

The archaeology of garlic (*Allium sativum*): the find at Akrotiri, Thera, Greece

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ABSTRACT – Recent finds of garlic from Late Bronze Age Akrotiri, Thera have led to research related to the historical, economic and social aspects of its use in the archaeological narrative. Garlic is an important domesticated plant in our lore, medicine, mythology, cooking, and ethnography, and is now ubiquitous in everyday use. Previously, we knew of its importance in historical periods, especially since Roman times, when its use extended to all of Europe and beyond. Archaeobotanical investigations have extended the prehistoric and historical knowledge of this crop, providing some evidence as to how it was regarded, what were its possible uses and its changing status, diachronically. Here, therefore, it is an attempt to provide an overview of the related archaeological finds and, briefly, its references in ancient texts.

KEY WORDS – garlic; *Allium sativum*; onion; *Allium cepa*; Akrotiri; Thera; Aegean; prehistory

Arheologija česna (*Allium sativum*): najdbe iz Akrotirija, Thera, Grčija

IZVLEČEK – Nedavna odkritja česna na pozno bronastodobnem naselju Akrotiri na otoku Thera so privedla do raziskav, ki so povezana z zgodovinskimi, gospodarskimi in družbenimi vidiki njegove uporabe v okviru arheološke pripovedi. Česen, ki je dandanes vseprisoten v vsakdanji rabi, je pomembna kultivirana rastlina v našem izročilu, zdravilstvu, mitologiji, kuhinji in etnografiji. Pomen česna v zgodovinskih obdobjih že poznamo, predvsem od rimskega obdobja naprej, ko se je njegova uporaba razširila po vsej Evropi in širše. Arheobotanične raziskave so diahronično razširile naše poznavanje tega pridelka v prazgodovinskih in zgodovinskih obdobjih, saj prinašajo dokaze o tem, kako so česen v preteklosti obravnavali, na kakšne načine so ga uporabljali in kako se je njegova vloga spreminjala skozi čas. V članku ponujamo pregled s tem povezanih arheoloških najdb, pa tudi krajši pregled referenc iz starodavnih besedil.

KLJUČNE BESEDE – česen; *Allium sativum*; čebula; *Allium cepa*; Akrotiri; Thera; Egejski prostor; prazgodovina

Origins and domestication

Garlic (*Allium sativum*) is a sterile and perennial plant. It is propagated through a vegetative method. The wild ancestry of garlic has not been definitely established yet, and nor has its place of domestication (Fritsch, Friesen 2002: 26; Zohary, Hopf, Weiss 2012). Daniel Zohary (1998) believes that garlic is a native crop of Southwest Asia, the Mediterranean

and temperate Europe, but does not explain if its use of 'native' is equal to 'naturalised', and this remains a bone of contention for some. However it seems that this possible distribution agrees with Reinhard M. Fritsch and Nikolai Friesen (2002). The cultivars are believed to be the closest morphologically and molecularly to *A. longicuspis* Regel¹ (Stearn

1 *A. longicuspis* Regel is sometimes used as a synonym of *Allium sativum*.

1978; Gi-An Lee et al. 2015). Recent studies on DNA markers demonstrated that *A. longicuspis* Regel is not a distinct species from common garlic (*Ipek et al. 2003*). It therefore makes sense that it is sometimes used as a synonym of *A. sativum* (The Plant List (Kew): <http://www.theplantlist.org/tpl1.1/record/kew-295919>). *A. longicuspis* Regel is found in east Turkey, Iran and Central Asia (one could call this area central to south and east Asia, which today also includes Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan), which together seem to be the main centre of garlic diversity and most probably the area of its domestication. Another three species, *A. tuncelianum* (Kollmann) (native to south-east Turkey) (*Ipek et al. 2008*), *A. macrochaetum* Boiss. & Hauskn. (native to south-west Asia) (*Zohary et al. 2012.157*), and *A. truncatum* (Feinbr.) Kollman and Zohary (native to the Levant) have been suggested as possible candidates of being the ancestor of domesticated garlic, but this remains an unproven hypothesis.² All four smell, though, like domesticated garlic, and it remains to be proven if, in antiquity, these might have been used instead of cultivated garlic.

Agriculture of garlic

Garlic is now harvested from March to April, and historically *Alliaceae* were generally cultivated in gardens denoted by a special word in Sumerian which referred to 'garlic place' (*Stol 1987.65*). The harvested crop was measured in dry measure. For the onion *Allium cepa* L., it is known that a 'container of onions' had a capacity of 5–40 litres, and they could have been counted using any of the related measuring units, such as container, sack, bundle or even by volume, but they were never measured by weight (*Donbaz 1999.150*). This could well have been the way garlic was measured and sold, too. After harvest, the bulbs could have been packed in baskets or strung into strings or bundles. This bundling was done by women, as shown in an Ur III text. After harvest, one had to dry garlic and onions, and this was done outside or on a roof³ (evidence from texts) (*Stol 1987.66*). Onions, it seems, were sometimes plaited.

The archaeobotanical evidence

The archaeobotanical evidence of garlic is very rare in archaeology, as the cloves and bulbs consist of

soft parts which are not parched or force-dried in an oven before storage, and if thrown in the fire (hearth) would most probably burn completely, or transform into an amorphous mass, instead of being charred and preserved with a recognizable morphology, due to both the consistency and essential oils contained in garlic. Another reason for its rarity in the archaeobotanical evidence could also be related to the way garlic was consumed, *i.e.* as an additive in foods, either sliced or mashed, as well as due to its storage needs, which do not benefit archaeological preservation. Specifically, garlic cannot be stored in pottery for a long time as humidity rots it and, instead, needs to be hung in an airy and shady place, often outdoors.

Syro-Levantine area

Zohary *et al.* (2012) claim that the earliest archaeobotanical finds of garlic (*Allium sativum* L.) come from the 'Cave of the Treasure', Nahal Mishmar, near Ein Gedi in Israel and has been dated to the Middle Chalcolithic period (Ghassulian Culture) (BM-140, reed (inner) (4425–3920 BCE; W-1341, reed (outer) (3885–3490 BCE) (*Moorey 1988*). Garlic was said to be found in two samples and onions in three samples by David V. Zaitschek (1961; 1962), who studied the archaeobotanical remains and said that they belonged partly to the Chalcolithic and partly to the Roman period. Due to the dryness of the environment, these samples were excellently preserved in a desiccated form. However, the mat which wrapped the objects of the hoard together with the organic remains was ¹⁴C dated, and it provided a date of *c.* 3500 BCE (*Aardsma 2001*), which would refer to the Chalcolithic of the Syro-Palestine area. In Peter Moorey's (1988) publication though, it is claimed that the mat was centuries old when it was deposited, so the dates for the garlic are definitely more recent than *c.* 3500 BCE. It would probably be worth submitting the garlic to AMS dating, since these figures remain controversial. However, the find of Nahal Mishmar is rather broadly contemporaneous to the Egyptian Ptolemaic (see below), if not proven to be dated later.

In the Hellenistic period, in the area which is today Israel, in Cave V/49, the remains of two garlic heads and six single cloves (bulbils) were found. The head had a diameter of *c.* 1.6cm and it was still covered by its tunic (*Melamed 2002*). In the Roman period,

² *Allium ursinum* does not exist in Greece or in several Mediterranean countries.

³ This would have been very important as the slightest humidity would have led to their rotting.

in the Cave of the Pool (*Zaitschek 1962*) a 'disc-like bulb-stem with rootlets of garlic (*Allium sativum*)' was also identified.

India

Anurudh K. Singh (2017) believes that garlic might have been introduced into India through the land route via exchange/trade between Mesopotamia, Egypt and India during the Mohenjo-Daro period (c. 3000 BCE). With regard to the Mature Harappan (2000–1700 BCE), remains of garlic (*Allium sativum*) were found at the sites of Balu, Haryana and Farmana (*Singh 2017; Pokharia, Srivastava 2013*). According to Singh (2017:196) the evidence suggests multiple introductions of garlic into India from the Middle East at different periods. Singh believes that garlic was perhaps reintroduced during the conquest of Alexander the Great, in the 4th century BCE (327–325 BCE). This is indicated by one of its Sanskrit names, Yavanpriya, which means 'likings of the Greeks' (Yavan is used for the Greeks). Kajale (1994) reports some cloves from Indo-Roman levels (50 BCE–200 AD) from the archaeological site of Adam, in the district of Nagpur, in the Maharashtra State. However, Singh (2017) believes that in the area of today's Pakistan there might have been another (secondary) centre of origin, with garlic domesticated independently by ancient Indian communities, but this still needs verification. In brief, then, garlic could have been introduced into India through trade with Mesopotamia and Egypt c. 3000 BCE, and reintroduced several times, so the picture remains, to a great extent, hypothetical and needs further collection of archaeobotanical data from sites in the area, and from various time periods, in order to clarify the various routes of introduction.

Babylon

In sample PR 5206 from Sippar-Amnanum (modern Tell ed Der) (19th–17th BCE) about 350 charred cloves were identified, among other plants, (*Van Zeist, Vynckier 1984:125–128, Fig. 2*), and they were considered rather small in size, *i.e.* length 1.47cm (1.0–1.9cm), and their width 0.67cm (0.5–1.0cm). They were found in sounding E, from the rooms of the archives which were destroyed by fire c. 1630 BCE. From Tell al Rimah (13th century BCE) there is a contract recording 84 litres of garlic (*Postgate 1987:98*). Other Old Babylonian texts (*Andersson 2008*)

(2000–1600 BCE) also mention a fairly large cultivation at Larsa of a '36 000m² garlic garden', and the collection of garlic for tax. It is also interesting that the Old Babylonian texts refer to a 'plait of onions or garlic' (*Kroonen 2012:293*). This string/plait seems to have been used as a standard measure for garlic and onions by the speakers of Akkadian (*Kroonen 2012:294*). However, it is known that onions, in several varieties, were widely consumed in the whole Near East (*Waetzoldt 1987; Donbaz 1999:149*) as early as the Ebla texts (c. 2600–2450 BCE).

Egypt

Garlic has been found in its wild state in Egypt and, therefore, believed to have been naturalized there (*Darby et al. 1977:657*). Egypt also provides early evidence of this crop found by Petrie at Naqada (Neqada culture), whereby at this Chalcolithic, Predynastic period (c. 4400–3000 BCE), a clay model of garlic was found (*Darby et al 1977:Fig. 17.1*). A clay model was also found in the Predynastic cemetery of Al-Mahasna (*Darby et al. 1977:660*), and at the cemetery of Umm el Qabb at Abydos (*Murray 2000*). These finds were made of white unbaked clay in the shape of cloved garlic bulbs. The presence of clay models of garlic, rather than the actual crop, must mean something, which will eventually need to be explained. Was garlic in those early times a rare and expensive commodity, and, moreover, one which encapsulated a ritual symbolism of protection and/or apotropaic against evil forces, and thus important for rituals? In the Harris papyrus there is also references to garlic (20th dynasty). Moreover, the find at Nahal Mishmar, Israel, is, rather broadly contemporaneous with the Egyptian Predynastic find, if not proven to be later.

To date desiccated garlic has only been found from the 18th dynasty and in later tombs. Tutankhamun's tomb (c. 1325 BCE) provided excellently preserved desiccated remains (*Vartavan 2002; Vartavan, Amóros 1997; Hepper 1990; Germer 1989*),⁴ and at Amarna there are also remains from the 18th dynasty. The Ebers papyrus (1550 BCE) describes about 800 medical formulas, 22 of which mention garlic as being an effective remedy for a variety of ailments such as headaches, heart problems, worms, tumours and bites (*Block 1985*), to mention just a few of the plant's medicinal uses at this time. At the Serapeum of Saqqara, northwest of the Pyramid of

⁴ In the Cairo Museum no. Sp.2795 garlic buds were identified by Jane Renfrew (*Vartavan 2002:32*), and in the same institution no. 1580 garlic bulbs were identified (*Vartavan, Amóros 1997:41*).

Djoser (c. 1350 BCE), garlic was also found in the sacred underground temple (*Aboelsoud 2010*). The remains of desiccated garlic were also located in the New Kingdom (18th dynasty) at Deir el-Medineh (Kha's Tomb) (*Darby et al. 1977.Fig. 17.2; Vartavan, Amóros 1997*).

From Saqqara, in the Hellenistic period (c. 400 BCE), a bundle of garlic is housed at Kew Gardens, London (pers. communication Mark Nesbitt – Kew cat. no. 26541; 26548; 26848 (bundle of garlic)). Large scale garlic cultivation during the Ptolemaic period was conducted in the Fayum (3rd century BCE) (*Crawford 1973*). Several sites from the Greco-Roman period have produced garlic, such as Hawara, Mons Claudianus, Berenike, and Abu Sha'ar, as well as Roman and Islamic Quseir al-Qadim and Qasr Ibrim (*Murray 2000*; for a list of finds see *Vartavan, Amóros 1997*).

The site of Ismant el-Kharab (Dakhleh Oasis), Egypt, was occupied from the 1st to the 4th centuries CE and has burials of the Ptolemaic period (Kellis I), so the settlement might have been in use then too. The finds from Kellis include garlic cloves (*Thanheisser et al. 2002,304*).

Substantial data has been preserved regarding garlic-growing under the Ptolemies in Graeco-Roman times, due to the references made by Greek and Roman writers, such as Athenaeus, Herodotus, Dioscurides, Theophrastus, Pliny, Columella, and Palladius, and also due to the many preserved Egyptian papyri. Dioscurides (1st century BCE) reports that Egyptian garlic was white and not split into cloves (*Crawford 1973.351*), although this trait was not depicted on the clay garlics of the Predynastic period (c. 4400–3000 BCE). In the area of the Fayum, the Ptolemies had done major works related to reclamation of land and agricultural innovation (*Crawford 1973.351*), and they wished to introduce new strains of garlic, namely garlic with cloves. However, this aspect is still disputed as the early garlic clay models, mentioned above, showed cloves. Could this indicate that the strain preserved in the historical period was different from the prehistoric strains? Theophrastus and Pliny (*Crawford 1973.355*) refer to garlic varieties in Egypt which had short growing periods, such as 60 days. Various ancient agricultural writers such as Theophrastus, Columella, Pliny and Palladius describe the process of garlic cultivation in detail (*O.c.*). At Oxyrhyncha, Egypt, in the 2nd century BCE the cultivation of garlic must have been highly organized and exceedingly profitable (*Crawford 1973.361*). It is believed that a high percentage

of the population was involved in this production, and therefore one could claim an early form of mono-culture and crop specialization.

The time-table of garlic cultivation was variable. Some garlic was grown in the summer in small market gardens, not reached by the Nile flood, or in among vines (*Crawford 1973.355, note 2*). When garlic was grown on a large scale, the planting of the cloves was done in areas where the Nile flood receded. Garlic-growing on a sizeable scale seems to have been introduced in the 3rd century BCE. This was planted in late November, whereas elsewhere it could have been planted earlier, as mentioned above. Lease agreements give us insight of when it was harvested, which seems to have been in January. In a papyrus (*Crawford 1973.360*) the growers seem to harvest and dispose of the crop by the end of the first week in January, which indicates a very quick growing variety of garlic and perhaps an early sowing date. In a papyrus from Euempolos to Zenon, Tloic and Oasitic garlic is mentioned (*Crawford 1973.356*). What is interesting is the phrase “*I'll bind it according to type...*” which would perhaps be an indication of the manner it was transported, *i.e.* plaited but also according to variety/quality. Moreover, there is mention of the importation and acquisition of a ‘Lycian variety’. In the same papyri Euempolos mentions people cultivating foreign strains of garlic, so we can be sure that there was a market in Alexandria and elsewhere for garlic, especially as garlic growing continued in the northeast Fayum into the Roman period. In the Oxyrhyncha papyrus, second century BCE, there were two specialist garlic-sellers, so we are sure there was a special emphasis on the crop and that probably a sizeable number of people must have been engaged in the production and distribution of garlic. At Kerkeosiris (town) (111–110 BCE) 0.3% of the cultivated land was used for garlic for domestic use (*Crawford 1973.360*). Jobs related to garlic were specialized, such as garlic-sellers, or skor-dopoles (σκορδοπωλαι), and workers in the garlic fields were *skordeutes* (σκορδευται).

Anatolia

At Sardis (mid-6th BCE) (*Nesbitt 1995*) a group of cloves was found at the base of a wall which could have fallen from above (a shelf?). The Iron Age material was not been published but has been passed on to Erica Rowan for completion, at the Royal Holloway (Nesbitt pers. comm.). In Turkey, garlic does not seem to be found from other sites until around the 1st century BCE.

Northern Europe and finds in the Roman Empire

In the Roman period garlic must have spread to northern Europe, firstly in military camps, and then to other civilian sites (*Bakels, Jacomet 2003*) as the Roman armies travelled and traded with the lands north and west of Italy. It might have been used as a luxury, at first, but lost its status once it was cultivated locally (*O.c. 554*). From the 400 sites examined, only in under 10 sites was garlic found, which convinced the authors to conclude that this low number was due to the plant's bad preservation rather than to the rarity of its use. Manfred Rösch (*2008*) claims that several cultivated *Allium* species were introduced by the Romans, but he does not state which, and notes that all wild *Allium* species are edible, so they could have been consumed too. He is probably referring to *Allium* species which were of local origin, and were edible but were not related to cultivated garlic.

Garlic was found in Herculaneum (Italy), France (*Vandorpe, Jacomet 2011*) and in post-Roman Britain and Switzerland (*Badura et al. 2013.4070*). It was likely widely propagated in the whole of the Roman Empire, but due to its low probability of preservation the actual garlic finds are few and far between. It was often hung in the entrance of houses, in the belief that it drove away evil spirits (*Pliny XIX.34*), a belief that still survives to the present in some cultures.

Archaeobotany and evidence from Greece

Conditions that would have enabled the preservation of soft tissue organic material remains at Akrotiri (Late Bronze Age, c. 1600 BCE) are rare, as the temperatures of ejected ash (*Braadbaart et al. 2019*) would have worked against the preservation of such material.

In Building I at Palaikastro, Crete (*Sarpaki 2019.358*), one clove from LM III B (≥ 1100 BCE) has been tentatively identified as garlic (*cf. Allium sativum*), but preservation on that site is exceptionally poor. In a recent publication though, on the archaeobotany of Tsoungiza (*Allen, Forste 2020*), in a domestic context dated to Late Helladic (LH) I levels (c. 1500 BCE), identified 21 cloves and 35 fragments (West Building room 2) and in LH IIB (c. 1400 BCE), in the dump deposit above wall 3, space 8, another 15 cloves were found. These are the earliest archaeobotanical finds of garlic in Greece, so far, together with

the Akrotiri finds (LCI), although, in the Hellenistic, Classical and Roman periods, we assume that garlic was definitely circulating widely. Yet up until recently the tangible presence of garlic in the Aegean was elusive, although its annotation in the Linear B indicated, indirectly, its presence. Given the Pre-Greek names in Linear B of garlic, 'αγλις' (αγλιθος = clove of garlic) and *gelgis* 'γελις' (γελιθος), an interpretation of the terms as Akkadian loanwords has been put forward (*Kroonen 2012*). If this is accepted, it would be interesting to consider that Akkadian was used in the Mesopotamian Empires, in the area of Akkad, Assyria, Isin, Larsa and Babylon and, being the *ligua franca*, is also suggested to have been used in the Syro-Levantine coast and Anatolia (*Vita 2020*). Therefore, one would think that garlic might have been introduced in the Bronze Age from that part of the world. However, the ancient Greek term which was later used was changed to 'σκορ(ο)δον', a non-Indo-European word found in Old Armenian, and/or from a language in the Pontic area (*Beeke 2010.1358; Chantraine 1968–1980*). This implies at least two waves of garlic introduction into Greece and from different areas, and perhaps of different varieties. We are aware that the inhabitants of Greece in the Iron Age, and perhaps slightly earlier, settled in Sinope and along the coast and formed several colonies in the Iron Age on the shores of the Pontus Sea (Black Sea). The term 'σκορ(ο)δον' probably replaced the borrowed Akkadian Bronze Age term 'γελις' at this time, when there might have been an intensification of trade to and from the Black Sea, and the Greek colonies, to Greece.

In Classical Greece, at the time of Aristotle and Hippocrates, garlic, 'σκορ(ο)δον', seemed to have been a staple (*Totelin 2015*) and was also used as a medicine (*Rivlin 2001*). At the women-only Athenian festival Skira (Skirophoria), women consumed large quantities of garlic in order to keep their husbands at bay, due to the smell, and abstain from sex (as reported by the historian Philochorus (3rd BCE) (*Totelin 2015*). However, there are frequent descriptions of the uses of garlic in herbalism by the Babylonians, Egyptians, Phoenicians, Chinese, Greeks, Romans and Hindus, and it is one of the most widely used plants in ethno-medicine, although this is a topic which cannot be dealt with here.

In the Hellenistic period, garlic was also consumed in large quantities (*Totelin 2015*). At Thasos, garlic (18 cloves and fragments) has been found in the necropolis (4th century BCE) (*Megaloudi et al. 2007*),⁵

⁵ Fragkiska Megaloudi (*2005.80*) wrongly refers to 55 carbonized garlic cloves in a grave (Thassos) which is either a spelling mistake or else a wrong number. The real number is mentioned in her 2007 reference, and it is the number quoted in the text above.

and was also found in Italy and Bulgaria (*Hristova 2015*) in tombs indicating that the plants were used for the dead, as mentioned by *Fragkiska Megaloudi et al. (2007) inter alia*, whereas, it did not differ from food eaten by the living. The usage, though, might have had different and/or complementary connotations, and we still have no knowledge of the symbolism and role played by garlic in death rites. Its presence though must have played a protective role, amongst others, for the dead⁶.

Akrotiri

At the site of Akrotiri (Fig. 1), it is cloves rather than bulbs of garlic that have been found (Fig. 2), although it is impossible to say whether these bulbs, with time, had disintegrated into their parts, *i.e.* bulbils/cloves. Some three cloves and fragments survived in Sector Delta (D), Room 1a in a small funnel-mouthed jar (Fig. 3), referred to as 'little amphora' in the diary. Sector Delta is an agglomeration of four buildings or a complex (Fig. 4) – private dwellings, we believe – which are not equally excavated. Therefore, this Sector still needs further excavation in order to complete its study. However, with the evidence at hand it is believed that the tenants of all four 'houses' of the Delta Complex were most probably merchants (*Michailidou 2008.247; 2013.146*). Storage of luxury items of all sorts seem to have been stored in Sector Delta (*Polychronakou-Sgouritsa 2000.80–81; Michailidou 2008.245*) In the houses a multitude of metal objects was found, such as the "only known half-talent lead weight" (*Michailidou 2013.idem*) found at Akrotiri, along with a cluster of lead balance weights, a pair of bronze tongs, two daggers with silver capped rivets, five vessels consisting of two lavers, found one inside the other, two jugs and a large hydria. Copper rings and bound strips were found in room Delta 1a, *i.e.* the same room where the garlic cloves were stored. In that very same room, scale pans No 7352 were also found. Similarly, in Delta Complex one of the Linear A tablet fragments which has been found records 200 textiles. The full list of items, indicating that the tenants of Sector Delta were traders, is too long to mention here.

Room D, 1a belongs to the western Delta building complex (Fig. 5), a ground floor storeroom (*Michailidou 2001.321; Mathioulaki, Nikolakopoulou 2018.66*), and possibly an area of the room was used as a kitchen as there was the presence of a hearth (along

with a number of pottery vessels, and therefore it seems to have been, at least partly, a cooking area) (Fig. 6). However, it must also have been a store-room, as seven lead weights and two scale pans were located among the finds, namely scale pans and a whole set of balance scales (*Michailidou 2008.43, 51*). Its entrance was from the Pylon, on the Triangular Square, opposite the West House, that is one of the busiest streets of the settlement. The garlic finds were in a vessel which was placed near the western wall of the building and might have had a conical cup as a lid, as this was found broken within the vessel. It is worth noting too that Rooms 9 and 9.1 of the same building held a high number of imported wares (*Mathioulaki, Nikolakopoulou 2018.66*) from Crete, the other Cycladic islands, the north-eastern Aegean islands, and the mainland. This indicates further the important position that was surely held by its owners in the trade networks of this period. The usage of garlic could perhaps indicate the remnants of a 'haute/exotic cuisine' and, hence added evidence about the high status of the inhabitants. This probably meant an enrichment of flavour which diverted from the 'archetypical' cuisine (*Hastorf, Bruno 2020*) that would have existed at Akrotiri, before the introduction of garlic.

Greek mythology

Garlic was scorned by the Gods, due to its smell, and one did not enter a temple after having eaten it. Similarly, a Babylonian omen says that a man who enters 'the house of his god' is impure if he eats garlic, onions, leeks, cress, beef or pork. During the festival of the Skirophoria, as was mentioned above, women chewed cloves of garlic, as is shown by Philochorus of Athens (*c.* 340–261 BCE), so that their breath should not smell sweet and that, in this way, they hoped to repulse their spouses and therefore abstain from the pleasures of love. Garlic was also known to have been placed by the ancient Greeks on the piles of stones at crossroads, as Hecate was associated with crossroads, and therefore it was provided as a supper for her (*Theophrastus, Characters, The Superstitious Man*). Indeed, Hecate was said to favour offerings of garlic, a vegetable closely associated to her cult (<https://en.wikipedia.org/wiki/Hecate> – cite_note-46). She is also sometimes associated with cypress, a tree symbolic of death, mourning and the underworld, and hence sacred to a number of chthonic deities.

⁶ See all the lore connected to garlic in medieval and post-medieval times.



Fig.1 Akrotiri, Thera: the excavated part of the site.

In Lemnos a New Year festival seems to have been celebrated yearly, in which they extinguished fires for nine days and made sacrifices to the chthonic deities. Their women chewed garlic, in order to keep their men away. Garlic was thus prominent among the various prohibited foodstuffs and classified under food taboos.

Ethnobotany

A tuncelianum has a mild garlic flavour and odour and has been called ‘garlic’ and consumed instead of the usual plan in the region it grows wild in in Eastern Anatolia (Ipek et al. 2008). In Crete *Allium roseum* L. is known as wild garlic, as it has the same odour and is, sometimes, used in cooking instead of garlic. Moreover, it is also considered to have the same therapeutic properties (Skoula et al. 2011.64). Garlic is said to have several therapeutic properties in the whole of Greece, and is used as an amulet against the evil eye as well (Lykiardopoulos 1981). In Egypt, Blackman (Blackman 1968.209), working amongst the ‘Fellahin’ (farmers) of Upper Egypt, discovered that rheumatism was cured with garlic. She goes on to describe the method used, whereby several cuts were made in both legs of an affected man (he had rheumatism in both legs), and garlic juice was squeezed as well as rubbed on the sores and into the cuts. This was repeated every day for a fortnight, and the mane was then completely cured.

There is, definitely, a wealth of ethnobotanical information on garlic from all the countries where it is used, but it is out of the scope of this study.

Garlic as value

Garlic is mentioned in Sumerian and Akkadian texts referring to plants used by the Babylonians (not Sumerians) (Stol 1987.57). The most ancient reference is from an Old Babylonian (c. 2000–1595 BCE) letter where garlic, leek, onion and bulb-leek are mentioned. It was originally believed that garlic was not mentioned in the Mari texts, but now this has view has been revised (Stol 1987.58) and it is also found in texts from Fara, Ebla, Pre-Sargonic Lagash, the Ur III dynasty and Hittite sources (Michailidou 2008. 244, note 230).

For the Ur III period (c. 2050–2000 BCE), it is interesting to compare the wages of workers as Robert K. Englund (2012) annotated them, so as to get an inkling of the value system of jobs and products. The lowest rank of workers have a normal wage of

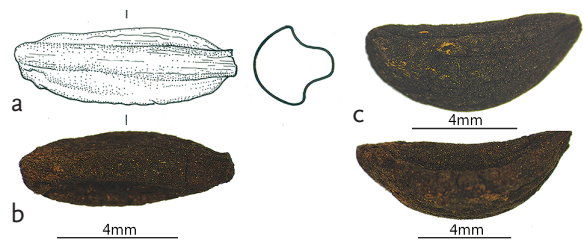


Fig. 2 Garlic remains, Akrotiri, Thera: a drawing of one bulbil; b photograph of the same bulbil; c two other whole bulbils.

c. 200 litres of barley per month (c. 6.6 litres/day), while upper management could have had 5000 litres of grain per month (167 litres/day), with 250 litres (8–9 litres/day) of grain monthly to gardeners, who one assumes would have been the people who tended the garlic fields. Two barig of garlic and garlic heads (where one barig is 60 litres), i.e. 120 litres, cost one shekel of silver (c. 8.33g). In this time period, the minimum wage would have been eight shekels of silver a year (Englund 2012.443). However, Englund states that informal markets could have made a variety of products affordable to workers, and claims that damaged garlic could have been exchanged with measures of barley at a ratio of 1: 11.1. Yet, of course, there would have been price fluctuations connected, among other reasons, to conflict, collapse of communication, and drought (which could have triggered prices of barley to rise to unforeseen heights), good harvests, and a high influx of silver.



Fig. 3 Photo of the funnel-mouthed jar in which the garlic remains were found. Akrotiri No. 7562.

Englund (2012:444) argues that throughout Mesopotamian history 1 gur of barley (c. 300 litres) was equivalent to one shekel of silver, which was a way of standardizing metrological systems and barley wages; two gur of salt (c. 600 litres) for one shekel of silver, as well as one healthy sheep for one shekel of silver. This provides a window into the relative values of products. Whether these prices referred to those in the Aegean is hard to tell, but it does provide some relative indication of value.

When first introduced to Greece/Cyclades/Akrotiri garlic was probably a luxury food, as it was an import, and an open question still remains as to when it became locally cultivated. Food and its consumption has been especially investigated in anthropology, as it reflects very subtle aspects of human communication within a society. It reflects those who prepare the food, those who consume it and share it, and those who are excluded from its consumption, as well as those who are allowed to access it. We therefore need to deal with the term 'luxury' from an anthropological perspective.

What is a luxury food and is garlic considered a luxury? In these terms, we could assume that a food that is "*desirable or hard to obtain but not essential to human nutrition*" is a luxury (Van der Veen 2003:405), and could thus be seen as an indulgence, an object of desire which could impress social competition and indicate various forms of conspicuous consumption/feasting. Such an object needs to be desired by many but affordable only by a few, and not concerned with meeting basic human needs in terms of food, shelter, clothing and leisure. This luxury status would probably refer to the time when garlic was imported as a high-status food enhancer and not cultivated locally. However, at Late Bronze Age Akrotiri we do not know for sure whether the garlic which was found was imported or cultivated locally, although we can assume that the latter was possible. Its name in Linear B was already well engrained in the culture (see above), and it was a plant that could easily become naturalized in the Mediter-

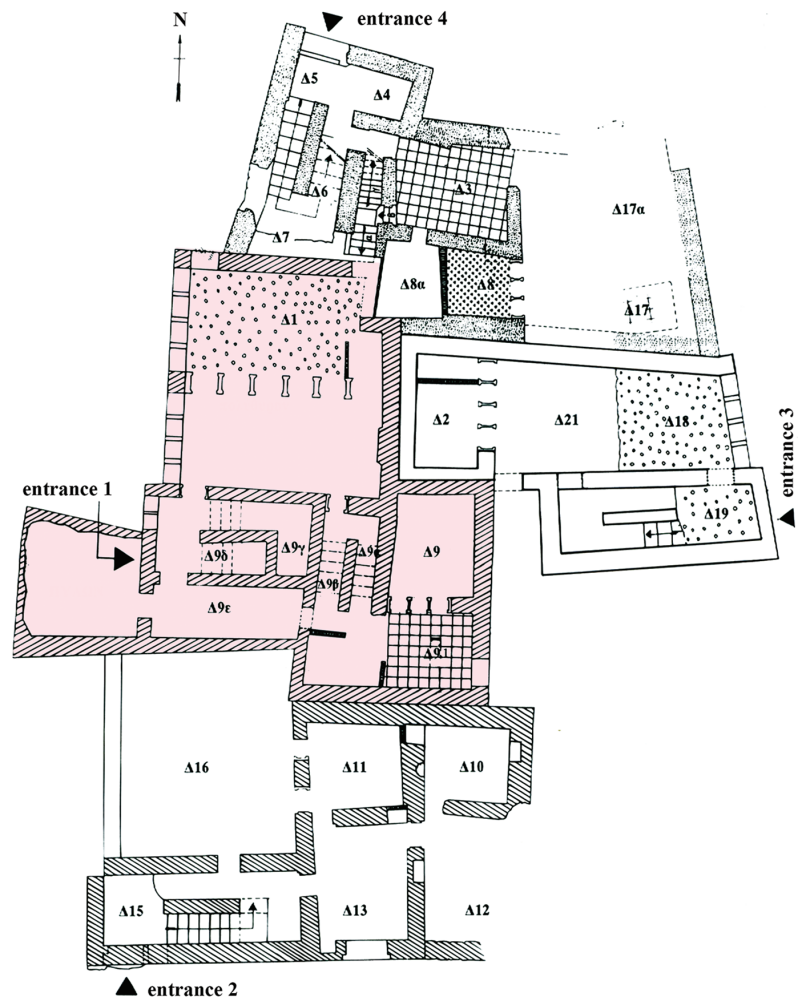


Fig. 4 Sector Delta (Δ), Akrotiri, Thera: the agglomeration of four buildings, whose separation is shown here, and symbolized by different raster graphics for each building and the building discussed here is marked in pink.

anean environment. Therefore, we might be seeing the 'trickle-down effect' sometime in the Late Bronze Age, when garlic, as a luxury, had changed status from an object desired by many but acquired by a few, to one available for most people and thus transformed to a commodity, seen as a common food enhancer. This could have been a time of a change in cuisine too, whereby garlic might have enriched a 'high cuisine' with the addition of more exotic aromatics. Was this the case for Akrotiri? Had garlic just been introduced – imported – in the Late Bronze Age Akrotiri, or had it arrived earlier and by the Linear B was already locally cultivated and naturalized? This cannot be answered at present, but at least the Akrotiri garlic find was found in a wealthy 'merchant's' abode, and thus might have been considered a high-status ingredient. Nevertheless, it is still interesting that on the miniature wall-painting of the West House, Room 5, north wall (Fig. 7), near the well, on its left, there is a line of plants which have

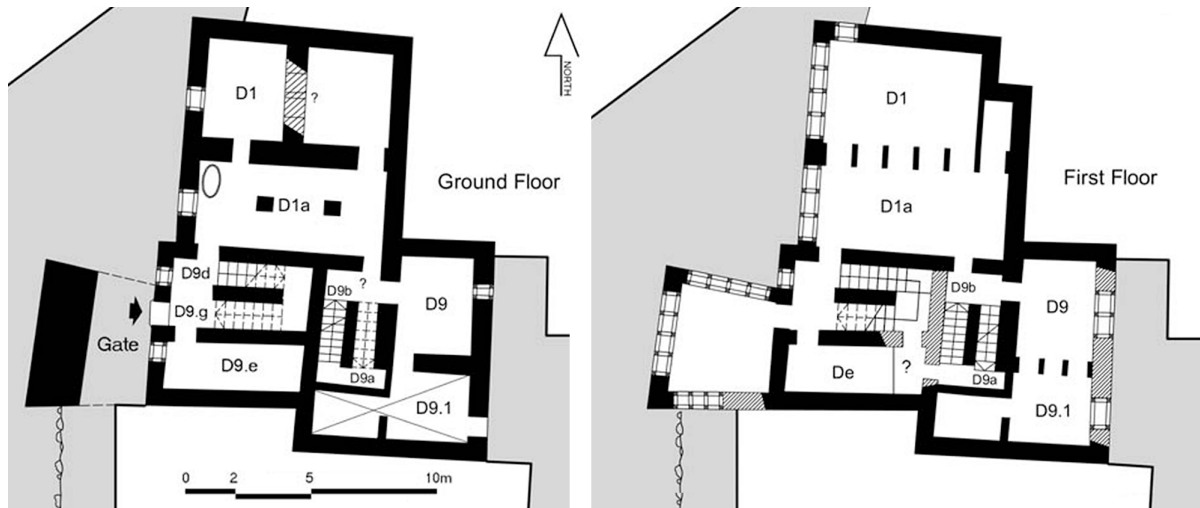


Fig.5 Sector Delta (D), Akrotiri: the western house of the complex, ground and first floor (after Palyvou 2016).

long elongated leaves, just like *Alliaceae*, and this could, perhaps, indicate onion or garlic plants. The bulbous looking flower on the edge of a stalk is very characteristic of this family. They grow in a line which has been identified as depicting/symbolizing a terrace (*Sarpaki 2000.665*), near a well, a water source, which indicates they were bulbous plants which needed watering, and thus this is a garden plot. At the time of publication, garlic had not been identified, therefore there was no tentative identifi-

cation of the plant. In view, though, of the archaeological finds and the knowledge that garlic was present at Akrotiri in the Late Bronze Age (c. 1600 BCE), it would not be far-fetched if we tentatively suggested it to be garlic/onion.⁷

Garlic plants grow c. 60cm tall. The spherical flower cluster is initially enclosed in a pair of papery tapered bracts. These bracts split open when the green-white or pinkish flowers bloom. They can be schematically depicted as a ball, as is shown in the plants in the wall painting.

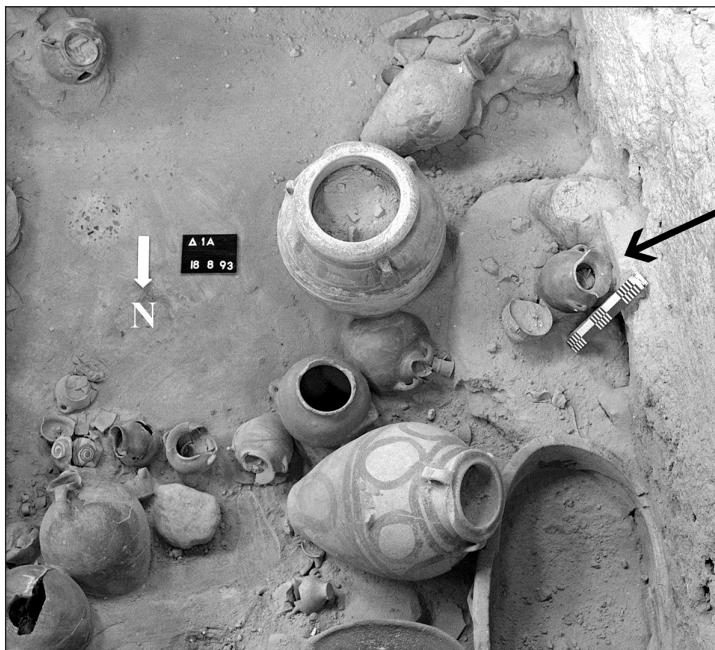


Fig.6 Sector D1a, photo of the northwest corner of the room, where the pot was found on the hearth (arrow) (Akrotiri archives, photo 93/474-475).

Conclusion on the finds of garlic in Greece

Based on the above evidence, we can assert that garlic has been used in Greece since at least about 1600 BCE, if not earlier, and was important enough to have been mentioned in Linear B. The rarity of this crop in the archaeological record could be due to several reasons, one of which may be its low preservation, *i.e.* deformation, that occurs due to its processing (inclusion in food) and its composition, which includes ethereal oil. Another reason might have been due to its rarity of use, storage needs and/or the way it was processed (*i.e.* sliced, mashed). Most probably, even if not imported, would have been a high-status crop, pertaining to rather well-

⁷ Onion skins (*Marinatos 1999.43, Pl. 108 b*) are believed to have been found in Sector Delta, in a vase. These came from a different building, of the same complex (Fig. 4), in Δ2, room of the lilies, (ground floor) named after the wall painting of lilies that was found there.

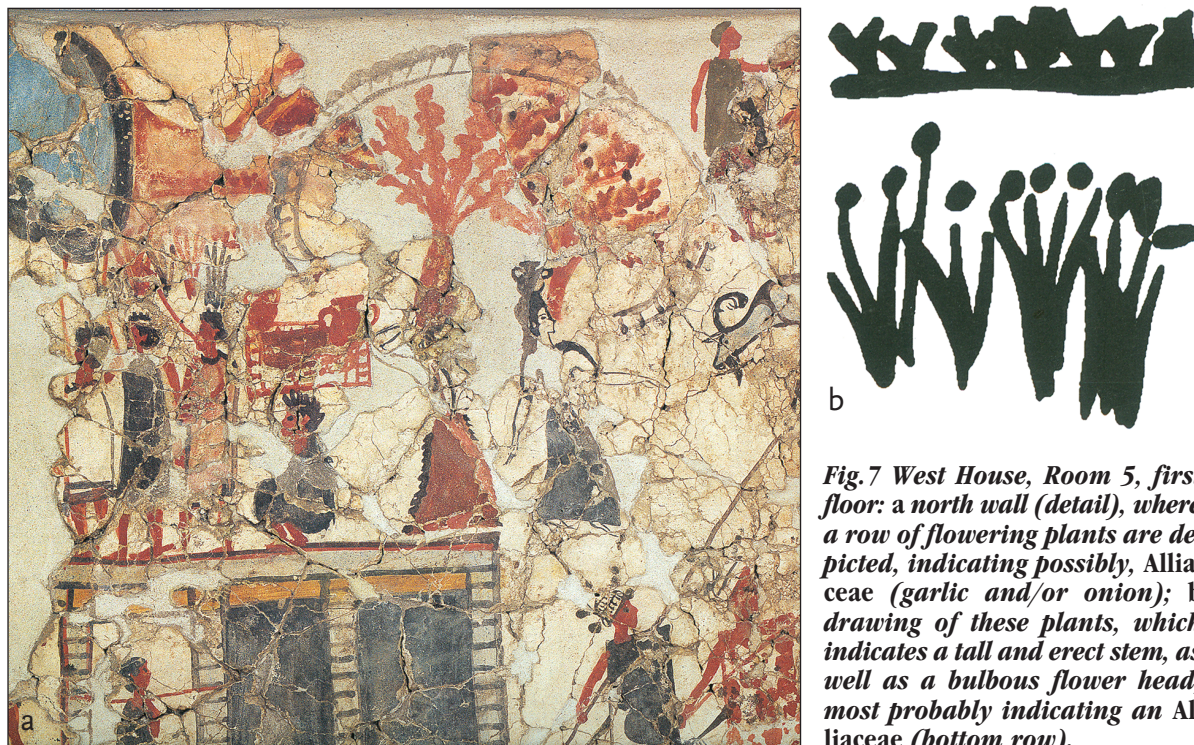


Fig.7 West House, Room 5, first floor: a north wall (detail), where a row of flowering plants are depicted, indicating possibly, Alliaceae (garlic and/or onion); b drawing of these plants, which indicates a tall and erect stem, as well as a bulbous flower head, most probably indicating an Alliaceae (bottom row).

to-do individuals and their high cuisine, and thus rare and never wasted. The rarity of this crop in Prehistory, as it has only been found at Akrotiri, perhaps at Palaikastro and, recently, at Tsoungiza, so far, together with its appearance in Linear B (c. 1200 BCE), might indicate that it was a 'luxury' crop, or at least, a crop somewhat controlled by the exchange/trade/bureaucratic networks of the Bronze Age, even later than c. 1600 BCE, when Linear B was used. The interest of the palatial bureaucracy in garlic is indicative of its retaining its high status, even after several centuries, at first as an import,

but even later when it might have been cultivated locally. Perhaps the use of wild 'garlics', as in Turkey, Greece and probably in other cultures of the Near and Middle East, reflects further evidence of 'indigenization' and 'popularization' of this new flavour, together with its eventual local cultivation. Its multiple uses, beyond cuisine, would have rendered this crop to be highly in demand for medicinal, ritual and preservative reasons, especially for storage of food, and specifically of animal products (Kumar, Berwal 2002).⁸

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⁸ It is known to repel bacteria. For example, fresh cheese gets a prolonged shelf life when garlic is added to it.

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