerianella sp.										
Order Aperetalia_weeds of rather acidic/neutral soils										
Camelina sativa										
Papaver argemone										
Papaver dubium										
Order Secalietalia, Caucalion alliance_weeds of calcareous soils										
Ajuga chamaepitys						1			1	
Caucalis platycarpos										
Euphorbia exigua										
Galium spurium										
Glaucium corniculatum									1	
Myagrum perfoliatum				1			1	2	1	
Nigella arvensis										
Orlaya grandiflora										
Ranunculus arvensis								2		
Silene cf *dichotoma*										
Stachys annua				1						
Thymelaea passerina									1	
cf *Vaccaria pyramidata*										
Valerianella dentata										
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS										
Aethusa cynapium										
Anagallis arvensis/foemina									1	
Arenaria serpyllifolia										
Capsella bursa-pastoris	1									
Chenopodium album	1	1	1	1	2	2				
Chenopodium hybridum						1		1	1	
Chenopodium murale										
Euphorbia helioscopia						1			1	
Euphorbia platyphyllos										
Fumaria sp.								1		
Galeopsis cf *bifida*										
Galeopsis bifida										
Galeopsis sp.								1		
Galeopsis cf *speciosa*										
Galeopsis ladanum/segetum										
cf *Heliotropium europaeum*										
Lamium cf *purpureum*										
Malva sylvestris										
Mercurialis annua							1		1	
Polygonum lapathifolium/persicaria	2	1	1		1					
Polygonum persicaria										
Portulaca sp.										
Setaria verticillata/viridis		1								
Setaria cf *viridis* - glume										
Solanum nigrum		1	2	2	3	3		1		
Sonchus asper										
Sonchus asper/oleraceus										
Sonchus oleraceus										

Chronology										
Context							**VESSEL**	**TRENCH**		
Structure	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**400**	**Son 2**	**Son 5**	
US	H	I	J	K	L	M			20	
Sample N°	BK51000	BK51000	BK51004	BK51004	BK51004	BK51004	BK51004(	BK39001	BK39008	
Stellaria cf *media*										
Stellaria media		1	2	2	2	2				
Thlaspi arvense				1						
Urtica urens			1	1		1				
Verbena officinalis						1				
Xanthium strumarium										
PERENNIAL RUDERALS										
Arctium sp.			1	2	1					
Bryonia dioica										
Chelidonium majus							4			
Cirsium sp.										
Cirsium/Carduus						1				
Conium maculatum	2	2	2	2	2	2				
Hyoscyamus niger									1	
Lactuca serriola										
Lapsana communis										
Onopordum acanthium										
Plantago major	2	2	2		2	2				
Polygonum aviculare	2	1	2	1	2	2		1		
Potentilla anserina										
Ranunculus repens	1	3	3	3	4	4		1		
Rumex conglomeratus - perianth					1	1				
Rumex crispus - perianth								1		
Rumex obtusifolius - perianth										
Rumex obtusifolius		1		3	3	3		1		
Sambucus ebulus									1	
Urtica dioica		2	2	2	2	1				
MEADOWS AND PASTURES										
Ajuga reptans									1	
Centaurea sp.					1					
Cichorium intybus					1					
Cirsium/Centaurea										
Leontodon autumnalis										
Leucanthemum vulgare										
Plantago lanceolata										
Plantago cf *media*										
Plantago media										
Potentilla erecta										
Prunella vulgaris	1	1				1		1		
Ranunculus acris										
Rhinanthus sp.										
Scabiosa sp.										
Taraxacum officinale		1								
Trifolium sp. - chalice										
Trifolium sp.										
Open swards										
cf *Acinos arvensis*										
Ajuga genevensis										
Medicago lupulina - pod										
Medicago lupulina - pod with seeds								1		
Medicago minima - pod			1							
cf *Petrorhagia prolifera*										
Teucrium botrys										
Teucrium cf *chamaedrys*										
Aquatic plants										
Ceratophyllum cf *submersum*	2	2	2	1						
Lemna sp.										
Potamogeton sp.	3	3		1						
Ranunculus aquatilis										
Sparganium sp.	2	2			1					
Zannichellia palustris										
Reed fields										
Alisma plantago-aquatica	3	3	2	1	2	1				
Carex sp. - utriculus										
Carex sp. bicarpellate					2				1	

Chronology										
Context							**VESSEL**	**TRENCH**		
Structure	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**400**	**Son 2**	**Son 5**	
US	H	I	J	K	L	M			20	
Sample N°	BK51000	BK51000	BK51004	BK51004	BK51004	BK51004	BK510040	BK39001	BK39008	
Carex sp. tricarpellate			1	2		1		1	1	
Cicuta virosa										
Eleocharis palustris							1	1		
Glyceria sp.			2	2	2	1				
Juncus sp.										
Lycopus europaeus	3	3	3	2	2	2				
Mentha arvensis/aquatica					1					
Nasturtium officinale	2	2	2	2	3	3				
Oenanthe fistulosa					1	1				
Schoenoplectus sp.	2	2								
Riverbank plants (pioneer)										
Bidens tripartita			1	1						
Cyperus fuscus										
Cyperus sp.										
Polygonum hydropiper			3	3						
Polygonum hydropiper/mite	2	2	1		2	3				
Polygonum lapathifolium										
Polygonum minus										
Ranunculus sardous										
Ranunculus sceleratus		1		1	1	1				
Wet meadows										
Linum catharticum										
Lychnis flos-cuculi										
Forests, forest edges and clearings, hedges										
Abies alba - needle										
Acer sp. - veg. part										
Betula pendula - veg. part								1		
Cornus sanguinea										
Crataegus sp.										
Humulus lupulus										
Quercus sp.										
Rosa sp.										
Solanum cf *dulcamara*										
Torilis cf *japonica*										
Viburnum lantana										
Hypericum perforatum										
Thalictrum minus										
VARIA										
Apiaceae										
Asteraceae										
Brassicaceae										
Campanula sp.										
Cannabinaceae										
Carduus sp.										
Cerastium sp.										
Chenopodium sp.								2		
Crepis sp.										
Cuscuta sp.										
Cyperaceae									1	
Euphorbia sp.										
Filipendula sp.										
Galium sp.									1	
Lamiaceae										
Lamium sp.			1	1				2		
Malva sp.										
Papaver sp.										
Physalis/Solanum										
Poaceae				1	2					
Polygonaceae										
Polygonum sp.										
Potentilla sp.	1	2						1		
Primulaceae										
Rosaceae										

Chronology										
Context							**VESSEL**	**TRENCH**		
Structure	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**Son 19**	**400**	**Son 2**	**Son 5**	
US	H	I	J	K	L	M			20	
Sample N°	BK51000	BK51000	BK51004	BK51004	BK51004	BK51004	BK51004C	BK39001	BK39008	
Rumex sp. - perianth		1	2	3						
Sambucus sp.										
Silene sp.										
Solanaceae										
Solanum sp.									1	
Stachys sp.								1	1	
Stellaria graminea/palustris										
Stellaria sp.		1								
Teucrium sp.										
Tilia sp. - fruit										
Torilis sp.										
Veronica sp.										
Viola sp.						1			1	
Indeterminata										
CHARRED										
CEREALS _ grain										
Avena sp.										
Hordeum vulgare									1	
Hordeum sp.										
Triticum aestivum										
Triticum cf *aestivum*										
Triticum aestivum/durum/turgidum				1						
Triticum dicoccon										
Triticum spelta										
Triticum sp.										
Cerealia ohne Hirsen										
Panicum miliaceum										
Setaria italica										
CEREALS _ chaff										
Hordeum vulgare - rachis										
Hordeum sp. - rachis										
Secale cereale - rachis										
Triticum aestivum - rachis										
Triticum spelta - glume										
Triticum sp. - glume										
PULSES										
Lens culinaris										
Vicia faba										
Fabaceae										
SPICES										
Apium graveolens										
Satureja hortensis										
VEGETABLES AND SALADS										
Brassica sp.										
FRUITS										
Ficus carica										
Prunus domestica/insititia										
WEEDS OF WINTER CEREALS										
Galium aparine										
Order Secalietalia, Caucalion alliance_weeds of calcareous soils										
Caucalis platycarpos										
Glaucium corniculatum										
Myagrum perfoliatum										
WEEDS OF SUMMER CROPS AND ANNUAL RUDERALS										
Galeospis ladanum/segetum										
cf *Solanum nigrum*										
PERENNIAL RUDERALS										
Rumex obtusifolius										
MEADOWS AND PASTURES										
Plantago lanceolata										
Reed fields										

Chronology										
Context							VESSEL	TRENCH		
Structure	Son 19	Son 19	Son 19	Son 19	Son 19	Son 19	400	Son 2	Son 5	
US	H	I	J	K	L	M			20	
Sample N°	BK51000	BK51000	BK51004	BK51004	BK51004	BK51004	BK51004(	BK39001	BK39008	
Carex sp. tricarpellate										
Forests, forest edges and clearings, hedges										
cf *Humulus lupulus*										
VARIA										
Bromus sp.										
Galium sp.										
Poaceae										
Indeterminata - seed/fruit										
MINERALISED										
CEREALS _ grain										
cf *Avena* sp.										
Panicum miliaceum										
PULSES										
Lens culinaris										
Vicia faba										
FRUITS										
Cucumis melo/sativa										
Ficus carica										
Malus/Pyrus										
Prunus sp. - fragment										
Vitis vinifera										
SPICES										
Anethum graveolens										
VARIA										
Apiaceae									1	
Chenopodium sp.										
Papaver sp.										