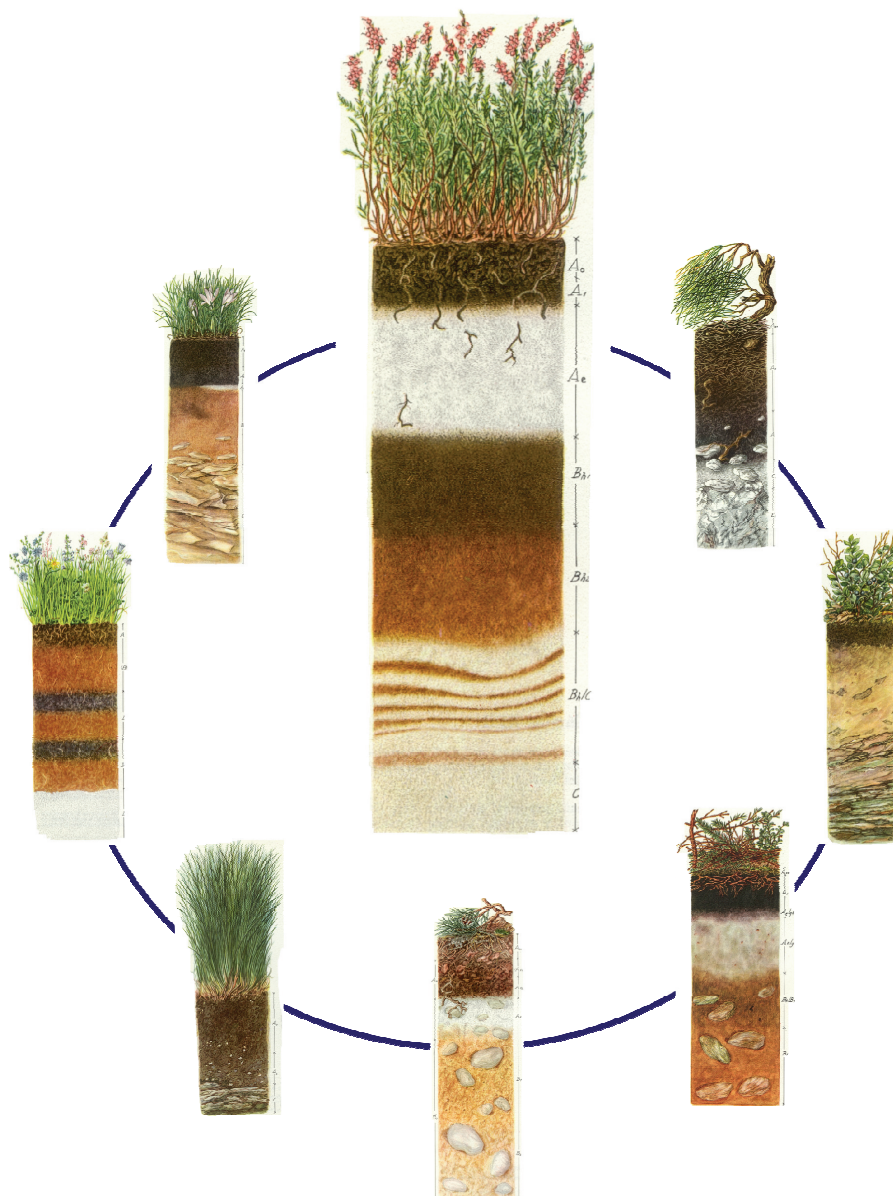# Environmental Assessment of Soil for Monitoring Volume IIb: Survey of National Networks

D. Arrouays, A. Richer de Forges, X. Morvan, N.P.A. Saby, A.R. Jones, C. Le Bas (eds).

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The Frontispiece is a collage of soil profile drawings from the Soils of Europe by W, Kubiena (1953). These are reproduced by kind permission of the Consejo Superior de Investigaciones Cientificas (CSIC), Madrid, Spain.
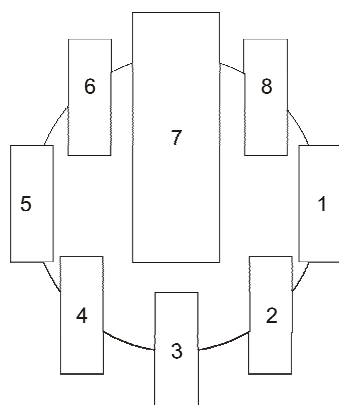
1. Stesopodzolic brown earth, Plate XXIII
2. Molken podzol, Plate XXIV
3. Iron podzol, Plate XXVI
4. Mull-like ranker, Plate XI
5. Allochthonous brown warp soil, Plate VIII
6. Eupodzolic brown earth, Plate XXIII
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Environmental Assessment of Soil for Monitoring Volume IIb: Survey of National Networks

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Preface

The ENVironmental ASsessment of Soil for mOnitoring – ENVASSO – Project (Contract 022713) was funded 2006-8, as Scientific Support to Policy (SSP) under the European Commission 6th Framework Programme of Research. The project's main objective was to define and document a soil monitoring system for implementation in support of a European Soil Framework Directive, aimed at protecting the continent's soils. The ENVASSO Consortium, comprising 37 partners drawn from 25 EU Member States, succeeded in reviewing soil indicators and criteria (Volume I) that are currently available upon which to base a soil monitoring system for Europe. Existing soil inventories and monitoring programmes in the Member States (Vol II) were also reviewed and a database system to capture, store and supply soil profile data was designed and programmed (Volume III). Procedures and protocols (Volume IV), appropriate for inclusion in a European soil monitoring system were defined and fully documented by ENVASSO, and 22 of these procedures were evaluated in 28 Pilot Areas in the Member States (Volume V). In conclusion, a European Soil Monitoring System (Volume VI), comprising a network of sites that are geo-referenced and at which a qualified sampling process is or could be conducted, is outlined.

Volume IIb, which complements Volume IIa, presents the results of a Survey of National Soil Monitoring Networks. It contains comprehensive fact sheets, listing for the national networks their purpose, the sampling strategy adopted, the analytical methods used and the number of operational monitoring sites. Some Member States operate several soil monitoring networks within-country, usually operated by different organisations.

Professor Mark Kibblewhite
Project Coordinator
Cranfield University

Dr Luca Montanarella
Secretary, European Soil Bureau Network
Joint Research Centre

29 June 2008

Questionnaire Survey of National Soil Monitoring Networks

Table 1: National enquiry

Soil monitoring network identification	purpose of the monitoring	country	operator	national sampling strategy Choose between the following possibilities:	description of the site			
				1. random sampling 2. systematic sampling 3. judgmental sampling 4. stratified pattern with random sampling 5. stratified pattern with systematic sampling 6. stratified pattern with directed sampling 7. nested pattern with random sampling 8. nested pattern with systematic sampling	Vegetation yes or no	geology (parent material) yes or no	slope yes or no	exposure yes or no
FR01	soil contamination	France	X. Morvan	2	yes	yes	yes	no

site sampling strategy										
site area delineation yes or no	Written protocol? yes or no	Sampling depth		Sampled layer 1						
		fixed depth or pedological horizon	depth of sampling	Identification	sampling strategy	Size and resolution of the grid	replicates or composite	samples number	disturbed, undisturbed or both	sample quantities (dried, g)
yes	yes	fixed depth	0-30 and 30-50	topsoil	grid	20x20m, resolution 2x2m	composite	16	disturbed	2000

National enquiry (continued from previous table)

site sampling strategy						
Sampled layer 2						
Identification	sampling strategy	Size and resolution of the grid	replicates or composite	samples number	disturbed, undisturbed or both	sample quantities (dried, g)
subsoil	grid	20x20m, resolution 2x2m	composite	16	disturbed	2000

profile description	sample pre-treatment						samples archiving				Land use and land management history (yes or no)
profile or auger (the "profile" choice means description of strucutre, porosity, development of root system, bedrock, presence or not of drainage system...)	drying			sieving			archive samples (yes or no)	Sample state(s)		Conservation method	
								fresh or dried?	sieved?		
	method of drying	temperature	length	yes or no	size	manually or mechanically					
profile	air			yes	2	mechanically	yes	dried	yes	cold room	yes

Table 2: Site enquiry

soil monitoring network identification	site identification	coordinates (with the folowing projection system: longitude/latitude, decimal degrees, WGS 84 ellipsoïd)	
		longitude	**latitude**
FR01	*1*	*xxx*	*xxx*
FR01	*2*	*xxx*	*xxx*

description site							sampling date		
data					climate	atmospheric deposition	year of the first sampling	number of campaign	time step (years)
soil type				Land Use (CLC code)					
WRB (2006)	**WRB (1998)**	**FAO (1974)**	**FAO (1990)**						
	Arenosol	*Arenosol*	*Arenosol*	*212*	*yes*	*yes*	*1995*	*2*	*7*
	Cambisol	*Cambisol*	*Cambisol*	*211*	*yes*	*yes*	*2003*	*1*	*5*

Table 3: site specific analysis

soil monitoring network identification	site identification
FR01	1

analysis											
				analytical method							
parameter	**Samples concerned**	**number of repetition**	**percentage standard deviation**	**name**	**reference of method**	**laboratory name**	**Quality control procedures**	**pre-treatment**	**precision**	**detection limit**	**frequency of measurements**
Cr content	all	1	-	-							1

Table 4: National analysis

soil monitoring network identification	analysis			
	parameter	Samples concerned	number of repetition	percentage standard deviation
RMQS	carbon content	ALL	1	
RMQS	Total Al content	ALL	1	
ICP01	Organic layer weight	all	1	
ICP01	pH(CaCl2)	F H		
ICP01	Organic carbon	F H		
ICP01	Total nitrogen	F H		
ICP01	Carbonates	F H		
ICP01	Aqua Regia extracted P, Ca, K, Mg, Mn	all		
ICP01	Aqua Regia extracted Cu, Pb, Cd, Zn	all		
ICP01	Aqua Regia extracted Al, Fe, Cr, Ni, S, Hg, Na	all		
ICP01	Exchangeable Acidity	F H		
ICP01	Exchangeable Cations: Ca, Mg, K, Na, Al, Fe, Mn, H	F H		
ICP01	pH(H2O)	F H		
ICP01	Oxalate extractable Fe, Al	F H		
ICP02	Coarse fragments	all		
ICP02	Bulk density	all		
ICP02	Particle size distribution (clay<2μm, sand>63μm)	all		
ICP02	Clay content	all		
ICP02	Silt Content	all		
ICP02	Sand Content	all		
ICP02	pH(CaCl2)	all		
ICP02	Organic carbon	all		
ICP02	Total nitrogen	all		
ICP02	Carbonates	all		
ICP02	Aqua Regia extracted P, Ca, K, Mg, Mn	all		
ICP02	Aqua Regia extracted Cu, Pb, Cd, Zn	0-10		
ICP02	Aqua Regia extracted Al, Fe, Cr, Ni, S, Hg, Na	0-10		
ICP02	Exchangeable Acidity	all		
ICP02	Exchangeable Cations: Ca, Mg, K, Na, Al, Fe, Mn, H	all		
ICP02	pH(H2O)	all		
ICP02	Oxalate extractable Fe, Al	all		

National analysis (continued from previous table)

soil monitoring network identification	analysis				
	analytical method				
	name	reference of method	laboratory name	Quality control procedures	pre-treatment
RMQS	Dry Combustion	NF ISO 10694	INRA ARAS	YES	Air-dried
RMQS	HF - HClO4	NF ISO 14689-1	INRA ARAS	YES	Air-dried
ICP01	gravimetric method	ISO 11465			
ICP01	pH-electrode	ISO 10390			
ICP01	Dry Combustion at >900°C	ISO 10694			
ICP01	Dry Combustion	ISO 13878			
ICP01	Calcimeter	ISO 10693			
ICP01		ISO 11466			
ICP01		ISO 11466			
ICP01		ISO 11466			
ICP01	Titration to pH 7.8	ISO 14254			
ICP01	Barium chloride solution	ISO 11260			
ICP01	pH-electrode	ISO 10390			
ICP01	AAS ICP	ISRIC 1992			
ICP02	residue left on a 2mm sieve after washing and drying	ISO 11272			
ICP02	steel cylinder recommended (100, 400 cm3)	ISO 11272			
ICP02	pipette method	ISO 11277			
ICP02	pipette method	ISO 11277			
ICP02	pipette method	ISO 11277			
ICP02	pipette method	ISO 11277			
ICP02	pH-electrode	ISO 10390			
ICP02	Dry Combustion at >900°C	ISO 10694			
ICP02	Dry Combustion	ISO 13878			
ICP02	Calcimeter	ISO 10693			
ICP02		ISO 11466			
ICP02		ISO 11466			
ICP02		ISO 11466			
ICP02	Titration to pH 7.8	ISO 14254			
ICP02	Barium chloride solution	ISO 11260			
ICP02	pH-electrode	ISO 10390			
ICP02	AAS ICP	ISRIC 1992			

National analysis (continued from previous table)

soil monitoring network identification	analysis		
	precision	detection limit	frequency of measurements
RMQS			*1*
RMQS		*0.02 mg/kg*	*1*
ICP01			
ICP01			
ICP01			
ICP01			
ICP01			
ICP01			
ICP01			
ICP01			
ICP01			
ICP01			
ICP01			
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ICP02			
ICP02			

List of files and their purpose

The present file is a dictionary to help you to fill the excel and/or the internet files. The files to fill are the following ones:
- national_enquiry.xls: description of the soil monitoring network(s)
- national_analysis.xls: description of the analyses made in one soil monitoring network
- Internet national_enquiry file: this file can replace the 2 first files. It can be filled on internet. The soil monitoring network and the analyses are described in this file. (still under construction)
- site_enquiry.xls: description of all the monitoring site of a soil monitoring network
- site_specific_analysis.xls: description of the specific analyses made on some monitoring sites.

Please give only one response when a choice is submitted. It will be much easier for us to create the database.

Thank you.

Definition of a monitoring site

To be considered a soil monitoring site, the following conditions need to be fulfilled:
- the location of the site has to be georeferenced with an accuracy less than 10 m.
- several measurement campaigns have been done, will be done or can be done on the site (excluding the soil profile now in a constructed zone)

The above conditions are the minimum conditions required to consider a site as a monitoring site. The quality of the soil monitoring network (SMN) will be better, if the following conditions are fulfilled:
- a composite sample or several replicates are sampled on the site to take into account the spatial variability
- accuracy of georeferencing is less than 10 m
- accuracy of georeferencing must be less than the half of the site area

As different conditions are required and as several SMN can exist in a country, each SMN will be represented by one line in the excel file "national_enquiry.xls" or in the internet "national_enquiry" file. There will be as many lines in the excel file as there are soil monitoring networks in the country.

Description of the metadata

Monitoring strategy ("national_enquiry.xls" file or internet file)

Soil Monitoring Network (SMN) identification:
Code that will identify the SMN in each file (please chose the 2 first letters of the country with a 2 numerals number, e.g. FR01)

What is the primary purpose of this SMN?
Is it to monitor heavy metal content, pesticide contamination, decline of soil organic matter…?

Country of the SMN
Indicate the name of the country.

Operator
What are the name and the institution of the person who fills the different files?

National sampling strategy
What is the chosen strategy? To choose among these different possibilities (Figure 1):

- random sampling
- systematic sampling
- judgmental sampling
- stratified pattern
  - ➢ random sampling
  - ➢ systematic sampling
  - ➢ directed sampling
- nested pattern
  - ➢ random sampling
  - ➢ systematic sampling

Description of the site: in general for all sites of the SMN
Vegetation
Do you describe the vegetation of the monitoring site? yes or no
Geology (parent material)
Do you describe the nature of the parent material? yes or no
Slope
Do you measure slope intensity (angle or percentage) on the monitoring site? yes or no
Exposure
Do you measure the orientation of the slope (0-360° or compass classes)? yes or no

Site sampling strategy in general for all sites of the SMN
Site area delineation:
Is the site area delineated (e.g. a grid)? Yes or no. (if not, that means that the sampling strategy on the site is free, i.e. the choice of the surveyor).

Written protocol:
Is there an existing and written protocol with quality insurance procedure for sampling in order to allow reproducibility according to the different soil surveyor? Yes or no.

Sampling depth
Are the samples taken at a fixed depth or based on pedological horizon?
Fixed depth
If you sample at a fixed depth, please specify the depth of your samples (in cm), e.g. 0-20 cm and 20-50 cm.
Pedological horizon
If your sampling strategy is based on the pedological horizons, please specify what is the maximum depth of sampling (e.g. to the bedrock, or to a fixed depth). In case of a fixed maximum depth, all the samples don't have to reach this depth (e.g. in case of a shallow soil), what we need is the defined maximum sampling depth.

For each sampled layers (if you fill the excel file and if you sample more than 2 layers, please add as many "sampled layer" columns as you need)
Identification
What is the identification of the sampled layer? (humic layer, topsoil, subsoil1, subsoil2,…)
Sampling strategy:
What is the sampling strategy used to collect samples (on a grid, a transect line, a soil profile…)
Size and resolution of the grid:
What are the size and the resolution of the sampling grid on the site?
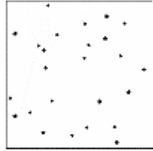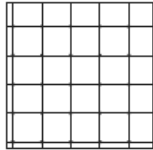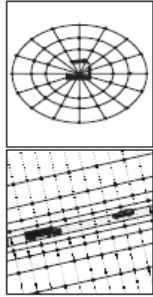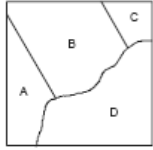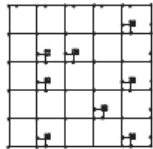
Distribution		Procedure
Random		Distribution of the sampling sites using random numbers and with complete exclusion of professional knowledge
Systematic		Distribution of the sampling sites on a geometrical grid: - square grid - rectangular grid - triangular grid
Judgmental		Distribution of the sampling sites based on expert judgement and considerations of plausibility (contamination hypothesis): - point sources: polar distribution - line sources: line distribution - other sources: in accordance with contamination hypothesis - greater sampling density in vicinity of source
Stratified pattern		Appropriate distribution in more homogeneous sub-areas. Number of sampling sites proportional to the area. Distribution within the area: random, systematic or directed
Nested pattern		Systematic distribution of the sampling sites and higher local sampling density as predefined in a diagram (random or systematic)

Figure 1: Description of the different national sampling strategies (Hämmann and Desaules, 2003)

Replicates or composite:
Are the analyses made on replicates or on a composite sample?
Number of samples:
Indicate the number of replicates or the number of sub-samples to make the composite sample
Disturbed/undisturbed:
Are the samples disturbed? Yes or no
Sample quantities (dried, g):
What is the approximate weight of the air-dried sample(s) in grams?

Profile description:
How is the soil of the site described? Is it based on a soil profile or on an auger hole(s)? If you choose "profile" response, that means that you describe the structure, the porosity, the development of root system, the bedrock, and the eventual presence of drainage system.
Answer "profile", "auger holes" or "no description".

Pre-treatment: of samples for all analyses. This excludes pre-treatments that are specific for one analysis (e.g. decarbonation before particle-size distribution is excluded).
Drying
Method of drying
What is the method to dry samples? (air-drying, oven-drying, chemical drying, freeze-drying)
Temperature
What is the drying temperature (degrees Celsius)?
Duration
How long are the samples dried for?
Sieving
Are the samples sieved or not? Yes or no
Size
What is the maximum sieving size? (e.g. 2 mm)
Manual or mechanical
Is the sieving manual or mechanical?

Samples archiving
Archive samples:
Are the samples archived or not? yes or no
Sample state(s)
Are the archive samples:
fresh or dried
Chose one of two answers
sieved or not
Are the archive samples sieved? yes or no
Conservation method
Are the archive samples stocked at room temperature, in a cold room, or under vacuum, or are they frozen?

Land use and land management history
Do you monitor any land use and land management parameters (yield, land use change, manure, sewage sludge, fertilizer and/or pesticide application, atmospheric deposition…) between any 2 sampling campaigns?

Soil monitoring network analysis (choose either *national_analyses.xls* file, or continue on the same internet file)
All the parameters measured on all the monitoring sites should be entered into the cells in the file. Each parameter will correspond to one line in the file.
Soil monitoring network identification
Identification of the SMN (same identification as in national_enquiry.xls)
Parameter

Give the name of the parameter measured. Specify what the particle size limit for particle size analysis is.
Samples concerned
Answer "all" if you measure this parameter on all the samples, or write the identification of the sampled layers on which you realise the measurements.
Number of repetitions
How many samples are analysed for the parameter?
Percentage standard deviation
if available, in case of replicates
Analytical method
    Name
    Specify the name of the analytical method.
    Reference of method
    Precise reference of the normalised analytical method (ISO, CE…)
    Laboratory name
    Specify the name of the laboratory
    Quality control procedures
    Are there any quality control procedures in the laboratory? Yes or no
    Pre-treatment
    Specify any pre-treatment on the sample for the measurement.

    Precision
    What is the precision of the measurement?
    Detection limit
    What is the detection limit?
    Frequency of the measurements
    Answer "1": measurement of this parameter for each sampling campaign
    Answer "2": measurement of this parameter one sampling campaign out of 2
    Answer "3": measurement of this parameter one sampling campaign out of 3
    Answer "4": measurement of this parameter one sampling campaign out of 4…

Monitoring sites ("site_enquiry.xls" file)

Soil monitoring network identification
Identification of the SMN (same identification as in national_enquiry.xls file)

Site Identification code
Identification code of the monitoring site, this identification can be a number

Coordinates of the site
Give the coordinates of each site as longitude and latitude in decimal degrees according to the WGS 84 ellipsoid.
    Longitude
    Latitude

Site description
    Data
        Soil type
        Give the soil name of the soil described on the site using at least one of the four classifications: WRB 2006, WRB 1998, FAO 1974 or FAO 1990.
        Land use
        *What is the land use of the site (**use Corine Land Cover code**)? See Table 1*
    Climate:
    Are the climatic parameters monitored less than 10 km from the site? Yes or no
    Atmospheric deposition:
    Is there a study of an eventual atmospheric deposition on the site? Yes or no

Sampling date
    Year of the first sampling

Number of campaigns:
How many sampling campaigns had been done on this site?
Time step (years):
What is the time step between two sampling campaign on this site?

Specific analysis on sites ("site_specific_analysis.xls" file)
This file has to be filled up with all the specific measurements made on some monitoring sites.

Soil monitoring network identification
Identification of the SMN (same identification as in the national_enquiry.xls file)

Site Identification code
Identification of the monitoring site this (same identification as in the site_enquiry.xls file)

Specific analysis
    Parameter
    What is measured?

    Samples concerned
    Answer "all" if you measure this parameter on all the samples, or write the identification of the sampled layers on which you realise the measurements.

    Number of repetitions
    How many samples are analysed for the parameter?

    Percentage standard deviation
    if available, in case of replicates

    Analytical method
        Name
        Specify the name of the analytical method.
        Reference of method
        Precise reference of the normalised analytical method (ISO, CE…)
        Laboratory name
        Specify the name of the laboratory
        Quality control procedures
        Are there any quality control procedures in the laboratory? Yes or no
        Pre-treatment
        Specify any pre-treatment on the sample for the measurement.

    Precision
    What is the precision of the measurement?

    Detection limit
    What is the detection limit?

    Frequency of the measurements
    Answer "1": measurement of this parameter for each sampling campaign
    Answer "2": measurement of this parameter one sampling campaign out of 2
    Answer "3": measurement of this parameter one sampling campaign out of 3
    Answer "4": measurement of this parameter one sampling campaign out of 4…

Corine Land Cover codes

CLC code	LABEL1	LABEL2	LABEL3
111	Artificial surfaces	Urban fabric	Continuous urban fabric
112	Artificial surfaces	Urban fabric	Discontinuous urban fabric
121	Artificial surfaces	Industrial, commercial and transport units	Industrial or commercial units
122	Artificial surfaces	Industrial, commercial and transport units	Road and rail networks and associated land
123	Artificial surfaces	Industrial, commercial and transport units	Port areas
124	Artificial surfaces	Industrial, commercial and transport units	Airports
131	Artificial surfaces	Mine, dump and construction sites	Mineral extraction sites
132	Artificial surfaces	Mine, dump and construction sites	Dump sites
133	Artificial surfaces	Mine, dump and construction sites	Construction sites
141	Artificial surfaces	Artificial, non-agricultural vegetated areas	Green urban areas
142	Artificial surfaces	Artificial, non-agricultural vegetated areas	Sport and leisure facilities
211	Agricultural areas	Arable land	Non-irrigated arable land
212	Agricultural areas	Arable land	Permanently irrigated land
213	Agricultural areas	Arable land	Rice fields
221	Agricultural areas	Permanent crops	Vineyards
222	Agricultural areas	Permanent crops	Fruit trees and berry plantations
223	Agricultural areas	Permanent crops	Olive groves
231	Agricultural areas	Pastures	Pastures
241	Agricultural areas	Heterogeneous agricultural areas	Annual crops associated with permanent crops
242	Agricultural areas	Heterogeneous agricultural areas	Complex cultivation patterns
244	Agricultural areas	Heterogeneous agricultural areas	Agro-forestry areas
311	Forest and semi natural areas	Forests	Broad-leaved forest
312	Forest and semi natural areas	Forests	Coniferous forest
313	Forest and semi natural areas	Forests	Mixed forest
321	Forest and semi natural areas	Scrub and/or herbaceous vegetation associations	Natural grasslands
322	Forest and semi natural areas	Scrub and/or herbaceous vegetation associations	Moors and heathland
323	Forest and semi natural areas	Scrub and/or herbaceous vegetation associations	Sclerophyllous vegetation
324	Forest and semi natural areas	Scrub and/or herbaceous vegetation associations	Transitional woodland-shrub
331	Forest and semi natural areas	Open spaces with little or no vegetation	Beaches, dunes, sands
332	Forest and semi natural areas	Open spaces with little or no vegetation	Bare rocks
333	Forest and semi natural areas	Open spaces with little or no vegetation	Sparsely vegetated areas
334	Forest and semi natural areas	Open spaces with little or no vegetation	Burnt areas
335	Forest and semi natural areas	Open spaces with little or no vegetation	Glaciers and perpetual snow
411	Wetlands	Inland wetlands	Inland marshes
412	Wetlands	Inland wetlands	Peat bogs

421	Wetlands	Maritime wetlands	Salt marshes
422	Wetlands	Maritime wetlands	Salines
423	Wetlands	Maritime wetlands	Intertidal flats
511	Water bodies	Inland waters	Water courses
512	Water bodies	Inland waters	Water bodies
521	Water bodies	Marine waters	Coastal lagoons
522	Water bodies	Marine waters	Estuaries
523	Water bodies	Marine waters	Sea and ocean
999	No data	No data	No data
990	Unclassified	Unclassified land surface	Unclassified land surface
995	Unclassified	Unclassified water bodies	Unclassified water bodies

Bibliography

Hämmann M., Desaules A., 2003. Manual. Sampling and sample pre-treatment for soil pollutant monitoring. Editor Swiss Agency for the Environment, Forest and Landscape SAEFL Berne. http://www.umwelt-schweiz.ch/buwal/shop/files/pdf/phpH491du.pdf

Fact Sheets describing National Soil Monitoring Networks

Description of soil monitoring networks
Austria - Burgenland

Country of the soil monitoring network (SMN): Austria - Burgenland

Operator (name, institute): A. Freudenschuß, Umweltbundesamt

Purpose of the SMN: Environmental Soil Survey - soil status

SMN identification: AT01

National sampling strategy: Systematic sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: fixed depth,
arable land: 0-20; 20-40; 40-50 cm/grassland: 0-5; 5-10; 10-20; 20-40; 40-50 cm
  Sampling
    Sampling strategy: 4 profiles within a circle (r=10m), systematically distributed
    Size and resolution of the sampling area: 314 m²
    Replicates or composite: composite
    Number of subsamples: 4
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: based on profile
Pre-treatment of samples for all analyses
  Drying
    Method: oven
    Temperature: 30°C
    Duration: until constant weight
  Sieving: yes
    Size: 2 mm
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method:

Monitoring sites (MS)
Number of MS: 174
Year of first sampling: 1992, 1993
Number of campaign: 1 or 2
Time step: 10 years

Comments

Description of soil monitoring networks
Austria - Carinthia

Country of the soil monitoring network (SMN): Austria -Carinthia
Operator (name, institute): A. Freudenschuß, Umweltbundesamt
Purpose of the SMN: Environmental Soil Survey - soil status
SMN identification: AT02
National sampling strategy: Systematic sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: fixed depth
arable land: 0-20; 20-40; 40-50; 50-70 cm/grassland: 0-5; 5-10; 10-20; 20-40; 40-50; 50-70 cm
  Sampling
    Sampling strategy: 4 profiles within a circle (r=10m), systematically distributed
    Size and resolution of the sampling area: 314 m²
    Replicates or composite: composite
    Number of subsamples: 4 (3 undisturbed samples)
    Disturbed/undisturbed: both
    Sample quantities:

Soil description: based on profile

Pre-treatment of samples for all analyses
  Drying
    Method: air / oven
    Temperature: 30°C
    Duration: constant weight
  Sieving: yes
    Size: 2 mm
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state:
  Conservation method:

Monitoring sites (MS)
Number of MS: 221
Year of first sampling: 1995, 1996
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Austria -Lower Austria

Country of the soil monitoring network (SMN): Austria -Lower Austria

Operator (name, institute): A. Freudenschuß, Umweltbundesamt

Purpose of the SMN: Environmental Soil Survey - soil status

SMN identification: AT03

National sampling strategy: Systematic sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: fixed depth
  arable land: 0-20; 20-40; 40-50 cm/grassland: 0-5; 5-10; 10-20; 20-40; 40-50 cm
  Sampling
    Sampling strategy: 4 profiles within a circle (r=10m), systematically distributed
    Size and resolution of the sampling area: 314 m²
    Replicates or composite: composite
    Number of subsamples: 4 (undisturbed samples at 112 sites)
    Disturbed/undisturbed: both
    Sample quantities:

Soil description: based on profile

Pre-treatment of samples for all analyses
  Drying
    Method: oven
    Temperature: 30°C
    Duration: constant weight
  Sieving: yes
    Size: 2 mm
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 725
Year of first sampling: 1990, 1991
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Austria -Upper Austria

Country of the soil monitoring network (SMN): Austria - Upper Austria

Operator (name, institute): A. Freudenschuß, Umweltbundesamt

Purpose of the SMN: Environmental Soil Survey - soil status

SMN identification: AT04

National sampling strategy: Systematic sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: fixed depth
  arable land: 0-20; 20-40; 40-60 cm/grassland: 0-5; 5-10; 10-20; 20-40 cm
  Sampling
    Sampling strategy: 12 auger holes within a circle (r=10m), systematically distributed
    Size and resolution of the sampling area: 314 m²
    Replicates or composite: composite
    Number of subsamples: 12 (undisturbed samples at 29 sites)
    Disturbed/undisturbed: both
    Sample quantities:

Soil description: based on profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: constant weight
  Sieving: yes
    Size: 2 or 5 mm
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 453
Year of first sampling: 1990, 1991
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Austria - Salzburg

Country of the soil monitoring network (SMN): Austria - Salzburg

Operator (name, institute): A. Freudenschuß, Umweltbundesamt

Purpose of the SMN: Environmental Soil Survey - soil status

SMN identification: AT05

National sampling strategy: Systematic sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: fixed depth
arable land: 0-20; 20-40; 40-50 cm/intensively used grassland: 0-5; 5-10; 10-20; 20-40; 40-50; 50-70 cm/extensively used grassland: 0-5; 5-10; 10-20; 20-30; 30-50; 50-70 cm
  Sampling
    Sampling strategy: 4 profiles within a circle (r=10m), systematically distributed
    Size and resolution of the sampling area: 314 m²
    Replicates or composite: composite
    Number of subsamples: 4
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: based on profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: constant weight
  Sieving: yes
    Size: 2 mm
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method:

Monitoring sites (MS)

Number of MS: 329
Year of first sampling: 1988, 1989, 1990, 1991
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Austria - Styria

Country of the soil monitoring network (SMN): Austria - Styria

Operator (name, institute): A. Freudenschuß, Umweltbundesamt

Purpose of the SMN: Environmental Soil Survey - soil status

SMN identification: AT06

National sampling strategy: Systematic sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: fixed depth
  arable land: 0-20; 20-50; 50-70 cm/grassland: 0-5; 5-20; 20-50 cm
  Sampling
    Sampling strategy: 4 profiles within a circle (r=10m), systematically distributed
    Size and resolution of the sampling area: 314 m²
    Replicates or composite: composite
    Number of subsamples: 4
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: based on profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: constant weight
  Sieving: yes
    Size: 2 mm
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 392
Year of first sampling: 1990; 1991, 1992, 1993, 1994, 1995, 1996, 1997
Number of campaign: 2
Time step: 1 year

Comments

Description of soil monitoring networks
Austria - Tyrol

Country of the soil monitoring network (SMN): Austria - Tyrol

Operator (name, institute): A. Freudenschuß, Umweltbundesamt

Purpose of the SMN: Environmental Soil Survey - soil status

SMN identification: AT07

National sampling strategy: Systematic sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: fixed depth
  arable land: 0-5 (or ploughing depth); deeper 5 cm or ploughing depth/grassland: 0-10; 30-50 cm
  Sampling
    Sampling strategy: 12 auger holes within a circle (r=10m), systematically distributed
    Size and resolution of the sampling area: 314 m²
    Replicates or composite: composite
    Number of subsamples: 20
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: based on profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: constant weight
  Sieving: yes
    Size: 2 mm
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method:

Monitoring sites (MS)

Number of MS: 559
Year of first sampling: 1986, 1987, 1988
Number of campaign: 1 or 2
Time step: 6, 7 or 8 years

Comments

Description of soil monitoring networks
Austria - Vorarlberg

Country of the soil monitoring network (SMN): Austria - Vorarlberg

Operator (name, institute): A. Freudenschuß, Umweltbundesamt

Purpose of the SMN: Environmental Soil Survey - soil status

SMN identification: AT08

National sampling strategy: Systematic sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: topsoil/subsoil – depth not uniform
  Sampling
    Sampling strategy: 3 profiles within an area of 10-30m2
    Size and resolution of the sampling area: 10 to 30 m²
    Replicates or composite: composite
    Number of subsamples: 3
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: based on profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: constant weight
  Sieving: yes
    Size: 10 or 5 mm
    Manual or mechanical:

Samples archiving
  Archive samples:
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 140
Year of first sampling: 1986
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Austria - Vienna

Country of the soil monitoring network (SMN): Austria - Vienna

Operator (name, institute): A. Freudenschuß, Umweltbundesamt

Purpose of the SMN: Environmental Soil Survey - soil status

SMN identification: AT09

National sampling strategy: Judgmental sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: fixed depth, 0-10 cm
  Sampling
    Sampling strategy: single point
    Size and resolution of the sampling area:
    Replicates or composite:
    Number of subsamples: 1
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: no description

Pre-treatment of samples for all analyses
  Drying
    Method: oven
    Temperature: 60°C
    Duration: constant weight
  Sieving: grinded manually
    Size:
    Manual or mechanical:

Samples archiving
  Archive samples:
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 287
Year of first sampling: 1993
Number of campaign: 4
Time step: 3 years

Comments

Description of soil monitoring networks
Austria

Country of the soil monitoring network (SMN): Austria

Operator (name, institute):

Purpose of the SMN: Permanent Soil Monitoring plots

SMN identification: AT11

National sampling strategy: Judgmental sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth
  Humic layer / grassland / forests: 0-5; 5-10; 10-20; 20-40; 40-50 cm, arable land: 0-20; 20-40; 40-50/60 cm
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area: 1000 m²
    Replicates or composite: replicates (each a mixture of about 16 samples)
    Number of subsamples: 3 or 4 replicates
    Disturbed/undisturbed: both
    Sample quantities:

Soil description: based on profile

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature:
    Duration:
  Sieving:
    Size:
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 23
Year of first sampling: 1994, 1995, 1996, 1999, 2000, 2001, 2002, 2003, 2004, 2005
Number of campaign: 1 or 2
Time step: 3 to 10 years

Comments

Description of soil monitoring networks
Austria

Country of the soil monitoring network (SMN): Austria

Operator (name, institute): Peter Strauss, BAW

Purpose of the SMN: erosion

SMN identification: AT12

National sampling strategy: Judgmental sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth:
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite:
    Number of subsamples:
    Disturbed/undisturbed:
    Sample quantities:

Soil description:

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature:
    Duration:
  Sieving:
    Size:
    Manual or mechanical:

Samples archiving
  Archive samples:
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 2 catchments, 1 plot
Year of first sampling:
Number of campaign:
Time step:

Comments
Most of the requested information are not applicable for those sites (sampling information, pre-treatment of samples)

Description of soil monitoring networks
Austria

Country of the soil monitoring network (SMN): Austria

Operator (name, institute): Heide Spiegel, AGES

Purpose of the SMN: long term field experiments to monitor changes (decline) of soil organic matter

SMN identification: AT13

National sampling strategy: stratified pattern with random sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth
  0-10, 10-20, 20-30 cm or 0-25 cm
  Sampling
    Sampling strategy: at least 16 auger holes within randomised plots
    Size and resolution of the sampling area:
    Replicates or composite: replicates
    Number of subsamples: 3 or 4
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: based on auger hole

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: constant weight
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method:

Monitoring sites (MS)

Number of MS: 3
Year of first sampling: 1989, 1995
Number of campaign: unknown to 3
Time step: 1 to 3 or 4 years

Comments

Description of soil monitoring networks
Belgium

Country of the soil monitoring network (SMN): Belgium

Operator (name, institute): M. Cardon, Flemish Waste Agency

Purpose of the SMN: According to the Decree on Soil Remediation, soil investigations have to be conducted

SMN identification: OVAM

National sampling strategy: Systematic and judgmental sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: depth of the samples is depending on the potentially contaminating activity (maximum depth 2m to 8m)
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area: depends on the cadastral parcel
    Replicates or composite: composite (when sampling in non suspicious area)
    Number of subsamples: 1 per 500m²
    Disturbed/undisturbed: often disturbed, sometimes undisturbed
    Sample quantities:

Soil description: based on soil profile and auger holes

Pre-treatment of samples for all analyses
  Drying
    Method: air/oven
    Temperature: 106°C
    Duration: 24 h
  Sieving: yes
    Size: removal of stones and impurities
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: fresh
  Conservation method:

Monitoring sites (MS)

Number of MS: 33373
Year of first sampling:
Number of campaign:
Time step:

Comments
Private data, the Flemish Waste Agency does not want us to use these data for a soil monitoring network

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Description of soil monitoring networks
Description of soil monitoring networks
North Belgium

Country of the soil monitoring network (SMN): north Belgium

Operator (name, institute): A.Verdoodt, University of Gent

Purpose of the SMN: soil inventory

SMN identification: BE01

National sampling strategy: stratified pattern with directed sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: pedological horizons, maximum depth 150 cm
  Sampling
    Sampling strategy: soil profile
    Size and resolution of the sampling area:
    Replicates or composite: one sample
    Number of subsamples: 1
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: based on profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark and dry, room temperature

Monitoring sites (MS)

Number of MS: 8601
Year of first sampling: 1947 to 1964
Number of campaign: 1
Time step:

Comments
The coordinates of the sites are <u>not accurate enough</u> (100m) to be taken into account during this study

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Description of soil monitoring networks
South Belgium

Country of the soil monitoring network (SMN): south Belgium

Operator (name, institute): A.Verdoodt, University of Gent

Purpose of the SMN: soil inventory

SMN identification: BE02

National sampling strategy: stratified pattern with directed sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: pedological horizons, maximum depth 150 cm
  Sampling
    Sampling strategy: soil profile
    Size and resolution of the sampling area:
    Replicates or composite: one sample
    Number of subsamples: 1
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: based on profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark and dry, room temperature

Monitoring sites (MS)

Number of MS: 3967
Year of first sampling: 1949 to 1972
Number of campaign: 1
Time step:

Comments
The coordinates of the sites are <u>not accurate enough</u> (100m) to be taken into account during this study

Description of soil monitoring networks
South Belgium

Country of the soil monitoring network (SMN): south Belgium

Operator (name, institute): E. Goidts, Department of Geography, Université Catholique de Louvain

Purpose of the SMN: soil inventory resampling

SMN identification: BE03

National sampling strategy: stratified pattern with directed sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: pedological horizons and fixed depth, 0-30 cm and then other pedological layers up to 100 cm depth
  Sampling
    Sampling strategy: soil profile
    Size and resolution of the sampling area:
    Replicates or composite: composite for 0-30 cm layer and then one sample
    Number of subsamples: 5 (0-30 cm) and 1 (horizons deeper than 30 cm)
    Disturbed/undisturbed: both (0-30 cm), disturbed (horizons deeper than 30 cm)
    Sample quantities:

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark and dry, room temperature

Monitoring sites (MS)

Number of MS: 295
Year of first sampling: average 1955
Number of campaign: 2
Time step: around 50 years

Comments
As the coordinates of the sites during the first campaign was not accurate enough, we can not consider this SMN as a second campaign. Indeed, the sampling may have been made somewhere else.

Description of soil monitoring networks
South Belgium

Country of the soil monitoring network (SMN): South Belgium

Operator (name, institute): G. Colinet, Faculté Universitaire des Sciences Agronomiques de Gembloux

Purpose of the SMN: soil reference system

SMN identification: BE04

National sampling strategy: judgmental sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: no
  Sampling depth: pedological horizons, to 120 cm
  Sampling
    Sampling strategy: soil profiles for topsoil and auger holes for deeper samples
    Size and resolution of the sampling area:
    Replicates or composite: replicates
    Number of subsamples:
    Disturbed/undisturbed: disturbed
    Sample quantities: 500g

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: <3 weeks
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: some of the samples
  Sample state: dried and sieved
  Conservation method: room temperature

Monitoring sites (MS)

Number of MS: 248
Year of first sampling: from 1972 to 1999
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Belgium

Country of the soil monitoring network (SMN): Belgium

Operator (name, institute): S. Sleutel - Soil Management & Soil Care, University of Gent

Purpose of the SMN: commercial assessment of soil fertility

SMN identification: BE06

National sampling strategy: random sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-24 cm
  Sampling
    Sampling strategy: random
    Size and resolution of the sampling area: community border
    Replicates or composite: composite
    Number of subsamples: from 1 to 1500
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: no description

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving:
    Size:
    Manual or mechanical:

Samples archiving
  Archive samples:
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: around 21 000
Year of first sampling: 1990
Number of campaign: 4
Time step: 3

Comments
Large dataset (frequency of measurement every 3 years between 1989 & 1999) with average values for O.C content in all municipalities across Flanders. This information has been used to set up baseline data and see how the O.C is changing. Care should be taken while interpreting the frequency of 3 years: this doesn't correspond to a new resampling of the same sites, so we can not consider these sites as monitoring sites.

Description of soil monitoring networks
South Belgium

Country of the soil monitoring network (SMN): South Belgium

Operator (name, institute): G. Colinet, Faculté Universitaire des Sciences Agronomiques de Gembloux

Purpose of the SMN: Forest Soil Condition

SMN identification: BE09

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: no
  Sampling depth: fixed depth, 0-20 cm
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 21
    Disturbed/undisturbed: disturbed
    Sample quantities: 400-700g

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: <3 weeks
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: room temperature

Monitoring sites (MS)

Number of MS: 246
Year of first sampling: from 2003 to 2005
Number of campaign: 1
Time step: 10 years

Comments

Description of soil monitoring networks
South Belgium

Country of the soil monitoring network (SMN): South Belgium

Operator (name, institute): G. Colinet, Faculté Universitaire des Sciences Agronomiques de Gembloux

Purpose of the SMN: oak tree sanitation

SMN identification: BE10

National sampling strategy: judgment   al sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: pedological horizons, up to 120 cm
  Sampling
    Sampling strategy: profile/auger hole
    Size and resolution of the sampling area:
    Replicates or composite: replicates
    Number of subsamples: 1 to 6
    Disturbed/undisturbed: disturbed
    Sample quantities: 500g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: <3 weeks
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: room temperature

Monitoring sites (MS)

Number of MS: 14
Year of first sampling: 2000 and 2002
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Belgium (West Flanders)

Country of the soil monitoring network (SMN): Belgium (West Flanders)

Operator (name, institute): A.Verdoodt, University of Gent

Purpose of the SMN: heavy metals monitoring

SMN identification: BE11

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-20 cm
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area: circle (r=30m) 2826m²
    Replicates or composite: composite
    Number of subsamples: 3 to 8
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: no description

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark and dry, room temperature

Monitoring sites (MS)

Number of MS: 340
Year of first sampling: 1997
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Belgium (East Flanders)

Country of the soil monitoring network (SMN): Belgium (East Flanders)

Operator (name, institute): A.Verdoodt, University of Gent

Purpose of the SMN: heavy metals monitoring

SMN identification: BE12

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-20 cm
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area: circle (r=30m) 2826m²
    Replicates or composite: composite
    Number of subsamples: 4 to 8
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: no description

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark and dry, room temperature

Monitoring sites (MS)

Number of MS: 494
Year of first sampling: 1979
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Belgium (South Belgium)

Country of the soil monitoring network (SMN): Belgium (south Belgium)

Operator (name, institute): G. Colinet, Faculté Universitaire des Sciences Agronomiques de Gembloux

Purpose of the SMN: metallic trace element background

SMN identification: BE13

National sampling strategy: stratified pattern with random sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: pedological horizons, up to 120 cm
  Sampling
    Sampling strategy: auger holes for the subsoil
    Size and resolution of the sampling area:
    Replicates or composite: composite for topsoil and one replicate for the subsoil
    Number of subsamples: 10 (topsoil), or 1 (subsoil)
    Disturbed/undisturbed: disturbed for topsoil and undisturbed for subsoil
    Sample quantities: 500g

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: <3 weeks
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: room temperature

Monitoring sites (MS)

Number of MS: 163
Year of first sampling: 2002
Number of campaign: 1
Time step:

Comments
For the subsoil sample, taking an undisturbed sample with an auger seems to be unrealistic.
We couldn't get permission for the coordinates of this network.

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Description of soil monitoring networks
Belgium (South Belgium)

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Country of the soil monitoring network (SMN): Belgium (south Belgium)

Operator (name, institute): G. Colinet, Faculté Universitaire des Sciences Agronomiques de Gembloux

Purpose of the SMN: metallic trace element content

SMN identification: BE14

National sampling strategy: judgmental sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: no
  Sampling depth: pedological horizons, up to 120 cm
  Sampling
    Sampling strategy: soil profiles for the topsoil, auger holes for the subsoil
    Size and resolution of the sampling area:
    Replicates or composite: replicates
    Number of subsamples: 1 to 4 (topsoil), 1 (subsoil)
    Disturbed/undisturbed: disturbed
    Sample quantities: 500g

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: <3 weeks
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: room temperature

Monitoring sites (MS)

Number of MS: 473
Year of first sampling: from 1993 to 2005
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Belgium (South Belgium)

Country of the soil monitoring network (SMN): Belgium (south Belgium)

Operator (name, institute): G. Colinet, Faculté Universitaire des Sciences Agronomiques de Gembloux

Purpose of the SMN: soil fertility evaluation

SMN identification: BE15

National sampling strategy: judgmental sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: fixed depth, 0-20 cm
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area: parcel area
    Replicates or composite: composite
    Number of subsamples: 25
    Disturbed/undisturbed: disturbed
    Sample quantities: 500g

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: <3 weeks
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: room temperature

Monitoring sites (MS)

Number of MS: 406
Year of first sampling: from 1985 to 2005
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Bulgaria

Country of the soil monitoring network (SMN): Bulgaria

Operator (name, institute): T. Sishkov, N. Kolev, data from National Environment Executive Agency

Purpose of the SMN: diffuse contamination

SMN identification: BG01

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-20; 20-40 cm
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 9
    Disturbed/undisturbed: disturbed
    Sample quantities: 500 / 1000 g

Soil description: based on profile

Pre-treatment of samples for all analyses
  Drying
    Method: thermostate
    Temperature: 100°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: temporally
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 407
Year of first sampling: 2004
Number of campaign: 3 (not for all)
Time step: 1 year

Comments

Description of soil monitoring networks
Bulgaria

Country of the soil monitoring network (SMN): Bulgaria

Operator (name, institute): T. Sishkov, N. Kolev, data from National Environment Executive Agency

Purpose of the SMN: local hot points

SMN identification: BG02

National sampling strategy: judgmental sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-20; 20-40 cm
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 9
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method: thermostate
    Temperature: 100°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: temporally
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS:
Year of first sampling:
Number of campaign:
Time step:

Comments
Access data restricted

Description of soil monitoring networks
Czech Republic

Country of the soil monitoring network (SMN): Czech Republic

Operator (name, institute): V. Penizek, J. Kozak, Czech Univerzity of Agriculture in Prague

Purpose of the SMN: agrochemical soil testing

SMN identification: CZ01

National sampling strategy: stratified pattern with random sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: fixed depth, arable land 0-30cm; pastures 5-15cm; hop-garden 10-40cm; vineyards 0-30 and 30-60cm
  Sampling
    Sampling strategy: transects
    Size and resolution of the sampling area: arable land 7-10ha; pastures 7-10ha; hop-garden 3ha; vineyards 2ha
    Replicates or composite: composite
    Number of subsamples: 30
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: no
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 207
Year of first sampling: 1992
Number of campaign:
Time step: 6 years

Comments

Description of soil monitoring networks
Czech Republic

Country of the soil monitoring network (SMN): Czech Republic

Operator (name, institute): V. Penizek, J. Kozak, Czech Univerzity of Agriculture in Prague

Purpose of the SMN: soil contamination

SMN identification: CZ02

National sampling strategy: stratified pattern with directed sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: fixed depth, arable land 0-30cm; pastures 5-15cm; hop-garden 10-40cm; vineyards 0-30 and 30-60cm
  Sampling
    Sampling strategy: transects
    Size and resolution of the sampling area: arable land 7-10ha; pastures 7-10ha; hop-garden 3ha; vineyards 2ha
    Replicates or composite: composite
    Number of subsamples: 30
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: no
  Sample state:
  Conservation method:

<u>Monitoring sites (MS)</u>

Number of MS:
Year of first sampling:
Number of campaign:
Time step:

<u>Comments</u>
We could not get the coordinates of the sites.

Description of soil monitoring networks
Czech Republic

Country of the soil monitoring network (SMN): Czech Republic
Operator (name, institute): V. Penizek, J. Kozak, Czech Univerzity of Agriculture in Prague
Purpose of the SMN: Monitoring of natural protected areas
SMN identification: CZ03
National sampling strategy:
Site sampling strategy
  Site area delineation:
  Written protocol:
  Sampling depth:
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite:
    Number of subsamples:
    Disturbed/undisturbed:
    Sample quantities:
Soil description:
Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature:
    Duration:
  Sieving:
    Size:
    Manual or mechanical:
Samples archiving
  Archive samples:
  Sample state:
  Conservation method:
Monitoring sites (MS)
Number of MS: 40
Year of first sampling:
Number of campaign:
Time step:
Comments
Coordinates of the sites not provided.
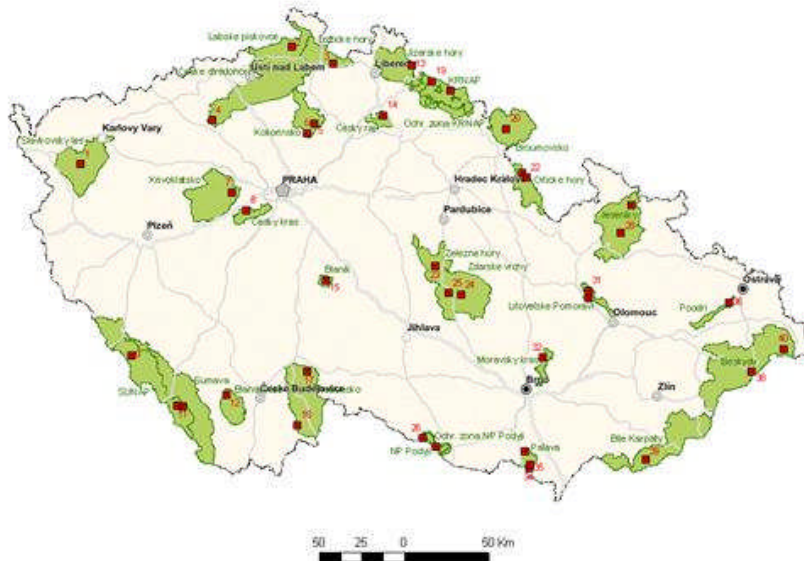
Description of soil monitoring networks
Denmark

Country of the soil monitoring network (SMN): Denmark

Operator (name, institute): T. Ballstroem, data from Danish Agricultural Advisory Service

Purpose of the SMN: Estimation of farmlands 'N-requirements

SMN identification: DK01

National sampling strategy: stratified pattern with random sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horizons and fixed depth, 0-25, 25-50, 50-75, 75-100
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 16
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000g

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature:
    Duration:
  Sieving:
    Size:
    Manual or mechanical:

Samples archiving
  Archive samples:
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS:
Year of first sampling: 1986
Number of campaign: 40
Time step: 0.5 year

Comments
No data access

Description of soil monitoring networks
Denmark

Country of the soil monitoring network (SMN): Denmark

Operator (name, institute): T. Ballstroem, data from Danish Agricultural Advisory Service

Purpose of the SMN: Estimation of farmlands 'N-requirements

SMN identification: DK02

National sampling strategy: stratified pattern with random sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horizons and fixed depth, 0-25, 25-50, 50-75, 75-100
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 16
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000g

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature:
    Duration:
  Sieving:
    Size:
    Manual or mechanical:

Samples archiving
  Archive samples:
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS:
Year of first sampling: 1986
Number of campaign: 2
Time step: 10

Comments
No data access

Description of soil monitoring networks
Denmark

Country of the soil monitoring network (SMN): Denmark

Operator (name, institute): T. Ballstroem, data from Danish Agricultural Advisory Service

Purpose of the SMN: Estimation of farmlands 'N-requirements

SMN identification: DK03

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: pedological horizons
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: single sample, replicates (for water retention)
    Number of subsamples: 1 (3 for water retention)
    Disturbed/undisturbed: disturbed (undisturbed for water retention)
    Sample quantities:

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method:

Monitoring sites (MS)

Number of MS: 858
Year of first sampling: 1987
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Denmark

Country of the soil monitoring network (SMN): Denmark

Operator (name, institute): T. Ballstroem, data from Forest & Landscape Denmark

Purpose of the SMN: Forest health

SMN identification: DK04

National sampling strategy: judgmental sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-5, 5-10, 10-20
  Sampling
    Sampling strategy: transect line
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 1
    Disturbed/undisturbed: disturbed (undisturbed for water retention)
    Sample quantities: 500g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method:

Monitoring sites (MS)

Number of MS:
Year of first sampling: 1990
Number of campaign: 10
Time step: 1

Comments
No data access

Description of soil monitoring networks
Estonia

Country of the soil monitoring network (SMN): Estonia

Operator (name, institute): P. Penu and T. Köster, Agricultural Research Council

Purpose of the SMN: soil quality observation

SMN identification: ES01

National sampling strategy: judgmental sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: pedological horizons, 0-30 cm and to the bedrock
  Sampling
    Humic layer
    Sampling strategy: transect
    Size and resolution of the sampling area: 180 m
    Replicates or composite: composite + pedological horizons
    Number of subsamples: 50
    Disturbed/undisturbed: disturbed
    Sample quantities: 300g
    Subsoil
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: 1 single sample per horizon
    Number of subsamples: 1
    Disturbed/undisturbed: disturbed
    Sample quantities: 300g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: until constant weight
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried ad sieved
  Conservation method:

Monitoring sites (MS)

Number of MS: 21
Year of first sampling: 1983 to 2004
Number of campaign: 1, 2 or 3
Time step: 10 or 20 years

Comments

Description of soil monitoring networks
Estonia

Country of the soil monitoring network (SMN): Estonia

Operator (name, institute): P. Penu and T. Köster, Agricultural Research Council

Purpose of the SMN: soil fertility

SMN identification: ES02

National sampling strategy: judgmental sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: no
  Sampling depth: fixed depth, 0-20 cm
  Sampling
    Sampling strategy: grid
    Size and resolution of the sampling area: 3-5 ha
    Replicates or composite: composite
    Number of subsamples: 30-40
    Disturbed/undisturbed: disturbed
    Sample quantities: 300g

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: until constant weight
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried ad sieved
  Conservation method:

Monitoring sites (MS)

Number of MS: 1462
Year of first sampling: 2004-2005
Number of campaign: 1
Time step: 5 years

Comments

Description of soil monitoring networks
Estonia

Country of the soil monitoring network (SMN): Estonia

Operator (name, institute): V. Petersell, Geological Survey of Estonia

Purpose of the SMN: geochemical atlas of Estonian soil humus horizon

SMN identification: ES04

National sampling strategy:

Site sampling strategy
  Site area delineation:
  Written protocol:
  Sampling depth: humus horizon
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite:
    Number of subsamples:
    Disturbed/undisturbed:
    Sample quantities:

Soil description:

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature:
    Duration:
  Sieving:
    Size:
    Manual or mechanical:

Samples archiving
  Archive samples:
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 1550
Year of first sampling:
Number of campaign:
Time step:

Comments
The accuracy of the georeferencing is around 25 m till 100 m. So we can not take into account these sites.

Description of soil monitoring networks
Finland

Country of the soil monitoring network (SMN): Finland

Operator (name, institute): H.Lilja, MTT Agrifood Research Finland

Purpose of the SMN: heavy metals and nutrients

SMN identification: FI01

National sampling strategy: random sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-20, 20-40 cm
  Sampling
    Sampling strategy: random
    Size and resolution of the sampling area:
    Replicates or composite:
    Number of subsamples:
    Disturbed/undisturbed:
    Sample quantities:

Soil description:

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving:
    Size:
    Manual or mechanical:

Samples archiving
  Archive samples:
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 117
Year of first sampling: 1992
Number of campaign: 2
Time step: 5 year

Comments

Description of soil monitoring networks
Finland

Country of the soil monitoring network (SMN): Finland

Operator (name, institute): H.Lilja, MTT Agrifood Research Finland

Purpose of the SMN: heavy metals and nutrients

SMN identification: FI02

National sampling strategy: nested pattern with systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-20 cm
  Sampling
    Sampling strategy: grid
    Size and resolution of the sampling area: 10 x 10 m
    Replicates or composite: composite
    Number of subsamples: 4
    Disturbed/undisturbed:
    Sample quantities:

Soil description:

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical:

Samples archiving
  Archive samples:
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 705
Year of first sampling: 1974
Number of campaign: 3
Time step: 12 year

Comments

Description of soil monitoring networks
France

Country of the soil monitoring network (SMN): France

Operator (name, institute): C. Jolivet, Institut National de la Recherche Agronomique (INRA)

Purpose of the SMN: soil quality

SMN identification: FR01

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-30; 30-50 cm
  Sampling
    Sampling strategy: grid
    Size and resolution of the sampling area: 20x20m, resolution 2x2m
    Replicates or composite: composite
    Number of subsamples: 25
    Disturbed/undisturbed: disturbed
    Sample quantities: 6000g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: 10 days
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried
  Conservation method: controlled room temperature (5-20°C)

Monitoring sites (MS)

Number of MS: 1605
Year of first sampling: from 2001 to 2006
Number of campaign: 1
Time step: 10 years

Comments

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Description of soil monitoring networks
Germany

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Country of the soil monitoring network (SMN): Germany

Operator (name, institute): R. Baritz, German Geological Survey (BGR)

Purpose of the SMN: soil quality

SMN identification: GE01

National sampling strategy: stratified pattern with directed sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horizons
  Sampling
    Sampling strategy: circle
    Size and resolution of the sampling area: around 1000m²
    Replicates or composite: composite
    Number of subsamples: 18
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: based on a soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air/oven
    Temperature: around 40°C
    Duration:
  Sieving: yes
    Size:
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state: dried and frozen
  Conservation method: cool (15°C) and dark atmosphere (dried sample) or frozen (-18°C) and away from light (frozed sample)

Monitoring sites (MS)

Number of MS: 829
Year of first sampling: from 1986
Number of campaign: 1
Time step: 10 years

Comments
Detailed description: BARTH, N.; BRANDTNER, W.; CORDSEN, E.; DANN, T.; EMMERICH, K.-H.; FELDHAUS, D.;KLEEFISCH, B.; SCHILLING, B.; UTERMANN, J. (2001): Permanent Soil Monitoring: Installation and Operation of Soil monitoring Sites. Prepared by the ad hoc working group "Permanent Soil Monitoring of the Standing Committee Basic Information of the Federal-*Land* Working Group soil protection (LABO).

Some other inventories programs in Germany are described just below.

Country report to accompany the meta data delivery to ENVASSO WP2
R.Baritz

Status of soil monitoring and soil inventories in Germany

With respect to the definition of „monitoring site" as adopted in the current glossary of ENVASSO (each site which has been sampled at least one time and has been located so accurately that it can be re-sampled at any time is a monitoring site), a huge number of inventory sites exits in Germany. The large majority of these sites were visited only once, in the frame of soil mapping and land evaluation. For example, 28,000 borings were conducted during mapping in Lower Saxony, or 45,000 sampling locations in Northrhine-Westfalia, 4.600 soil profiles in Bavaria. These sites have widely differing sampling dates, the campaigns are stretched over long time and mapping intervals, and the data bases have greatly differing levels of quality control. Further definitional aspects with regard to these inventories, and in particular, the data status in the federal states in Germany were covered in Baritz (2005).

In the context of the information needs in ENVASSO and European soil monitoring, those sites were reported for Germany which belong to an established network of sites, based on an agreed programme, funding, and the declared intention to repeat the sampling in certain intervals. For Germany, two main monitoring networks exist: *Bodendauerbeobachtung* (BDF, permanent soil monitoring), and the *Bodenzustandserhebung (BZE)* of forest soils. Since the forest monitoring is investigated separately by WP2 (with independent data request to the ICP Forests), only the meta data for the BDF sites are provided by BGR.

The BFD monitoring is based on a well-defined monitoring scheme with a specified (minimum) set of parameters to be determined and a definite cycle of sampling repetition (ca. 830 sites for all land uses). Because German soil monitoring sites are selected in a stratified approach to cover a variety of specific site conditions, it cannot be expected to have normally distributed data. On that basis, it does not seem mathematically sound to calculate means, variances, etc. which are needed for the calculation of minimum detectable change. On the other hand, the BDF sampling design is sufficiently accurate to determine trend/change at the plot level rather than at the regional level within certain inventory strata.

The BZE network contains the ICP Forests Level 1 inventory grid. The grid has been condensed to roughly 8x8 km for Germany, resulting in ca. 1,800 inventory locations. The whole network of sites is currently being resampled in the frame of the BioSoil project.

In addition to these two monitoring schemes, several other large scale programmes exist:

- *Deutsche Umweltprobenbank* (German environmental sample base)

- *Biosphärenreservate* (biosphere reserves data base)

- *National Air Pollution Monitoring*

- *UN ECE ICP Forests Level 2 (N=86; partly contained in the BDF programme)*

- *UN ECE Integrated monitoring sites (IM) (N=2)*

These programmes contain soil information, but cannot be considered soil inventories nor monitoring because the information gathered is not always based on sampling, and does not cover the complete soil inventory sampling and analytical schemes (exception: UN ECE monitoring)

In addition, in some federal lands, auxiliary inventories were established with the idea to receive representative analytical data (the following list is not complete).

- new federal states (East Germany): *Ökologische Waldzustandserhebung* (*ÖWK*) [survey of ecological state of forests]

- peat inventory in Mecklenburg Vorpommern: N= 8,246

- representative, typical soil inventory sites (benchmark sites) established during mapping: e.g. N= 315 in Baden-Württemberg

- 4 x 4 km soil inventory programme of Saxony (*Bodenmessprogramm Sachsen*) (N=1164) [Saxony has also condensed the Level I grid in forests to 4x4 km].

For all these data, BGR has not asked data providers for access rights and, therefore, has no legal access to the data.

Baritz, R. (2005). Status of soil data in EU25 – soil maps, soil monitoring, soil data bases. European Commission DG Environment, Brussels. (unpublished report)

Description of soil monitoring networks **Greece**

Country of the soil monitoring network (SMN): Greece

Operator (name, institute): C. Kosmas, Agricultural University of Athens

Purpose of the SMN: variable purpose (soil survey, soil genesis, soil erosion, landslide, soil organic matter, nutrients availability, nitrate leaching, metal contamination, vine growth)

SMN identification: GR…

National sampling strategy: judgmental sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: no
  Sampling depth: fixed depth 0-30 cm (50/134) or pedological horizon (83/134) 0-7 to 0-47 cm
  Sampling
    Sampling strategy: random
    Size and resolution of the sampling area:
    Replicates or composite: replicates or composite
    Number of subsamples: 3 (replicates), 4 to 16 (composite)
    Disturbed/undisturbed: disturbed
    Sample quantities: 2000g

Soil description: based on soil profile or auger holes

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: 2 days
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes (2/134, soil erosion) or no (132/134)
  Sample state: dried and sieved
  Conservation method: cold room

Monitoring sites (MS)

Number of MS: 134
Year of first sampling: from 1964 to 2005
Number of campaign: mostly 1 (129/134), 3, 17 or 18
Time step: 1 year for the 5 monitoring sites

Comments
The 134 monitoring sites are not a part of a SMN. They all are isolated monitoring sites.

Description of soil monitoring networks
Hungary

Country of the soil monitoring network (SMN): Hungary

Operator (name, institute): J. Berényi Üveges, Central Service for Plant protection and Soil Conservation

Purpose of the SMN: basic soil properties

SMN identification: HU01

National sampling strategy: stratified pattern with directed sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: fixed depth 0-30; 30-60; 60-90 cm
  Sampling
    Sampling strategy: circle (r=50m)
    Size and resolution of the sampling area: 7850 m²
    Replicates or composite: composite
    Number of subsamples: 9
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature: 40°C
    Duration: 2 weeks
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method:

Monitoring sites (MS)

Number of MS: 1038
Year of first sampling: 1992
Number of campaign: 14
Time step: 1 year

Comments

Description of soil monitoring networks
Hungary

Country of the soil monitoring network (SMN): Hungary

Operator (name, institute): J. Berényi Üveges, Central Service for Plant protection and Soil Conservation

Purpose of the SMN: forest soil properties

SMN identification: HU02

National sampling strategy: stratified pattern with directed sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: pedological horizons, up to 150cm
  Sampling
    Sampling strategy: random
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 3
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature: 40°C
    Duration: 2 weeks
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method:

Monitoring sites (MS)

Number of MS: 197
Year of first sampling: 1992
Number of campaign: 14
Time step: 1 year

Comments

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Description of soil monitoring networks - ICP
Czech Republic, Italy, Denmark, Estonia, Finland, Germany, Hungary, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Romania, Spain

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Country of the soil monitoring network (SMN): Czech Republic, Italy, Denmark, Estonia, Finland, Germany, Hungary, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Romania, Spain

Operator (name, institute): G. Becher, ICP Forests, Data unit

Purpose of the SMN: Forest soil Monitoring, level I

SMN identification: ICP1

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horizon and fixed depth, organic layer; 0-10; 10-20 cm
  Sampling
    Sampling strategy: circle
    Size and resolution of the sampling area: 400 m²
    Replicates or composite: composite
    Number of subsamples: 6
    Disturbed/undisturbed: disturbed
    Sample quantities: 500g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air or oven
    Temperature: <40°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: under normal room conditions with minimal temperature and humidity fluctuations, shielded from incident light.

Monitoring sites (MS)

Country	Number of MS	Year of first sampling	Number of campaign	Time step (yr)
Czech Republic	516	1993-1994	1	
Italy	313	1993-1994	1	
Denmark	27	1993-1994	1	
Estonia	101	1993-1994	1	
Finland	720	1993-1994	1	
Germany	456	1993-1994	1	
Hungary	79	1993-1994	1	
Latvia	102	1993-1994	1	

Country	Number of MS	Year of first sampling	Number of campaign	Time step (yr)
Lithuania	74	1993-1994	1	
Luxembourg	4	1993-1994	1	
Netherlands	14	1993-1994	1	
Poland	528	1993-1994	1	
Portugal	171	1993-1994	1	
Romania	258	1993-1994	1	
Spain	681	1993-1994	1	

Comments
Information from the ICP Forest manual "Part IIIa: Sampling and analysis of soil and Part IIIb: Soil solution Collection and analysis". Only the mandatory parameters are selected.

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Description of soil monitoring networks - ICP
Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Spain.

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Country of the soil monitoring network (SMN): Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Spain.

Operator (name, institute): G. Becher, ICP Forests, Data unit

Purpose of the SMN: Forest soil Monitoring, level II

SMN identification: ICP2

National sampling strategy: judgmental sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horizon and fixed depth, organic layer; 0-10; 10-20, 20-40, 40-80 cm
  Sampling
    Sampling strategy: circle
    Size and resolution of the sampling area: 400 m²
    Replicates or composite: 3 composites
    Number of subsamples: 8
    Disturbed/undisturbed: disturbed, both for 0-10 cm layer
    Sample quantities: 500g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air or oven
    Temperature: <40°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: under normal room conditions with minimal temperature and humidity fluctuations, shielded from incident light.

Monitoring sites (MS)

Country	Number of MS	Year of first sampling	Number of campaign	Time step (yr)
Czech Republic	15	1993-1995	1	
Italy	28	1993-1995	1	
Denmark	20	1993-1995	1	
Estonia	7	1993-1995	1	
Finland	31	1993-1995	1	
France	100	1993-1995	1	

Country	Number of MS	Year of first sampling	Number of campaign	Time step (yr)
Germany	95	1993-1995	1	
Hungary	15	1993-1995	1	
Latvia	3	1993-1995	1	
Lithuania	9	1993-1995	1	
Luxembourg	2	1993-1995	1	
Netherlands	14	1993-1995	1	
Norway	19	1993-1995	1	
Poland	150	1993-1995	1	
Portugal	13	1993-1995	1	
Romania	13	1993-1995	1	
Spain	58	1993-1995	1	

Comments
Information from the ICP Forest manual "Part IIIa: Sampling and analysis of soil and Part IIIb: Soil solution Collection and analysis". Only the mandatory parameters are selected.

Description of soil monitoring networks
France

Country of the soil monitoring network (SMN): France

Operator (name, institute): J.P. Renaud, French Forest Institute

Purpose of the SMN: Forest soil Monitoring, level I

SMN identification: FR02

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horizon and fixed depth, organic layer; 0-10; 10-20 cm
  Sampling
    Sampling strategy: circle
    Size and resolution of the sampling area: 400 m²
    Replicates or composite: composite
    Number of subsamples: 6
    Disturbed/undisturbed: disturbed
    Sample quantities: 500g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air or oven
    Temperature: <40°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: under normal room conditions with minimal temperature and humidity fluctuations, shielded from incident light.

Monitoring sites (MS)

Number of MS: 523
Year of first sampling: 1993-1994
Number of campaign: 1
Time step:

Comments
Information from the ICP Forest manual "Part IIIa: Sampling and analysis of soil and Part IIIb: Soil solution Collection and analysis". Only the mandatory parameters are selected.
Analysis

Parameter	Sample concerned	analytical method				
		Name	reference	laboratory	Quality control	

Description of soil monitoring networks
Description of soil monitoring networks **Norway**

Country of the soil monitoring network (SMN): Norway

Operator (name, institute): A.H. Arnoldussen, Norsk institutt for skog og landskap

Purpose of the SMN: Forest soil Monitoring, level I

SMN identification: NO01

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horizon and fixed depth, organic layer; 0-10; 10-20 cm
  Sampling
    Sampling strategy: circle
    Size and resolution of the sampling area: 400 m²
    Replicates or composite: composite
    Number of subsamples: 6
    Disturbed/undisturbed: disturbed
    Sample quantities: 500g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air or oven
    Temperature: <40°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: under normal room conditions with minimal temperature and humidity fluctuations, shielded from incident light.

Monitoring sites (MS)

Number of MS: 1038
Year of first sampling:
Number of campaign: 1
Time step:

Comments
Information from the ICP Forest manual "Part IIIa: Sampling and analysis of soil and Part IIIb: Soil solution Collection and analysis". Only the mandatory parameters are selected.

Analysis

Parameter	Sample concerned	analytical method				
		Name	reference	laboratory	Quality control	

Description of soil monitoring networks
Slovakia

Country of the soil monitoring network (SMN): Slovakia

Operator (name, institute): P. Pavlenda, National Forest Centre

Purpose of the SMN: Forest soil Monitoring, level I

SMN identification: ICP1

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horizon and fixed depth, organic layer; 0-10; 10-20 cm
  Sampling
    Sampling strategy: circle
    Size and resolution of the sampling area: 400 m²
    Replicates or composite: composite
    Number of subsamples: 6
    Disturbed/undisturbed: disturbed
    Sample quantities: 500g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air or oven
    Temperature: <40°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: under normal room conditions with minimal temperature and humidity fluctuations, shielded from incident light.

Monitoring sites (MS)

Number of MS: 111
Year of first sampling:
Number of campaign: 1
Time step:

Comments
Information from the ICP Forest manual "Part IIIa: Sampling and analysis of soil and Part IIIb: Soil solution Collection and analysis". Only the mandatory parameters are selected.

Analysis

Parameter	Sample concerned	analytical method				
		Name	reference	laboratory	Quality control	

Description of soil monitoring networks
Ireland

Country of the soil monitoring network (SMN): Ireland

Operator (name, institute): P. Neville, Coillte (Irish Forest Company)

Purpose of the SMN: Forest soil Monitoring, level I

SMN identification: IE_ICP

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horizon and fixed depth, organic layer; 0-10; 10-20 cm
  Sampling
    Sampling strategy: circle
    Size and resolution of the sampling area: 400 m²
    Replicates or composite: composite
    Number of subsamples: 6
    Disturbed/undisturbed: disturbed
    Sample quantities: 500g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air or oven
    Temperature: <40°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: under normal room conditions with minimal temperature and humidity fluctuations, shielded from incident light.

Monitoring sites (MS)

Number of MS: 22
Year of first sampling:
Number of campaign: 1
Time step:

Comments
Information from the ICP Forest manual "Part IIIa: Sampling and analysis of soil and Part IIIb: Soil solution Collection and analysis". Only the mandatory parameters are selected.

Analysis

Parameter	Sample concerned	analytical method				
		Name	reference	laboratory	Quality control	

Description of soil monitoring networks
Greece

Country of the soil monitoring network (SMN): Greece

Operator (name, institute): P. Michopoulos, Forest Research Institute of Athens

Purpose of the SMN: Forest soil Monitoring, level I

SMN identification: GR_ICP

National sampling strategy: systematic sampling

Site sampling strategy
　Site area delineation: yes
　Written protocol: yes
　Sampling depth: pedological horizon and fixed depth, organic layer; 0-10; 10-20 cm
　Sampling
　　Sampling strategy: circle
　　Size and resolution of the sampling area: 400 m²
　　Replicates or composite: composite
　　Number of subsamples: 6
　　Disturbed/undisturbed: disturbed
　　Sample quantities: 500g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
　Drying
　　Method: air or oven
　　Temperature: <40°C
　　Duration:
　Sieving: yes
　　Size: 2 mm
　　Manual or mechanical:

Samples archiving
　Archive samples: yes
　Sample state: dried and sieved
　Conservation method: under normal room conditions with minimal temperature and humidity fluctuations, shielded from incident light.

Monitoring sites (MS)
Number of MS: 15
Year of first sampling:
Number of campaign: 1
Time step:

Comments
Information from the ICP Forest manual "Part IIIa: Sampling and analysis of soil and Part IIIb: Soil solution Collection and analysis". Only the mandatory parameters are selected.

Analysis

Parameter	Sample concerned	analytical method				
		Name	reference	laboratory	Quality control	

Description of soil monitoring networks
Austria - Vorarlberg

Country of the soil monitoring network (SMN): Austria - Vorarlberg

Operator (name, institute): E. Herzberger, Bundesforschungs- und Ausbildungszentrum für Wald, Naturgefahren und Landschaft (BFW)

Purpose of the SMN: Forest Soil Monitoring

SMN identification: AT10

National sampling strategy: Systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth
  Humic layer / 0-10; 10-20; 20-30; 30-50 cm
  Sampling
    Sampling strategy: 3 pits, each of them positioned near one of the 3 trees for needle-sampling, if no such trees (about 30% of the sample-plots): circle (r=17.84m(1000m2))
    Size and resolution of the sampling area: 1000 m²
    Replicates or composite: composite
    Number of subsamples: 3
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: no description

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: constant weight
  Sieving: yes
    Size: 2 mm
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state: fresh and sieved
  Conservation method:

Monitoring sites (MS)

Number of MS: 514
Year of first sampling: 1987, 1988, 1989, 1990
Number of campaign: 1 or 2
Time step: 17 to 20 years

Comments

Description of soil monitoring networks
Austria

Country of the soil monitoring network (SMN): Austria

Operator (name, institute): A.Freudenschuß, Umweltbundesamt

Purpose of the SMN: ICP-IM

SMN identification: AT14

National sampling strategy: Judgmental sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth
  Humic layer/0-5;5-10;10-20;20-30:30-50cm
  Sampling
    Sampling strategy: 3-5 auger holes mixed to one sample; humus 1 frame
    Size and resolution of the sampling area: 2 intensive plots of each 3000m2
    Replicates or composite: composite
    Number of subsamples: 96 or 102
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: based on auger hole

Pre-treatment of samples for all analyses
  Drying
    Method: air/oven
    Temperature: 30°C/105°C
    Duration: constant weight
  Sieving: yes
    Size: 2 mm
    Manual or mechanical:

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method:

Monitoring sites (MS)

Number of MS: 1
Year of first sampling: 1992
Number of campaign: 2
Time step: 12 years

Comments

Description of soil monitoring networks
Belgium (north Belgium)

Country of the soil monitoring network (SMN): Belgium (north Belgium)

Operator (name, institute): A.Verdoodt, University of Gent

Purpose of the SMN: forest soil condition monitoring (ICP Forest)

SMN identification: BE07

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horion and fixed depth,
organic layer; 0-5; 5-10; 10-20
  Sampling
    Organic layer
    Sampling strategy: random within the 4 quadrants of the plot
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 36
    Disturbed/undisturbed: both
    Sample quantities:
    Mineral layer
    Sampling strategy: random within the 4 quadrants of the plot
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 36
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: based on profile

Pre-treatment of samples for all analyses
  Drying
    Method: air/oven
    Temperature: 40°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark and dry, room temperature

Monitoring sites (MS)

Number of MS: 10
Year of first sampling: 1993
Number of campaign: 1
Time step: 10 years
Comments

Description of soil monitoring networks
Belgium (south Belgium)

Country of the soil monitoring network (SMN): Belgium (south Belgium)

Operator (name, institute): A.Verdoodt, University of Gent

Purpose of the SMN: forest soil condition monitoring (ICP Forest)

SMN identification: BE08

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horizon and fixed depth,
  organic layer; 0-10; 10-20
  Sampling
    Organic layer
    Sampling strategy: random within the 4 quadrants of the plot
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 10
    Disturbed/undisturbed: both
    Sample quantities:
    Mineral layer
    Sampling strategy: random within the 4 quadrants of the plot
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 10
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description: based on profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark and dry, room temperature

Monitoring sites (MS)

Number of MS: 21
Year of first sampling: 1994
Number of campaign: 1
Time step: 10 years
Comments

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Description of soil monitoring networks
Slovenia

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Country of the soil monitoring network (SMN): Slovenia

Operator (name, institute): P. Simoncic, Slovenian Forestry Institute

Purpose of the SMN: Forest focus - level I (ICP Forest)

SMN identification: SI09

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth: organic layers, 0-5, 5-10, 10-20, 20-40, 40-60, 60-80 cm
  Sampling
    Sampling strategy: cross
    Size and resolution of the sampling area: 4 pits in main direction (N, S, E, W) + 1 pit in center
    Replicates or composite: composite
    Number of subsamples: 5
    Disturbed/undisturbed: disturbed
    Sample quantities: 500 g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature: <40°C
    Duration: at least 3 weeks
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark room

Monitoring sites (MS)

Number of MS: 45
Year of first sampling: 1995 or 2006
Number of campaign: 1 or 2
Time step: 10 or 11 years

Comments

Description of soil monitoring networks
Slovenia

Country of the soil monitoring network (SMN): Slovenia

Operator (name, institute): P. Simoncic, Slovenian Forestry Institute

Purpose of the SMN: Forest focus - level II (ICP Forest)

SMN identification: SI10

National sampling strategy: judgmental sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth: organic layers, 0-5, 5-10, 10-20, 20-40, 40-60, 60-80 cm
  Sampling
    Sampling strategy: lines
    Size and resolution of the sampling area: 3 lines; 8 pits in each lines
    Replicates or composite: 3 composites
    Number of subsamples: 8
    Disturbed/undisturbed: disturbed
    Sample quantities: 500 g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature: <40°C
    Duration: at least 3 weeks
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark room

Monitoring sites (MS)

Number of MS: 11
Year of first sampling: 2004 or 2006
Number of campaign: 1
Time step: 5 or 10 years

Comments

Description of soil monitoring networks
Ireland

Country of the soil monitoring network (SMN): Ireland

Operator (name, institute): D. Fay, Irish Agriculture and Food Development Authority

Purpose of the SMN: heavy metal content

SMN identification: IE01

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth 0-10 cm
  Sampling
    Sampling strategy: grid
    Size and resolution of the sampling area: 20m x 20 m, resolution 5m x 5m
    Replicates or composite: composite
    Number of subsamples: 25
    Disturbed/undisturbed: disturbed
    Sample quantities: 1500g

Soil description: no description

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: room temperature

Monitoring sites (MS)

Number of MS: 1310
Year of first sampling: 1995 and 2002
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Lithuania

Country of the soil monitoring network (SMN): Lithuania

Operator (name, institute): V.V.Buivydaite, Lithuanian University of Agriculture

Purpose of the SMN: soil contamination and other agrochemical properties

SMN identification: LT01

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: no
  Sampling depth: fixed depth 0-20; 20-40; 40-60 cm
  Sampling
    Sampling strategy: random
    Size and resolution of the sampling area: 10 x 10 m
    Replicates or composite: composites
    Number of subsamples: 1
    Disturbed/undisturbed: disturbed
    Sample quantities: 1500g

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature: 35°C
    Duration: 24-36 days
  Sieving: yes
    Size: 1 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes (or no)
  Sample state: dried and sieved
  Conservation method:

Monitoring sites (MS)

Number of MS: 63
Year of first sampling: 1993 to 1997
Number of campaign: 2
Time step: 5 years

Comments

Description of soil monitoring networks
Latvia

Country of the soil monitoring network (SMN): Latvia

Operator (name, institute): A. Karklins, data from State Land Service

Purpose of the SMN: Agricultural land monitoring

SMN identification: LV01

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth 0-20 cm
  Sampling
    Sampling strategy: nest
    Size and resolution of the sampling area: 2 x 2 m
    Replicates or composite: 5 composites
    Number of subsamples: 20
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature: 20°C
    Duration: week
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: no
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 20
Year of first sampling: 1992
Number of campaign: 8
Time step: 1 year

Comments

Description of soil monitoring networks
Malta

Country of the soil monitoring network (SMN): Malta

Operator (name, institute): S. Camilleri, S. Sammut, Ministry for Rural Affairs & the Environment

Purpose of the SMN: soil inventory

SMN identification: MT01

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth 0-15; 50-55 cm
  Sampling
    Sample 0-15 cm
    Sampling strategy: grid
    Size and resolution of the sampling area: 4 x 4 m, resolution 1 x 1 m
    Replicates or composite: composite
    Number of subsamples: 25
    Disturbed/undisturbed: disturbed
    Sample quantities: 1500g
    Sample 50-55 cm
    Sampling strategy: profile
    Size and resolution of the sampling area:
    Replicates or composite: single
    Number of subsamples: 1
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: oven
    Temperature: 30-40
    Duration: 2 days
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: room temperature

Monitoring sites (MS)

Number of MS: 271
Year of first sampling: 2002
Number of campaign: 1
Time step: 5 to 20 years
Comments

Description of soil monitoring networks
Malta

Country of the soil monitoring network (SMN): Malta

Operator (name, institute): S. Camilleri, S. Sammut, Ministry for Rural Affairs & the Environment

Purpose of the SMN: soil contamination, organic matter, salinity

SMN identification: MT02

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth 0-15; 50-55 cm
  Sampling
    Sample 0-15 cm
    Sampling strategy: grid
    Size and resolution of the sampling area: 4 x 4 m, resolution 1 x 1 m
    Replicates or composite: composite
    Number of subsamples: 25
    Disturbed/undisturbed: disturbed
    Sample quantities: 1500g
    Sample 50-55 cm
    Sampling strategy: profile
    Size and resolution of the sampling area:
    Replicates or composite: single
    Number of subsamples: 1
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000g

Soil description: based on auger hole

Pre-treatment of samples for all analyses
  Drying
    Method: oven
    Temperature: 30-40
    Duration: 2 days
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: room temperature

Monitoring sites (MS)
Number of MS: 68
Year of first sampling: 2002
Number of campaign: 1
Time step: 5 years
Comments MT02 is included in the MT01. The monitoring sites of MT02 are a part of the MT01

Description of soil monitoring networks
Malta

Country of the soil monitoring network (SMN): Malta

Operator (name, institute): S. Camilleri, S. Sammut, Ministry for Rural Affairs & the Environment

Purpose of the SMN: contamination

SMN identification: MT03

National sampling strategy: judgmental sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth 0-15 cm
  Sampling
    Sampling strategy: grid
    Size and resolution of the sampling area: 4 x 4 m, resolution 1 x 1 m
    Replicates or composite: composite
    Number of subsamples: 25
    Disturbed/undisturbed: disturbed
    Sample quantities: 1500g

Soil description: no description

Pre-treatment of samples for all analyses
  Drying
    Method: oven
    Temperature: 30-40
    Duration: 2 days
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: room temperature

Monitoring sites (MS)

Number of MS: 49
Year of first sampling: 2003
Number of campaign: 1
Time step: 5 years

Comments

Description of soil monitoring networks
Malta

Country of the soil monitoring network (SMN): Malta

Operator (name, institute): S. Camilleri, S. Sammut, Ministry for Rural Affairs & the Environment

Purpose of the SMN: contamination, salinity

SMN identification: MT04

National sampling strategy: judgmental sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth 0-15; 50-55 cm
  Sampling
    Sample 0-15 cm
    Sampling strategy: grid
    Size and resolution of the sampling area: 4 x 4 m, resolution 1 x 1 m
    Replicates or composite: composite
    Number of subsamples: 25
    Disturbed/undisturbed: disturbed
    Sample quantities: 1500g
    Sample 50-55 cm
    Sampling strategy: profile
    Size and resolution of the sampling area:
    Replicates or composite: single
    Number of subsamples: 1
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000g

Soil description: no description

Pre-treatment of samples for all analyses
  Drying
    Method: oven
    Temperature: 30-40
    Duration: 2 days
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: room temperature

<u>Monitoring sites (MS)</u>

Number of MS: 25
Year of first sampling: 2004
Number of campaign: 1
Time step: 5 years
<u>Comments</u>

Description of soil monitoring networks
Malta

Country of the soil monitoring network (SMN): Malta

Operator (name, institute): S. Camilleri, S. Sammut, Ministry for Rural Affairs & the Environment

Purpose of the SMN: salinity

SMN identification: MT05

National sampling strategy: judgmental sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth 0-15cm
  Sampling
    Sampling strategy: random
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 15
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000g

Soil description: no description

Pre-treatment of samples for all analyses
  Drying
    Method: oven
    Temperature: 30-40
    Duration: 2 days
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: room temperature

Monitoring sites (MS)

Number of MS: 43
Year of first sampling: 2000
Number of campaign: 1 or 2
Time step: 5 years

Comments

Description of soil monitoring networks
Northern Ireland

Country of the soil monitoring network (SMN): Northern Ireland

Operator (name, institute): A. Higgins and J. Crawford, Agriculture Food and Environmental Science Division, Agri-Food & Biosciences Institute

Purpose of the SMN: geochemical database

SMN identification: NI01

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation:
  Written protocol:
  Sampling depth: fixed depth, 0-15 cm
  Sampling
    Sampling strategy: grid
    Size and resolution of the sampling area:
    Replicates or composite:
    Number of subsamples:
    Disturbed/undisturbed:
    Sample quantities:

Soil description:

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature:
    Duration:
  Sieving:
    Size:
    Manual or mechanical:

Samples archiving
  Archive samples:
  Sample state:
  Conservation method:

<u>**Monitoring sites (MS)**</u>

Number of MS: 582
Year of first sampling:
Number of campaign:
Time step:

<u>**Comments**</u>
More details in: Jordan C, Cruickshank J G, Higgins A J and Hamill K P 1997 The Soil Geochemical Atlas of Northern Ireland. The Department of Agriculture for Northern Ireland, Belfast, UK.

Description of soil monitoring networks
The Netherlands

Country of the soil monitoring network (SMN): The Netherlands

Operator (name, institute): M. Rutgers, National Institute for Public
Purpose of the SMN: biodiversity and contamination

SMN identification: NL01

National sampling strategy: stratified pattern with random sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: fixed depth 0-10; 0-20 cm
  Sampling
    topsoil
    Sampling strategy: free
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples:
    Disturbed/undisturbed: both
    Sample quantities: 5000g
    worms
    Sampling strategy: column
    Size and resolution of the sampling area:
    Replicates or composite: replicates
    Number of subsamples: 6
    Disturbed/undisturbed: both
    Sample quantities: worms

Soil description: no description

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature: 4 or 10°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: fresh
  Conservation method: 4°C

Monitoring sites (MS)

Number of MS: 503
Year of first sampling: 1993 to 2004
Number of campaign:
Time step: 5 years
Comments

Description of soil monitoring networks
The Netherlands

Country of the soil monitoring network (SMN): The Netherlands

Operator (name, institute): M. Rutgers
Purpose of the SMN: check the state of the abiotic environment, nature conservation, and biodiversity

SMN identification:

National sampling strategy:

Monitoring sites (MS)

Number of MS: from 66 to 490
Year of first sampling:
Number of campaign:
Time step: 2, 4, 8 or 10 years

Comments
There are many monitoring activities in the Netherlands, but we don't manage to get the data.

The soil analyses are variable depending on the province.

Description of soil monitoring networks
Poland

Country of the soil monitoring network (SMN): Poland

Operator (name, institute): J. Niedzwiecki, T. Stuczynski, Institute of soil Science and plant cultivation, Pulawy
Purpose of the SMN: soil chemical properties and soil contamination

SMN identification: PL01

National sampling strategy: judgmental sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: yes
  Sampling depth: pedological horizon, 0-20 cm
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 10
    Disturbed/undisturbed: disturbed
    Sample quantities: 200g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration: 2 or 4 days
  Sieving: yes
    Size: 1 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: stocked at room temperature

Monitoring sites (MS)

Number of MS: 216
Year of first sampling: 1995
Number of campaign: 2
Time step: 5 years

Comments

Description of soil monitoring networks
Portugal

Country of the soil monitoring network (SMN): Portugal

Operator (name, institute): M.C. Gonçalves, Estação Agronómica Nacional

Purpose of the SMN: soil salinisation due to the quality of irrigation water

SMN identification: PT01

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: no
  Sampling depth: fixed depth, 0-20, 20-40, 40-60, 60-80, 80-100 cm
  Sampling
    Sampling strategy: auger holes
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 2
    Disturbed/undisturbed: disturbed
    Sample quantities: 2000g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature: 18 to 25°C
    Duration: 8 to30 days
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: no
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 1
Year of first sampling: 2001
Number of campaign:
Time step: 4 years

Comments

Description of soil monitoring networks
Portugal

Country of the soil monitoring network (SMN): Portugal

Operator (name, institute): R. Dias Mano, National Research Institute for Agriculture and Fisheries

Purpose of the SMN: heavy metals in agricultural soils

SMN identification: PT02

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol:
  Sampling depth: fixed depth, 0-20, 20-40; 40-60; 60-80 cm
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 16
    Disturbed/undisturbed: disturbed
    Sample quantities:

Soil description:

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature: 35 to 40°C
    Duration: days
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples:
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 110
Year of first sampling: from 1999 to 2001
Number of campaign: 1
Time step:

Comments
Dias, R.M.S., Simões, A.M.O., Soveral-Dias, J.C., Oliveira, R., Rodrigues, P.C. & Santos, F. dos. 2005. Metais pesados em solos com ocupação agrícola em Portugal. Cádmio, Cobre, Níquel e Zinco [Heavy metals in Portuguese agricultural soils. Cadmium, Copper, Nickel and Zinc]. Lisboa, Portugal: Instituto Nacional de Investigação Agrária e das Pescas / Laboratory of Agricultural Chemistry Rebelo da Silva. Under publication in Revista das Ciências Agrárias.

Description of soil monitoring networks
Romania

Country of the soil monitoring network (SMN): Romania

Operator (name, institute): C. Simota, Research Institute for Soil Science and Agrochemistry (ICPA)

Purpose of the SMN: soil physical state, soil chemical state (including humus), soil pollution with heavy metals and pesticides

SMN identification: RO01

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horizon, to 150 cm
  Sampling
    Sampling strategy: soil profile
    Size and resolution of the sampling area: 20 x 20 m
    Replicates or composite: replicates
    Number of subsamples: 4
    Disturbed/undisturbed: undisturbed
    Sample quantities: 500g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method:

Monitoring sites (MS)

Number of MS: 941
Year of first sampling:
Number of campaign:
Time step:

Comments

The monitoring sites of the 3 Romanian monitoring networks are the same. The SMNs have been splitted in three monitoring systems: one for agrophysical data based on soil profiles and undisturbed samples, one for soil texture and soil chemical properties based on disturbed samples collected in soil profiles, and the other one for monitoring heavy metals and pesticides.

Description of soil monitoring networks
Romania

Country of the soil monitoring network (SMN): Romania

Operator (name, institute): C. Simota, Research Institute for Soil Science and Agrochemistry (ICPA)

Purpose of the SMN: soil chemical state (including humus)

SMN identification: RO02

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horizon, to 150 cm
  Sampling
    Sampling strategy: soil profile
    Size and resolution of the sampling area: 20 x 20 m
    Replicates or composite: replicates
    Number of subsamples: 4
    Disturbed/undisturbed: disturbed
    Sample quantities: 1500g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method:

Monitoring sites (MS)

Number of MS: 941
Year of first sampling:
Number of campaign:
Time step:

Comments
The monitoring sites of the 3 Romanian monitoring networks are the same. The SMNs have been splitted in three monitoring systems: one for agrophysical data based on soil profiles and undisturbed samples, one for soil texture and soil chemical properties based on disturbed samples collected in soil profiles, and the other one for monitoring heavy metals and pesticides.

Description of soil monitoring networks
Romania

Country of the soil monitoring network (SMN): Romania

Operator (name, institute): C. Simota, Research Institute for Soil Science and Agrochemistry (ICPA)

Purpose of the SMN: soil pollution with heavy metals and pesticides

SMN identification: RO03

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-10; 10-20 cm
  Sampling
    Sampling strategy: random
    Size and resolution of the sampling area: 20 x 20 m
    Replicates or composite: composites
    Number of subsamples: 16
    Disturbed/undisturbed: disturbed
    Sample quantities: 1500g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method:

Monitoring sites (MS)

Number of MS: 941
Year of first sampling:
Number of campaign:
Time step:

Comments
The monitoring sites of the 3 Romanian monitoring networks are the same. The SMNs have been splitted in three monitoring systems: one for agrophysical data based on soil profiles and undisturbed samples, one for soil texture and soil chemical properties based on disturbed samples collected in soil profiles, and the other one for monitoring heavy metals and pesticides.

Description of soil monitoring networks
Romania

Country of the soil monitoring network (SMN): Romania

Operator (name, institute): C. Simota, Research Institute for Soil Science and Agrochemistry (ICPA)

Purpose of the SMN: soil erosion

SMN identification: RO_erosion

National sampling strategy: judgmental sampling

Site sampling strategy
  Site area delineation:
  Written protocol:
  Sampling depth:
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area: 20 x 20 m
    Replicates or composite:
    Number of subsamples:
    Disturbed/undisturbed:
    Sample quantities:

Soil description:

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature:
    Duration:
  Sieving:
    Size:
    Manual or mechanical:

Samples archiving
  Archive samples:
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 4
Year of first sampling:
Number of campaign:
Time step:

Comments

Description of soil monitoring networks
Scotland

Country of the soil monitoring network (SMN): Scotland

Operator (name, institute): A. Lilly and G. Hudson, Macaulay Institute, Aberdeen

Purpose of the SMN: To provide an unbiased sample to characterise or quantify soil distribution and variability at a broad, regional scale in Scotland.

SMN identification: SC01

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation:
  Written protocol: yes
  Sampling depth: pedological horizon, to 100 cm
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: single
    Number of subsamples: 1
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000-1500g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air-drying on waxed paper in aluminium alloy trays
    Temperature: 30°C
    Duration: constant weight
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: stored in plastic pot in basement archive
  Conservation method: Dried at 30°C, sieved, 350 g < 2mm mineral soil and 100g milled organic soil retained in pots

Monitoring sites (MS)

Number of MS: 721
Year of first sampling: 1978 to 1987
Number of campaign:
Time step:

Comments

Description of soil monitoring networks
Slovenia

Country of the soil monitoring network (SMN): Slovenia

Operator (name, institute): M. Zupan, Centre for Soil and Environmental Science

Purpose of the SMN: soil contamination (TKCE)

SMN identification: SI01

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-5, 5-20, 20-30 or 0-20, 20-30 (arable land)
  Sampling
    Sampling strategy: circle (r=30-50m), 6 pits
    Size and resolution of the sampling area: 2826 to 7850 m²
    Replicates or composite: composite
    Number of subsamples: 30
    Disturbed/undisturbed: disturbed
    Sample quantities: 500 g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature: <40°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark room

Monitoring sites (MS)

Number of MS: 116
Year of first sampling: 1989
Number of campaign: 1
Time step: no, 8 or 14 years

Comments

Description of soil monitoring networks
Slovenia

Country of the soil monitoring network (SMN): Slovenia

Operator (name, institute): M. Zupan, Centre for Soil and Environmental Science

Purpose of the SMN: soil contamination (MOTS)

SMN identification: SI02

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-5, 5-20, 20-30 or 0-20, 20-30 (arable land)
  Sampling
    Sampling strategy: circle (r=30-50m), 6 pits
    Size and resolution of the sampling area: 2826 to 7850 m²
    Replicates or composite: composite
    Number of subsamples: 30
    Disturbed/undisturbed: disturbed
    Sample quantities: 500 g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature: <40°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark room

Monitoring sites (MS)

Number of MS: 79
Year of first sampling: 1991
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Slovenia

Country of the soil monitoring network (SMN): Slovenia

Operator (name, institute): M. Zupan, Centre for Soil and Environmental Science

Purpose of the SMN: soil contamination (NM)

SMN identification: SI03

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-5, 5-20, 20-30 or 0-20, 20-30 (arable land)
  Sampling
    Sampling strategy: circle (r=30-50m), 6 pits
    Size and resolution of the sampling area: 2826 to 7850 m²
    Replicates or composite: composite
    Number of subsamples: 30
    Disturbed/undisturbed: disturbed
    Sample quantities: 500 g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature: <40°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark room

Monitoring sites (MS)

Number of MS: 12
Year of first sampling: 1994
Number of campaign: 1
Time step:

Comments

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Description of soil monitoring networks
Slovenia

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Country of the soil monitoring network (SMN): Slovenia

Operator (name, institute): M. Zupan, Centre for Soil and Environmental Science

Purpose of the SMN: soil contamination (MOP)

SMN identification: SI04

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-5, 5-20, 20-30 or 0-20, 20-30 (arable land)
  Sampling
    Sampling strategy: circle (r=30-50m), 6 pits
    Size and resolution of the sampling area: 2826 to 7850 m²
    Replicates or composite: composite
    Number of subsamples: 30
    Disturbed/undisturbed: disturbed
    Sample quantities: 500 g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature: <40°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark room

Monitoring sites (MS)

Number of MS: 2
Year of first sampling: 1995
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Slovenia

Country of the soil monitoring network (SMN): Slovenia

Operator (name, institute): M. Zupan, Centre for Soil and Environmental Science

Purpose of the SMN: soil contamination (ROTS)

SMN identification: SI05

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-5, 5-20, 20-30 or 0-20, 20-30 (arable land)
  Sampling
    Sampling strategy: circle (r=30-50m), 6 pits
    Size and resolution of the sampling area: 2826 to 7850 m²
    Replicates or composite: composite
    Number of subsamples: 30
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000 g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature: <40°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark room

Monitoring sites (MS)

Number of MS: 72
Year of first sampling: 1999
Number of campaign: 1 or 2
Time step:

Comments

Description of soil monitoring networks
Slovenia

Country of the soil monitoring network (SMN): Slovenia

Operator (name, institute): M. Zupan, Centre for Soil and Environmental Science

Purpose of the SMN: soil contamination (ROTS)

SMN identification: SI06

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-5, 5-20, 20-30 or 0-20, 20-30 (arable land)
  Sampling
    Sampling strategy: circle (r=30-50m), 6 pits
    Size and resolution of the sampling area: 2826 to 7850 m²
    Replicates or composite: composite
    Number of subsamples: 30
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000 g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature: <40°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark room

Monitoring sites (MS)

Number of MS: 60
Year of first sampling: 2001
Number of campaign: 1 or 2
Time step:

Comments

Description of soil monitoring networks
Slovenia

Country of the soil monitoring network (SMN): Slovenia

Operator (name, institute): M. Zupan, Centre for Soil and Environmental Science

Purpose of the SMN: soil contamination (ROTS)

SMN identification: SI07

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-5, 5-20, 20-30 or 0-20, 20-30 (arable land)
  Sampling
    Sampling strategy: circle (r=30-50m), 6 pits
    Size and resolution of the sampling area: 2826 to 7850 m²
    Replicates or composite: composite
    Number of subsamples: 30
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000 g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature: <40°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark room

Monitoring sites (MS)

Number of MS: 39
Year of first sampling: 2004
Number of campaign: 1
Time step:

Comments

Description of soil monitoring networks
Slovenia

Country of the soil monitoring network (SMN): Slovenia

Operator (name, institute): M. Zupan, Centre for Soil and Environmental Science

Purpose of the SMN: soil contamination (ROTS)

SMN identification: SI08

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-5, 5-20, 20-30 or 0-20, 20-30 (arable land)
  Sampling
    Sampling strategy: circle (r=30-50m), 6 pits
    Size and resolution of the sampling area: 2826 to 7850 m²
    Replicates or composite: composite
    Number of subsamples: 30
    Disturbed/undisturbed: disturbed
    Sample quantities: 500 g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature: <40°C
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: dark room

Monitoring sites (MS)

Number of MS: 32
Year of first sampling: 2005
Number of campaign: 1 or 2
Time step:

Comments

Description of soil monitoring networks
Slovakia

Country of the soil monitoring network (SMN): Slovakia

Operator (name, institute): J. Kobza, Soil Science and Conservation Research Institute

Purpose of the SMN: measurements of soil properties according to threats to soils

SMN identification: SK01

National sampling strategy: random sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: no
  Sampling depth: fixed depth, 0-10; 20-30 35-45 cm
  Sampling
    Sampling strategy: circle (r=10m)
    Size and resolution of the sampling area: 314m²
    Replicates or composite: composite
    Number of subsamples: 5
    Disturbed/undisturbed: both
    Sample quantities: 3000-5000 g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air-drying
    Temperature:
    Duration: constant weight
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried
  Conservation method:

Monitoring sites (MS)

Number of MS: 318
Year of first sampling: 1993
Number of campaign: 2
Time step: 5 years

Comments

Description of soil monitoring networks
Spain

Country of the soil monitoring network (SMN): Spain

Operator (name, institute): I. Simo Josa, University of Lleida

Purpose of the SMN: soil contamination-Heavy metals

SMN identification: SP01

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-25 cm
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples:
    Disturbed/undisturbed: both
    Sample quantities: 1500 g

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature: 35-40°C
    Duration:
  Sieving: yes
    Size:
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: cold room

Monitoring sites (MS)

Number of MS: 191
Year of first sampling: 2004
Number of campaign: 1
Time step: 1 year

Comments

Description of soil monitoring networks
Spain

Country of the soil monitoring network (SMN): Spain

Operator (name, institute): I. Simo Josa, University of Lleida

Purpose of the SMN: soil erosion

SMN identification: SP02

National sampling strategy: random sampling

Site sampling strategy
  Site area delineation: no
  Written protocol: no
  Sampling depth: pedological horizon
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite:
    Number of subsamples:
    Disturbed/undisturbed:
    Sample quantities:

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature: 35-40°C
    Duration:
  Sieving: yes
    Size:
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried
  Conservation method: cold room

Monitoring sites (MS)

Number of MS:
Year of first sampling:
Number of campaign:
Time step:

Comments
Lack of the coordinates of the monitoring sites

Description of soil monitoring networks
Spain

Country of the soil monitoring network (SMN): Spain

Operator (name, institute): I. Simo Josa, University of Lleida

Purpose of the SMN: Nutrients

SMN identification: SP03

National sampling strategy: nested pattern with systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-30 and 30-60 cm
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples:
    Disturbed/undisturbed: both
    Sample quantities: 1000 g

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature: 35-40°C
    Duration:
  Sieving: yes
    Size:
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: cold room

Monitoring sites (MS)

Number of MS:
Year of first sampling:
Number of campaign:
Time step:

Comments
Lack of the coordinates of the monitoring sites

Description of soil monitoring networks
Spain

Country of the soil monitoring network (SMN): Spain

Operator (name, institute): I. Simo Josa, University of Lleida

Purpose of the SMN: organic matter

SMN identification: SP04

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-25 cm
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples:
    Disturbed/undisturbed: both
    Sample quantities: 1500 g

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature: 35-40°C
    Duration:
  Sieving: yes
    Size:
    Manual or mechanical: manual

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: cold room

<u>Monitoring sites (MS)</u>

Number of MS: 191
Year of first sampling: 2004
Number of campaign: 1
Time step: 1 year

<u>Comments</u>
Same coordinates as SP01

Description of soil monitoring networks
Spain

Country of the soil monitoring network (SMN): Spain

Operator (name, institute): I. Simo Josa, University of Lleida

Purpose of the SMN: organic matter

SMN identification: SP05

National sampling strategy: random sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-30; 30-60; 60-90 cm
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: replicates and composite
    Number of subsamples:
    Disturbed/undisturbed: both
    Sample quantities: 1000 g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size:
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: cold room

Monitoring sites (MS)

Number of MS:
Year of first sampling:
Number of campaign:
Time step:

Comments
Lack of the coordinates of the monitoring sites

Description of soil monitoring networks
Spain

Country of the soil monitoring network (SMN): Spain

Operator (name, institute): I. Simo Josa, University of Lleida

Purpose of the SMN: soil physics characteristics

SMN identification: SP06

National sampling strategy: random sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horizon, to the bedrock
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples:
    Disturbed/undisturbed: both
    Sample quantities:

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size:
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: cold room

Monitoring sites (MS)

Number of MS:
Year of first sampling:
Number of campaign:
Time step:

Comments
Lack of the coordinates of the monitoring sites

Description of soil monitoring networks
Spain

Country of the soil monitoring network (SMN): Spain

Operator (name, institute): I. Simo Josa, University of Lleida

Purpose of the SMN: soil chemical characteristics

SMN identification: SP07

National sampling strategy: random sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horizon, to the bedrock
  Sampling
    Sampling strategy:
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples:
    Disturbed/undisturbed: both
    Sample quantities:

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size:
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: cold room

Monitoring sites (MS)

Number of MS: 9
Year of first sampling: 1985 to 2006
Number of campaign:
Time step:

Comments

Description of soil monitoring networks
Spain

Country of the soil monitoring network (SMN): Spain

Operator (name, institute): I. Simo Josa, University of Lleida

Purpose of the SMN: soil contamination-Heavy metals and soil type

SMN identification: SP08

National sampling strategy: nested pattern with systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-25 cm
  Sampling
    Sampling strategy: random
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 62
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000-2000 g

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature: 35-50°C
    Duration:
  Sieving: yes
    Size:
    Manual or mechanical: mechanical

Samples archiving
  Archive samples:
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 5
Year of first sampling: 1998-2000
Number of campaign: 1
Time step: 3 years

Comments
If the time step is three years, several campaigns should have been done.

Description of soil monitoring networks
Spain

Country of the soil monitoring network (SMN): Spain

Operator (name, institute): I. Simo Josa, University of Lleida

Purpose of the SMN: Ecological and forest inventory of catalunya. Chemical proprieties of soils

SMN identification: SP09

National sampling strategy: random sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: pedological horizon, to the bedrock
  Sampling
    Sampling strategy: random
    Size and resolution of the sampling area:
    Replicates or composite: composite
    Number of subsamples: 20
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000-2000 g

Soil description: based on auger holes

Pre-treatment of samples for all analyses
  Drying
    Method:
    Temperature: 35-50°C
    Duration:
  Sieving: yes
    Size:
    Manual or mechanical: mechanical

Samples archiving
  Archive samples:
  Sample state:
  Conservation method:

Monitoring sites (MS)

Number of MS: 5
Year of first sampling: 1996
Number of campaign: 1
Time step: 1 year

Comments
If the time step is one year, several campaigns should have been done.

Description of soil monitoring networks

Sweden

Country of the soil monitoring network (SMN): Sweden

Operator (name, institute): M. Olsson, Swedish University of Agricultural Sciences

Purpose of the SMN: general

SMN identification: SW01

National sampling strategy: stratified pattern with systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: combination, depth of sampling depends on soil type; from O hor., 0-10 to 65 cm (discontinuous)
  Sampling
    Organic horizon
    Sampling strategy: circle (r=10m)
    Size and resolution of the sampling area: 314 m²
    Replicates or composite: composite
    Number of subsamples: 3
    Disturbed/undisturbed: volumetric
    Sample quantities: 400 g
    Mineral horizon
    Sampling strategy: soil profile
    Size and resolution of the sampling area:
    Replicates or composite: single
    Number of subsamples: 1
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000 g

Soil description: based on soil profile

Pre-treatment of samples for all analyses
  Drying
    Method: air
    Temperature:
    Duration:
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: dried and sieved
  Conservation method: cold room

Monitoring sites (MS)
Number of MS: 5410
Year of first sampling: from 1983 to 1988
Number of campaign: 2
Time step: 10 years

Comments There is a huge gap in the centre of Sweden.

Description of soil monitoring networks
UK – England and Wales

Country of the soil monitoring network (SMN): England and Wales

Operator (name, institute): F. Verheijen and B. Jones, NSRI, Cranfield University

Purpose of the SMN: to catalogue the soils of England and Wales

SMN identification: UK01

National sampling strategy: systematic sampling

Site sampling strategy
  Site area delineation: yes
  Written protocol: yes
  Sampling depth: fixed depth, 0-15 cm
  Sampling
    Sampling strategy: grid
    Size and resolution of the sampling area: 20 x 20 m (resolution: 4 m)
    Replicates or composite: composite
    Number of subsamples: 25
    Disturbed/undisturbed: disturbed
    Sample quantities: 1000 g

Soil description: based on soil profile (0-80 cm), on auger holes (80-120 cm)

Pre-treatment of samples for all analyses
  Drying
    Method: air-drying on waxed paper in aluminium alloy trays
    Temperature: <30°C
    Duration: constant weight
  Sieving: yes
    Size: 2 mm
    Manual or mechanical: mechanical

Samples archiving
  Archive samples: yes
  Sample state: air-drying (<30°C)
  Conservation method: at ambient humidity and temperature

Monitoring sites (MS)

Number of MS: 6105
Year of first sampling: from 1966 to 1987
Number of campaign: 1 or 2
Time step: from 7 to 37 years

Comments

Analytical Methods used in National Soil Monitoring Networks

List of Tables of Analytical Methods

Table 5 : Exchangeable K

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	Austrian Standard L 1086
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - buffered	Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - unbuffered	Austrian Standard L 1086
Austria	AT4	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT4	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	Austrian Standard L 1086
Austria	AT6	all	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT7	all	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT10	all	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT13	AGES 90/101	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT14	BDB_UBA	all	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT14	BDB_UBA	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	Austrian Standard L 1086

Exchangeable K (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	m	*unknown*	0.1M BaCl2 extraction; FES	NF ISO 11260 ?
Denmark	*unknown*	*unknown*	*unknown*	*unknown*	extraction with 1M ammoniumacetate at pH 7.0. determined by FES.	*unknown*
France	ICP	*unknown*	*unknown*	unknown	BaCl2	absorption atomique
France	RMQS	all	all	meq/100g	cobalt hexamine trichloride method	NF X 31-130
Greece	GRPRES17	*unknown*	*unknown*	*unknown*	NH4OAc extraction	Rhoades 1985
Hungary	HU1, HU2	*unknown*	all	*unknown*	modified Mehlich method, flame emission spectrometry	MSZ-08-0214:1978
ICP	ICP	*unknown*	*unknown*	*unknown*	Barium chloride solution	ISO 11260 & ISO 14254
ICP	ICP	*unknown*	*unknown*	*unknown*	Barium chloride solution	ISO 11260 & ISO 14254
Latvia	LV03	*unknown*	all	*unknown*	0.1 M $BaCl_2$, ICP, AAS	*unknown*
Malta	MT01	*unknown*	topsoil (B)	*unknown*	barium chloride solution buffered at pH 8.1	ISO 13536:1995
Portugal	Project Piddac 906-99	*unknown*	*unknown*	*unknown*	extracted by ammonium acetate 1M	*unknown*
Scotland	National Soils Inventory for Scotland (NSIS)	*unknown*	*unknown*	meq/100g	*unknown*	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	Barium chloride solution buffered at pH 8.1	ISO 13536

Table 6 : Exchangeable Ca

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT6	all	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT7	all	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT10	all	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT13	AGES 90/101	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT14	BDB_UBA	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT4	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT4	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	m	*unknown*	0.1 m BaCl2 extraction; FES	NF ISO 11260 ?

Exchangeable Ca (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Denmark	*unknown*	*unknown*	*unknown*	*unknown*	extraction with 1M ammoniumacetate at pH 7.0. determined by AAS	*unknown*
France	ICP	*unknown*	*unknown*	*unknown*	BaCl2	NF ISO 11260 ?
Austria	AT11	all BDB_OE	all	*Unknown*	0,1 m BaCl2 1:20	Austrian Standard L 1086-1
France	RMQS	all	all	meq/100g	Cobalt hexamine trichloride method	NF X 31-130
Greece	GRPRES17	*unknown*	*unknown*	*unknown*	NH4OAc extraction	Rhoades 1982
Hungary	HU1, HU2	*unknown*	all	*unknown*	modified Mehlich method, AAS	MSZ-08-0214:1978
ICP	ICP	*unknown*	*unknown*	*unknown*	Barium chloride solution	ISO 11260 & ISO 14254
ICP	ICP	*unknown*	*unknown*	*unknown*	Barium chloride solution	ISO 11260 & ISO 14254
Latvia	LV03	*unknown*	all	*unknown*	0.1 m $BaCl_2$, ICP, AAS	*unknown*
Portugal	Project Piddac 906-99	*unknown*	*unknown*	*unknown*	extracted by ammonium acetate 1M	*unknown*
Portugal	PT01	*Unknown*	all	*Unknown*	Method according to Bascomb at pH 8.2	ISSO 13536/1997
Scotland	National Soils Inventory for Scotland (NSIS)	*unknown*	*unknown*	meq/100g	unknown	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	Barium chloride solution buffered at pH 8.1	ISO 13536
Sweden	national	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*

Table 7 : Exchangeable Mg

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT4	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT4	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT6	all	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT7	all	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT10	all	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT13	AGES 90/101	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT11	all BDB_OE	all	*unknown*	0,1 m BaCl2 1:20	Austrian Standard L 1086-1
Austria	AT14	BDB_UBA	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	m	*unknown*	0.1M BaCl2 extraction unbuffered; FES	NF ISO 11260 ?
Denmark	*unknown*	*unknown*	*unknown*	*unknown*	extraction with 1M ammoniumacetate at pH 7.0. determined by AAS	*unknown*

Exchangeable Mg (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
France	ICP	*unknown*	*unknown*	*unknown*	BaCl2	absorption atomique
France	RMQS	all	all	meq/100g	cobalt hexamine trichloride method	NF X 31-130
Greece	GRPRES17	*unknown*	*unknown*	*unknown*	NH4OAc extraction	Rhoades 1984
Hungary	HU1, HU2	*unknown*	all	*unknown*	modified Mehlich method, AAS	MSZ-08-0214:1978
ICP	ICP	*unknown*	*unknown*	*unknown*	Barium chloride solution	ISO 11260 & ISO 14254
ICP	ICP	*unknown*	*unknown*	*unknown*	Barium chloride solution	ISO 11260 & ISO 14254
Latvia	LV03	*unknown*	all	*unknown*	0.1 M $BaCl_2$, ICP, AAS	*unknown*
Malta	MT01	*unknown*	topsoil (B)	*unknown*	barium chloride solution buffered at pH 8.1	ISO 13536:1995
Portugal	Project Piddac 906-99	*unknown*	*unknown*	*unknown*	extracted by ammonium acetate 1M	*unknown*
Portugal	PT01	*unknown*	all	*unknown*	Method according to Bascomb at pH 8.3	ISSO 13536/1998
Scotland	National Soils Inventory for Scotland (NSIS)	*unknown*	*unknown*	meq/100g	*unknown*	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	Barium chloride solution buffered at pH 8.1	ISO 13536
Sweden	national	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*

Table 8 : Exchangeable Na

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT4	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT4	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT6	all	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT7	all	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT13	AGES 90/101	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT14	BDB_UBA	all	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT11	all BDB_OE	all	*unknown*	0,1 m BaCl2 1:20	Austrian Standard L 1086-1
Austria	AT14	BDB_UBA	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086

Exchangeable Na (continued from previous table

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	m	*unknown*	0.1M BaCl2 extraction; FES	NF ISO 11260 ?
Denmark	*unknown*	*unknown*	*unknown*	*unknown*	extraction with 1M ammoniumacetate at pH 7.0. determined by FES.	*unknown*
France	RMQS	all	all	meq/100g	cobalt hexamine trichloride method	NF X 31-130
Greece	GR06	*unknown*	all	*unknown*	ammonium acetate	Sumner and Miller 1997
Greece	GRPRES17	*unknown*	*unknown*	*unknown*	NH4OAc extraction	Rhoades 1983
Hungary	HU1, HU2	*unknown*	all	*unknown*	modified Mehlich method, flame emission spectrometry	MSZ-08-0214:1978
ICP	ICP	*unknown*	*unknown*	*unknown*	Barium chloride solution	ISO 11260 & ISO 14254
ICP	ICP	*unknown*	*unknown*	*unknown*	Barium chloride solution	ISO 11260 & ISO 14254
Latvia	LV03	*unknown*	all	*unknown*	0.1 M $BaCl_2$, ICP, AAS	unknown
Malta	MT01	*unknown*	topsoil (B)	*unknown*	barium chloride solution buffered at pH 8.1	ISO 13536:1995
Portugal	Project Piddac 906-99	*unknown*	unknown	*unknown*	extracted by ammonium acetate 1M	*unknown*
Portugal	PT01	*unknown*	all	*unknown*	Method according to Bascomb at pH 8.1	ISSO 13536/1996
Romania	RO01-2	*unknown*	all	*unknown*	Bower method = percolation with ammonium acetate 1n, dosage using flame photometer and correction with soluble sodium	*unknown*
Scotland	National Soils Inventory for Scotland (NSIS)	*unknown*	*unknown*	meq/100g	*unknown*	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	Barium chloride solution buffered at pH 8.1	ISO 13536
Sweden	national	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*
Austria	AT1	all	partly	mmol lÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086

Table 9 : Exchangeable H+

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT4	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT10	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT10	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Denmark	*unknown*	*unknown*	*unknown*	*unknown*	the Piper method at pH 8.2	(see Piper C.S., 1942: Soil and plant analysis. University of Adelaide)

Table 10 : Exchangeable Fe

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT7	all	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT10	all	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT14	BDB_UBA	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
France	RMQS	all	all	meq/100g	cobalt hexamine trichloride method	NF X 31-130
ICP	ICP	*unknown*	*unknown*	*unknown*	Barium chloride solution	ISO 11260 & ISO 14254

Table 11 : exchangeable Al

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT7	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT10	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT14	BDB_UBA	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Greece	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*
France	ICP	*unknown*	*unknown*	*unknown*	Barium chloride solution	ISO 11260 & ISO 14254
Latvia	LV03	*unknown*	all	*unknown*	0.1 M BaCl$_2$, ICP, AAS	*unknown*
ICP	ICP	*unknown*	*unknown*	*unknown*	Barium chloride solution	ISO 11260 & ISO 14254
ICP	ICP	*unknown*	*unknown*	*unknown*	Barium chloride solution	ISO 11260 & ISO 14254

Exchangeable Al (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Greece	*unknown*	*unknown*	*unknown*	cmol/kg	1 M KCl extraction	*unknown*
Romania	RO01-2	*unknown*	all	*unknown*	Sokolov method = determination of the exchange acidity (As) at equilibrium; Al3+ and H+ exchangeable ions dissociate from strong acids are movement in solution through treatment of the soil with KCl solution 1n using soil:solution ratio of 1:2,5 and one hour time interaction under agitation. The value H+ exchangeable determining after block up Al3+ in extract. The value for Al3+ exchangeable establish from difference As-H+	*unknown*
France	RMQS	all	all	meq/100g	cobalt hexamine trichloride method	NF X 31-130
Slovakia	SK1	*unknown*	*unknown*	*unknown*	Sokolov´s method = Exchangeable aluminium (at samples with pH 5,8) - Sokolov method - determination of the exchange acidity (As) at equilibrium; Al3+ and H+ exchangeable ions dissociate from strong acids are movement in solution through treatment of the soil with KCl solution 1n using soil:solution ratio of 1:2,5 and one hour time interaction under agitation. The value H+ exchangeable determining after block up Al3+ in extract. The value for Al3+ exchangeable establish from difference As-H+.	*unknown*
Sweden	national	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*

Table 12 : Exchangeable Mn

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT7	all	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT10	all	all	mmol IÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT14	BDB_UBA	all	mmol IÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
France	ICP	*unknown*	*unknown*	*unknown*	Barium chloride solution	ISO 11260 & ISO 14254
France	RMQS	all	all	meq/100g	cobalt hexamine trichloride method	NF X 31-130
ICP	ICP	*unknown*	*unknown*	*unknown*	Barium chloride solution	ISO 11260 & ISO 14254
ICP	ICP	*unknown*	*unknown*	*unknown*	Barium chloride solution	ISO 11260 & ISO 14254

Table 13 : CEC

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_S	all	mmol IÄ/kg	0,1 m BaCl2 1:20	Austrian Standard L 1086
Austria	AT11	all BDB_T	all	*unknown*	0,1 m BaCl2 1:20	Austrian Standard L 1086
Austria	AT11	all BDB_V	all	*unknown*	BaCl2-Extrakt	NF ISO 11260 ?
Austria	AT11	all BDB_OE	all	*unknown*	0,1 m BaCl2 1:20	Austrian Standard L 1086
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	*unknown*	Metson : amonium acetate method, pH 7	Menlich, 1948; De Leenheer & Maes, 1954
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	*unknown*	Metson : amonium acetate method, pH 7	Menlich, 1948; De Leenheer & Maes, 1954
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	*unknown*	CEC-OM = (CEC-total- (1-O.C*1,724)*CEC-mineral)/ (O.C*1,724)	*unknown*
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	*unknown*	Metson : amonium acetate method, pH 7	Menlich, 1948; De Leenheer & Maes, 1954
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	*unknown*	Metson : amonium acetate method, pH 7	Menlich, 1948; De Leenheer & Maes, 1954
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	*unknown*	*unknown*	*unknown*
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	m	*unknown*	BCE + AcExc	*unknown*
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	m	*unknown*	titration of a 0.1M BaCL2 extraction to pH 7.8	ISO 11260
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1702	m	*unknown*	BCE + AcExc	*unknown*
France	RMQS	all	all	meq/100g	cobalt hexamine trichloride method	NF X 31-130
Greece	GR06	*unknown*	all	*unknown*	Metson : amonium acetate method, pH 7	Sumner and Miller 1996
Greece	GRARG53	*unknown*	*unknown*	*unknown*	NH4OAc extraction	Rhoades 1982
Hungary	HU1, HU2	*unknown*	all	*unknown*	modified Mehlich method	MSZ-08-0215:1978
Latvia	LV03	*unknown*	all	*unknown*	0.1 M $BaCl_2$	*unknown*
Polska	SMN PO 01	*unknown*	all	*unknown*	Method according to Bascomb at pH 8.1	ISSO 13536/1995
Portugal	Project Piddac 906-99	*unknown*	*unknown*	*unknown*	Metson : amonium acetate method, pH 7	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	STN ISO 13536	ISO 13536
The Netherlands	DSQN (NL)	*unknown*	0-10 cm	*unknown*	extraction with BaCl2, with is replaced with MgSO4	*unknown*

Table 14 : Total nitrogen content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	all	%	Kjeldahl	Austrian Standard L 1082
Austria	AT2	all	all	%	microelementary analysis and oxidation	according to Austrian Standard G1071 or Austrian Standard G1072
Austria	AT3	all	all	%	Kjeldahl	Austrian Standard L 1082
Austria	AT4	all	all	%	Kjeldahl	Austrian Standard L 1082
Austria	AT5	all	all	%	microelementary analysis	according to Austrian Standard G1071 or Austrian Standard G1072
Austria	AT7	all	all	%	Kjeldahl	Austrian Standard L 1082
Austria	AT8	all	all	%	Kjeldahl	Austrian Standard L 1082
Austria	AT10	all	all	%	Kjeldahl	Austrian Standard L 1082
Austria	AT11	all BDB_S	all	%	Kjeldahl	Austrian Standard L 1082
Austria	AT11	all BDB_T	all	%	Kjeldahl	Austrian Standard L 1082
Austria	AT11	all BDB_V	all	*unknown*	microelementary analysis	*unknown*
Austria	AT11	all BDB_OE	all	*unknown*	total nitrogen by dry combustion	Austrian Standard L 1095
Austria	AT13	AGES 90/101	all	*unknown*	elementary analysis	Austrian Standard L 1095
Austria	AT13	AGES 17/601	all	%	elementary analysis	Austrian Standard L 1095
Austria	AT13	AGES 17/201	all	%	elementary analysis	Austrian Standard L 1095
Austria	AT14	BDB_UBA	all	%	Kjeldahl	Austrian Standard L 1082
Austria	AT14	BDB_UBA	all	%	elementary analysis	Austrian Standard L 1082
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	all	*unknown*	dry combustion	ISO 13878
Belgium	BE06 (ICP Forests-Sbelgium 1994)	*unknown*	all	*unknown*	dry combustion	*unknown*

Total nitrogen content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1702	all	*unknown*	dry combustion	ISO 13878
Bulgaria	European monitoring grid for Diffuse contamination	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*
Estonia	ES01	*unknown*	all	*unknown*	Kjeldahl	ISO 11261
France	ICP	*unknown*	*unknown*	*unknown*	kjeldahl	*unknown*
France	ICP	*unknown*	litter	*unknown*	unknown	*unknown*
France	RMQS	all	all	g/kg	dry combustion (elemental analysis)	NF ISO 13878
Germany	NR	290	*unknown*	*unknown*	dry combustion	ISO 13878 = DIN 19 684
Germany	NR	160	*unknown*	*unknown*	dry combustion	ISO 13878 = DIN 19 684 DIN EN 25663
Germany	NR	131	*unknown*	*unknown*	dry combustion	ISO 13878 = DIN 19 684-4
Germany	NR	2	*unknown*	*unknown*	Elementaranalyse	ISO 13878
Germany	NR	6	*unknown*	*unknown*	Kjeldahl	ISO 11261 (approx.)
Germany	NR	133	*unknown*	*unknown*	Dumas method, total combustion in an surplus of oxygen	*unknown*
Greece	GRPRES28	*unknown*	all	*unknown*	Salicylic Sulfuric acid digestion	Bremner 1965
Hungary	HU1, HU2	*unknown*	all	*unknown*	digestion with ccH2SO4 and phenol, fotometry	MSZ-08-0458, FIA13:1991
ICP	ICP	*unknown*	unknown	*unknown*	Dry Combustion	ISO 13878 (Détermination de la teneur totale en azote par combustion sèche ("analyse élémentaire")) & ISO 11261 (Dosage de l'azote total -- Méthode de Kjeldahl modifiée)

Total nitrogen content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
ICP	ICP	*unknown*	unknown	*unknown*	Dry Combustion	ISO 13878 (Détermination de la teneur totale en azote par combustion sèche ("analyse élémentaire")) & ISO 11261 (Dosage de l'azote total -- Méthode de Kjeldahl modifiée)
Latvia	LV03	*unknown*	all	*unknown*	Dry Combustion	*unknown*
Lithuania	LT_ATC	*unknown*	topsoil	*unknown*	Kjeldal method	*unknown*
Northern Ireland	national	*unknown*	*unknown*	%	dry combustion using elemental analyser	*unknown*
Polska	SMN PO 01	*unknown*	all	*unknown*	Kjeldahl method	*unknown*
Polska	SMN PO 01	*unknown*	all	*unknown*	Kjeldahl method	PN-ISO 11261
Polska	SMN PO 01	*unknown*	all	*unknown*	Kjeldahl method	PN-ISO 11261
Romania	RO01-2	*unknown*	all	*unknown*	Kjeldahl method	*unknown*
Scotland	National Soils Inventory for Scotland (NSIS)	*unknown*	*unknown*	%	Elemental Nitrogen content	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	Jodlbauer´s method	STN ISO 11261
Sweden	national	*unknown*	*unknown*	%	*unknown*	*unknown*
The Netherlands	DSQN (NL)	*unknown*	0-10 cm	*unknown*	total nitrogen (Keldjal)	*unknown*

Table 15 : Organic carbon

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT5	all	all	%	elementary analysis	according to Austrian Standard L 1080
Austria	AT7	all	all	%	WAKLEY-AMSTRONG-titrimet.or elementary analysis	Austrian Standard L 1080 and L 1081
Austria	AT8	all	all	%	WAKLEY-AMSTRONG-titrimet.	WAKLEY-AMSTRONG
Austria	AT10	all	all	%	elementary analysis	according to Austrian Standard L 1080
Austria	AT11	all BDB_S	all	%	organic carbon by wet combustion	Austrian Standard L 1081
Austria	AT11	all BDB_T	all	%	organic carbon by dry combustion	Austrian Standard L 1080
Austria	AT11	all BDB_OE	all	%	organic carbon by dry combustion	Austrian Standard L 1080 and L 1081
Austria	AT11	all BDB_OE	all	%	organic carbon by wet combustion	Austrian Standard L 1080 and L 1081
Austria	AT11	all BDB_OE	all	%	organic carbon by dry combustion	Austrian Standard L 1080
Austria	AT13	AGES 90/101	all	*unknown*	elementary analysis	Austrian Standard L 1080
Austria	AT13	AGES 17/601	all	%	elementary analysis	Austrian Standard L 1080
Austria	AT13	AGES 17/201	all	%	elementary analysis	Austrian Standard L 1080
Austria	AT2	all	all	%	elementary analysis	according to Austrian Standard L 1080
Austria	AT11	all BDB_V	all	*unknown*	Elementaranalysator	*unknown*
Austria	AT14	BDB_UBA	all	%	dry combustion	Austrian Standard L 1080
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	*unknown*	dichromate method of Walkley and Black	Walkley and Black, 1934; De Leenheer et al., 1957
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	*unknown*	dichromate method of Walkley and Black	Walkley and Black, 1934; De Leenheer et al., 1957

Organic carbon (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Belgium	BE03 (Heavy Metals WFlanders & Antwerp)	*unknown*	all	*unknown*	dichromate method of Walkley and Black	ISRIC, 1987
Belgium	BE04 (Heavy Metals EFlanders)	*unknown*	all	*unknown*	dichromate method of Walkley and Black	Nelson and Sommers, 1982
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	all	*unknown*	dry combustion at temperature > 900°C	ISO 10694
Belgium	BE06 (ICP Forests-Sbelgium 1994)	*unknown*	o	*unknown*	dry combustion at temperature > 900°C	ISO 10694
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1202	all	*unknown*	dry combustion at temperature > 900°C	ISO 10694
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1702	all	*unknown*	dry combustion at temperature > 900°C	ISO 10694
Bulgaria	European soil monitoring grig for diffuse contamination	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*
Estonia	ES01	*unknown*	all	*unknown*	NIRS (also Tjurin-Black method)	*unknown*
Estonia	ES02	*unknown*	30%	*unknown*	NIRS (also Tjurin-Black method)	*unknown*
France	ICP	*unknown*	*unknown*	*unknown*	modified Anne method (colorimetry)	*unknown*

Organic carbon (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
France	ICP	*unknown*	litter	*unknown*	*unknown*	*unknown*
France	RMQS	all	all	g/kg	dry combustion (elementary analysis)	NF ISO 10694
Finland	FI02	*unknown*	*unknown*	*unknown*	an automated dry ashing method (LECO CR-12, St. Joseph, MI, USA)	*unknown*
Germany	NR	408	*unknown*	*unknown*	dry combustion at temperature > 900°C	ISO 10694 = DIN 19 684
Germany	NR	92	*unknown*	*unknown*	dry combustion at temperature > 900°C	ISO 10694 = DIN 19684/2
Germany	NR	32	*unknown*	*unknown*	Determination of organic and total carbon after dry combustion (elementary analysis)	ISO 10694 = DIN ISO 10694
Germany	NR	6	*unknown*	*unknown*	nasse Oxidation = wet oxidation	*unknown*
Germany	NR	133	*unknown*	*unknown*	Dumas method, total combustion in an surplus of oxygen	*unknown*
Germany	NR	2	*unknown*	*unknown*	Elementaranalyse	ISO 10694
Greece	*unknown*	*unknown*	*unknown*	g/kg	Walkey Black modified wet combustion	*unknown*
Hungary	HU1, HU2	*unknown*	all	*unknown*	K2Cr2O7 and ccH2SO4 colorimetry	MSZ-08-0452:1980
ICP	ICP	*unknown*	*unknown*	*unknown*	Dry Combustion at >900°C	ISO 10694
ICP	ICP	*unknown*	*unknown*	*unknown*	Dry Combustion at >900°C	ISO 10694
Ireland	IE01	*unknown*	all	*unknown*	Dry Combustion	*unknown*
Latvia	LV03	*unknown*	all	*unknown*	Dry Combustion	*unknown*
Malta	MT02	*unknown*	all	*unknown*	Determination of soil organic C by Walkley – black method	BS 1377:1975
Northern Ireland	national	*unknown*	*unknown*	%	loss in wt at 850C	*unknown*
Northern Ireland	national	*unknown*	*unknown*	%	dry combustion using elemental analyser	*unknown*
Polska	SMN PO 01	*unknown*	all	*unknown*	Tjurin method-K dichromate digestion	PN-ISO 14235:2003

Organic carbon (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Polska	SMN PO 01	*unknown*	all	*unknown*	Tjurin method-K dichromate digestion	PN-ISO 14235:2003
Portugal	ICP	*unknown*	*unknown*	*unknown*	Dry Combustion at >900°C	ISO 10694
Portugal	Project Piddac 906-99	*unknown*	*unknown*	%	dry combustion	*unknown*
Romania	RO01-2	*unknown*	all	*unknown*	Wet digestion, Walkley-Black (modified by Gogoaşă) method	*unknown*
Scotland	National Soils Inventory for Scotland (NSIS)	*unknown*	unknown	*unknown*	Elemental Carbon content (gravimetric measurement expressed as a percentage)	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	according to STN ISO 10694 ((by sulfochromic oxidation)	ISO 14235
Sweden	national	*unknown*	*unknown*	%	*unknown*	*unknown*
The Netherlands	DSQN (NL)	*unknown*	0-10 cm	*unknown*	Dumas method, total combustion in an surplus of oxygen	Elemental analyser (Dumas's method)
United Kingdom	national	*unknown*	*unknown*	*unknown*	Organic Carbon (% by wt) measured either by loss-on-ignition for soils estimated to contain more than about 20% organic carbon or by dichromate digestion.	*unknown*

Table 16 : Arylsulfatase activity

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_S	*unknown*	*unknown*	*unknown*	*unknown*

Table 17 : C/N

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	*unknown*	carbon = Springer and Klee method; nitrogen = micro-Kjelldahl	Springer & Klee (1954)
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	*unknown*	carbon = Springer and Klee method; nitrogen = micro-Kjelldahl	Springer & Klee (1954)
Polska	SMN PO 01	*unknown*	all	*unknown*	*unknown*	*unknown*

Table 18 : Cellulose decomposition activity

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Hungary	HU1, HU2	*unknown*	topsoil	*unknown*	weight reduction of the Whatman No1. filter paper (size and weidht is known)	MSZ-08-1931:1984

Table 19 : Microbial biomass

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT4	81	partly	*unknwon*	mg CO2 . 100 g-1 TS . h-1	*unknown*

Table 20 : pot. denitrification

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_S	*unknown*	*unknown*	*unknown*	*unknown*
Austria	AT13	AGES 90/101	all	*unknown*	*unknown*	Schinner F., R. Öhlinger, E. Kandeler and R. Margesin (1996): Methods in Soil Biology. Springer Verlag, Berlin, Heidelberg, New York, pp. 1-426.
Hungary	HU1, HU2	*unknown*	all	*unknown*	nitrate + nitrite content : KCl extraction, spectrophotometry	MSZ-20135:1999

Table 21 : soil zoology (Lumbricidae and Enchytraeidae)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	BDB_S1 - BDB_S8	*unknown*	*unknown*	*unknown*	*unknwon*

Table 22 : N-mineralisation

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_S	*unknown*	*unknown*	*unknown*	*unknown*
Austria	AT11	BDB_T1/T2/T3/T4	topsoil horizon	*unknown*	anaerobic incubation	*unknown*
Austria	AT13	AGES 90/101	all	*unknown*	*unknown*	*unknown*
Austria	AT13	AGES 17/601	all	*unknown*	*unknown*	*unknown*
Austria	AT13	AGES 17/201	all	*unknown*	*unknown*	*unknown*

Table 23 : Phosphatase activity

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_S	*unknown*	*unknown*	*unknown*	*unknown*
Austria	AT13	AGES 90/101	all	*unknown*	*unknown*	Schinner F., R. Öhlinger, E. Kandeler and R. Margesin (1996): Methods in Soil Biology. Springer Verlag, Berlin, Heidelberg, New York, pp. 1-426.

Table 24 : protease activity

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT13	AGES 90/101	all	*unknown*	*unknown*	Schinner F., R. Öhlinger, E. Kandeler and R. Margesin (1996): Methods in Soil Biology. Springer Verlag, Berlin, Heidelberg, New York, pp. 1-426.

Table 25 : substrate induced respiration

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_S	*unknown*	*unknown*	*unknown*	*unknown*
Austria	AT13	AGES 90/101	all	*unknown*	*unknown*	Schinner F., R. Öhlinger, E. Kandeler and R. Margesin (1996): Methods in Soil Biology. Springer Verlag, Berlin, Heidelberg, New York, pp. 1-426.
Hungary	HU1, HU2	*unknown*	topsoil	*unknown*	measuring the CO2 production by infra-analysator after aerobic incubation for 100 hours on 18 C	ISO 14240-1:1997

Table 26 : Urease activity

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_S	*unknown*	*unknown*	*unknown*	*unknown*

Table 27 : Xylanase activity

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_S	*unknown*	*unknown*	*unknown*	*unknown*
Austria	AT13	AGES 90/101	all	*unknown*	*unknown*	Schinner F., R. Öhlinger, E. Kandeler and R. Margesin (1996): Methods in Soil Biology. Springer Verlag, Berlin, Heidelberg, New York, pp. 1-426.

Table 28 : dehydrogenase activity

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Hungary	HU1, HU2	*unknown*	topsoil	*unknown*	reduction of 2,3,5-triphenyl-tetrazolium-chloride by enzimatic process	ISO 23753-1:2005

Table 29 : Total Al content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT4	all	all	mg/kg	0,1m BaCl2 1:20 - unbuffered	Austrian Standard L 1086
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT7	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT10	all	all	mg/kg	Nitric acid	Austrian Standard L 1085
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	m	*unknown*	digestion in aqua regia; AAS	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1702	m	*unknown*	digestion in aqua regia; AAS	ISO 11466
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
Finland	FI02	*unknown*	*unknown*	*unknown*	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na2EDTA (pH 4.65, AAAc-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	*unknown*
France	RMQS	all	all	mg/kg	HF - HClO4	NF ISO 14689-1
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO4)	NF X 31-147
Greece	*unknown*	*unknown*	*unknown*	g/100g	HF	*unknown*
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
Ireland	IE01	*unknown*	all	*unknown*	HF - HCl - HNO3	*unknown*
Polska	SMN PO 01	*unknown*	all	*unknown*	AAS-Flame	PN ISO 14689-1

Total Al content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Scotland	National Soils Inventory for Scotland (NSIS)	*unknown*	*unknown*	*unknown*	Pyrophosphate extractable aluminium	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 30 : Total As content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT1	all	partly	mg/kg	aqua regia	DIN 38414 S7
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT3	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT4	171	partly	mg/kg	Perchloric acid 70%	n.a.
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1086
Austria	AT6	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT7	50	partly	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT8	all	all	mg/kg	HCl:HNO3=1:9	n.a.
Austria	AT9	all	all	mg/kg	aqua regia	DIN 38414/7
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_OE	all	unknown	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085
Bulgaria	European monitoring grid for Diffuse contamination	*unknown*	*unknown*	*unknown*	Flame spectrometer	*unknown*
Bulgaria	National grid for Local contamination	*unknown*	*unknown*	*unknown*	Flame spectrometer	*unknown*
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSZ-21470-50:1998
Ireland	IE01	*unknown*	all	*unknown*	HF - HCl - HNO3	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	extracted with HF-HNO3-HCl	*unknown*

Total As content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
United Kingdom	national	*unknown*	*unknown*	mg/kg	Hydride Atomic Absorption Spectrometry (AAS), extracted into hydrochloric acid after digestion with nitric acid and ashing with magnesium nitrate	*unknown*

Table 31 : extractable As

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_T	all	*unknown*	NH4NO3	CTUA Rotholz

Table 32 : Total Boron content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1087
Austria	AT6	all	all	mg/kg	acetate extraction (acc. to BARON)	Austrian Standard L 1090
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
Finland	FI02	*unknown*	*unknown*	*unknown*	boiling water ; inductively coupled plasma emission optic spectrometry (ICS-OES)	*unknown*
Greece	GRPRES42	*unknown*	all	*unknown*	Na2CO3 digestion	Bingham, 1982
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSz-08-1933:1986

Table 33 : Soluble B

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Estonia	ES01	*unknown*	all	mg/kg	Berger and Truog = Extraction of boron soluble in boiling water	*unknown*
Estonia	ES02	*unknown*	5%	mg/kg	Berger and Truog = Extraction of boron soluble in boiling water	*unknown*
France	RMQS	all	all	mg/kg	Extraction of boron soluble in boiling water	NF X 31-122
Greece	*unknown*	*unknown*	*unknown*	mg/kg	water soluble	*unknown*

Table 34 : Total Ba content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSz-08-1933:1986
Polska	SMN PO 01	*unknown*	all	*unknown*	ICP-Emission	ISO-11466:2002
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*
United Kingdom	national	*unknown*	*unknown*	*unknown*	Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 35 : Total Be content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Polska	SMN PO 01	*unknown*	all	*unknown*	ICP-Emission	ISO-11466:2002

Table 36 : Total Ca content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1088
Austria	AT7	all	all	%	aqua regia	Austrian Standard L 1085
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT10	all	all	mg/kg	Nitric acid	Austrian Standard L 1085
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_OE	all	*unknown*	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard EN ISO 11885 (modified)
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	o	*unknown*	digestion in aqua regia; AAS	ISO 11466
Belgium	BE06 (ICP Forests-Sbelgium 1994)	*unknown*	o	*unknown*	digestion in aqua regia; AAS	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1202	o	*unknown*	digestion in aqua regia; AAS	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1702	o	*unknown*	digestion in aqua regia; AAS	ISO 11466
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
Finland	FI02	*unknown*	unknown	*unknown*	0.5 M ammonium acetate + 0.5 M acetic acid (pH 4.65, AAAc) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	*unknown*
France	ICP	*unknown*	litière	*unknown*	*unknown*	*unknown*
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO4)	NF X 31-147
Greece	unknown	*unknown*	*unknown*	g/100g	HF	*unknown*

Total Ca content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSZ-21470-50:1998
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	*Unknown*	*Unknown*	*Unknown*	aqua regia	ISO 11466
ICP	ICP	*Unknown*	*Unknown*	*Unknown*	aqua regia	ISO 11466
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	aqua-regia digest	*unknown*
Polska	SMN PO 01	unknown	all	unknown	AAS-Flame	PN ISO 14689-1
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*
United Kingdom	national	*unknown*	*unknown*	*unknown*	Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 37 : Extractible Ca

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Northern Ireland	national	*Unknown*	*Unknown*	mg/kg	0.05M EDTA-extractable, followed by ICP-AES	*Unknown*

Table 38 : Ca available

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Estonia	ES01	*unknown*	all	*unknown*	Mehlich-3	*unknown*
Estonia	ES02	*unknown*	20%	*unknown*	Mehlich-3	*unknown*

Table 39 : Soluble Ca

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Portugal	PT01	*unknown*	all	*unknown*	Determination of soluble Ca2+ by atomic absorption spectrophotometry	*unknown*
Portugal	PT01	*unknown*	all	*unknown*	Determination of soluble Ca2+ by atomic absorption spectrophotometry	*unknown*

Table 40 : CaCO3

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	all	%	Determination of carbonate - Scheibler	Austrian Standard L 1084
Austria	AT2	all	all	%	Determination of carbonate - Scheibler	Austrian Standard L 1084
Austria	AT3	all	all	%	Determination of carbonate - Scheibler	Austrian Standard L 1084
Austria	AT4	all	all	%	Determination of carbonate - Scheibler	Austrian Standard L 1084
Austria	AT5	all	all	%	Determination of carbonate - Scheibler	Austrian Standard L 1084
Austria	AT6	all	all	%	Determination of carbonate - Scheibler	Austrian Standard L 1084
Austria	AT7	all	all	%	Determination of carbonate - Scheibler	Austrian Standard L 1084
Austria	AT8	all	all	%	Determination of carbonate - Scheibler	Austrian Standard L 1084
Austria	AT10	all	all	%	Determination of carbonate - Scheibler	Austrian Standard L 1084
Austria	AT11	all BDB_S	all	%	*unknown*	Austrian Standard L 1084
Austria	AT11	all BDB_T	all	*unknown*	Determination of carbonate - Scheibler	Austrian Standard L 1084
Austria	AT11	BDB_V1/V2	all	%	Scheibler	unknown
Austria	AT11	all BDB_OE	all	%	Determination of carbonate - Scheibler	Austrian Standard L 1084
Austria	AT13	AGES 90/101	all	%	Scheibler	Austrian Standard L 1084
Austria	AT14	BDB_UBA	all	%	Scheibler	Austrian Standard L 1084
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	*unknown*	titrimetrie	De Leenheer et al., 1954
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	*unknown*	*unknown*	titrimetrie	De Leenheer et al., 1954
France	RMQS	all	all	g/kg	Determination of carbonate content - Volumetric method	NF ISO 10693
France	ICP	*unknown*	si pH > 6	*unknown*	*unknown*	*unknown*
France	ICP	*unknown*	litter	*unknown*	*unknown*	*unknown*
Greece	*unknown*	*unknown*	*unknown*	g/kg	*unknown*	*unknown*

CaCO3 (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Hungary	HU1, HU2	*unknown*	all	*unknown*	Scheibler method	MSZ-08-0206/2:1978
ICP	ICP	*unknown*	*unknown*	*unknown*	Calcimeter	ISO 10693
Polska	SMN PO 01	*unknown*	all	*unknown*	Scheibler method : Méthode volumétrique	PN-ISO 10693
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	volumetric method	ISO 10693

Table 41 : Total Cd content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	all	mg/kg	aqua regia	Austrian Standard L 1086
Austria	AT1	all	partly	mg/kg	aqua regia	DIN 38414 S7
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT3	88	partly	mg/kg	0,1m BaCl2 1: 2,5	Blum et al., 1995
Austria	AT3	all	all	mg/kg	aqua regia	Austrian Standard L 1086
Austria	AT4	all	all	mg/kg	reversed aqua regia [HNO3+HCl =3+1]	n.a.
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1089
Austria	AT6	all	all	mg/kg	aqua regia	Austrian Standard L 1086
Austria	AT7	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT9	all	all	mg/kg	aqua regia	DIN 38414/7
Austria	AT10	all	all	mg/kg	Nitric acid	Austrian Standard L 1085
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_V	all	unknown	aqua regia	unknown
Austria	AT11	all BDB_OE	all	unknown	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085, Austrian Standard EN ISO 11885 (modified)
Belgium	BE03 (Heavy Metals Wflanders & Antwerp)	*unknown*	all	*unknown*	spectrophotométrie d'absorption atomique (AAS) with graphite oven (Varian spectrAA-800, GTA 100)	Verloo, 1997
Belgium	BE04 (Heavy Metals Eflanders)	*unknown*	all	*unknown*	AAS with graphite oven (Varian spectrAA-800, GTA 100)	Verloo, 1997
Bulgaria	European monitoring grid for Diffuse contamination	*unknown*	*unknown*	*unknown*	Flame spectrometer	*unknown*

Total Cd content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Bulgaria	National grid for Local contamination	*unknown*	*unknown*	*unknown*	Flame spectrometer	*unknown*
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
Finland	FI02	*unknown*	*unknown*	*unknown*	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na2EDTA (pH 4.65, AAAc-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	*unknown*
France	ICP	*unknown*	litter	*unknown*	*unknown*	*unknown*
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HclO4)	NF X 31-147
Germany	NR	45	*unknown*	*unknown*	pressure digestion	*unknown*
Germany	NR	11	*unknown*	*unknown*	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	5	*unknown*	*unknown*	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	369	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	6	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	14	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	53	*unknown*	*unknown*	digestion with perchloric and hydrofluoric acid	*unknown*
Germany	NR	30	*unknown*	*unknown*	digestion with (hydrofluoric acid and) aqua regia, analysis with ICP-OES	*unknown*
Germany	NR	45	*unknown*	*unknown*	pressure digestion	*unknown*
Germany	NR	6	*unknown*	*unknown*	HF	*unknown*
Germany	NR	26	*unknown*	*unknown*	digestion with nitric, perchloric and hydrofluoric acid	*unknown*

Total Cd content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Germany	NR	20	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	133	*unknown*	*unknown*	HNO3 + 3 HCl (aqua regia), AAS	*unknown*
Germany	NR	17	*unknown*	*unknown*	RFA	*unknown*
Germany	NR	32	*unknown*	*unknown*	XRF (X-ray fluorescence) [with pressed powder pellet]	*unknown*
Greece		*unknown*	*unknown*	mg/kg	HF	*unknown*
Greece	GRPRES24	*unknown*	all	*unknown*	Digestion with Nitric Acid and Perchloric Acid in a block Digester	Miller and Mcfee, 1983
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSz-08-1933:1986
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
Lithuania	LT_ATC	*unknown*	all	*unknown*	*unknown*	*unknown*
Lithuania	LT_ATC	*unknown*	all	*unknown*	*unknown*	*unknown*
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	aqua-regia digest	*unknown*
Polska	SMN PO 01	*unknown*	all	*unknown*	Méthodes de dosage par spectrométrie d'absorption atomique dans la flamme et électrothermique AAS-Flame	PN-ISO 11047:2001
Portugal	Project Piddac 906-99	*unknown*	*unknown*	mg kg-1	Aqua regia, determination by Graphite furnace-AAS	ISO Standard 11466
Romania	RO01-3	*unknown*	all	*unknown*	Acid digestion with mixture of HClO4, H2SO4, HNO3 - Determination by flame atomic absorption spectrometry	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	extracted with HF-HNO3-HCl	*unknown*

Total Cd content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 42 : Extractable Cd

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_T	all	*unknown*	NH4NO3	*unknown*
Greece	*unknown*	*unknown*	*unknown*	mg/kg	EDTA	*unknown*
France	RMQS	all	all	mg/kg	Extractable trace elements by BCR method (EDTA solution 0.05 M)	*unknown*
Irlande du Nord	national	*unknown*	*unknown*	mg/kg	0.05M EDTA-extractable, followed by ICP-AES	*unknown*
United Kingdom	national	*unknown*	*unknown*	mg/l	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) after shaking 10ml of soil with 50ml of 0.05M EDTA at pH 7.0 for 1h at 20 deg. C and then filtering	*unknown*
Slovakia	SK 1	*unknown*	all	*unknown*	mobile forms extracted with 0.05 mol.dm-3 EDTA	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	EDTA	*unknown*
Austria	AT7	all	all	mg/kg	0,05 m EDTA 1:10	Austrian Standard L 1089

Table 43 : Soluble Cl

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT2	all	all	mg/kg	water soluble substances (water extract 1:10)	Austrian Standard L 1092
Austria	AT4	171	partly	mg/kg	water soluble substances (water extract 1:10)	Austrian Standard L 1092
Austria	AT11	all BDB_OE	all	*unknown*	water soluble substances (water extract 1:10)	Austrian Standard L 1092

Table 44 : Total Co content

country	soil monitoring network ID	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	all	mg/kg	aqua regia	Austrian Standard L 1087
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT3	88	partly	mg/kg	0,1m BaCl2 1: 2,5	Blum et al., 1995
Austria	AT3	all	all	mg/kg	aqua regia	Austrian Standard L 1087
Austria	AT4	all	all	mg/kg	reversed aqua regia [HNO3+HCl =3+1]	n.a.
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1090
Austria	AT6	all	all	mg/kg	aqua regia	Austrian Standard L 1087
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT9	all	all	mg/kg	aqua regia	DIN 38414/7
Austria	AT10	all	all	mg/kg	Nitric acid	Austrian Standard L 1085
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_OE	all	*unknown*	aqua regia	Austrian Standard L 1085
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
Finland	FI02	*unknown*	*unknown*	*unknown*	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na2EDTA (pH 4.65, AAAc-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	*unknown*
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO4)	NF X 31-147
Greece	unknown	*unknown*	*unknown*	mg/kg	HF	*unknown*
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSZ-21470-50:1998
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
Ireland	IE01	*unknown*	all	*unknown*	HF - HCl - HNO3	*unknown*
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	aqua-regia digest	*unknown*

Total Co content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Polska	SMN PO 01	*unknown*	all	*unknown*	dosage by flame atomic absorption spectrometry and electrothermic AAS-Flame	PN-ISO 11047:2001
Romania	RO01-3	*unknown*	all	*unknown*	Acid digestion with mixture of HClO4, H2SO4, HNO3 - Determination by flame atomic absorption spectrometry	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	extracted with HF-HNO3-HCl	*unknown*
United Kingdom	national	*unknown*	*unknown*	*unknown*	Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 45 : Extractable Co

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Northern Ireland	national	*unknown*	*unknown*	mg/kg	0.05M EDTA-extractable, followed by ICP-AES	*unknown*
Slovakia	SK 1	*unknown*	all	mobile forms	extracted with 0.05 mol.dm-3 EDTA	*unknown*
United Kingdom	national	*unknown*	*unknown*	mg/l	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) after shaking 10ml of soil with 50ml of 0.05M EDTA at pH 7.0 for 1h at 20 deg. C and then filtering	*unknown*

Table 46 : Total Cr content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	all	mg/kg	aqua regia	Austrian Standard L 1088
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT3	88	partly	mg/kg	0,1m BaCl2 1: 2,5	Blum et al., 1995
Austria	AT3	all	all	mg/kg	aqua regia	Austrian Standard L 1088
Austria	AT4	all	all	mg/kg	reversed aqua regia [HNO3+HCl =3+1]	n.a.
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1091
Austria	AT6	all	all	mg/kg	aqua regia	Austrian Standard L 1088
Austria	AT7	50	partly	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT9	all	all	mg/kg	aqua regia	DIN 38414/7
Austria	AT10	all	all	mg/kg	Nitric acid	Austrian Standard L 1085
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_V	all	*unknown*	aqua regia	*unknown*
Austria	AT11	all BDB_OE	all	*unknown*	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085, Austrian Standard EN ISO 11885 (modified)
Austria	AT14	BDB_UBA	all	mg/kg	hydrofluoric acid	own methode
Belgium	BE03 (Heavy Metals WFlanders & Antwerp)	*unknown*	all	*unknown*	AAS (Varian spectrAA-10)	Verloo, 1997
Belgium	BE04 (Heavy Metals EFlanders)	*unknown*	all	*unknown*	AAS (Varian spectrAA-10)	Verloo, 1997
Bulgaria	European monitoring grid for Diffuse contamination	*unknown*	*unknown*	*unknown*	Flame spectrometer	*unknown*
Bulgaria	National grid for Local contamination	*unknown*	*unknown*	*unknown*	Flame spectrometer	*unknown*

Total Cr content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
Finland	FI02	*unknown*	*unknown*	*unknown*	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na2EDTA (pH 4.65, AAAc-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	*unknown*
France	RMQS	*unknown*	*unknown*	*unknown*	Total solubilizing by acid attack (HF - HclO4)	NF X 31-147
Germany	NR	45	*unknown*	*unknown*	pressure digestion	*unknown*
Germany	NR	11	*unknown*	*unknown*	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	5	*unknown*	*unknown*	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	369	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	6	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	14	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	53	*unknown*	*unknown*	digestion with perchloric and hydrofluoric acid	*unknown*
Germany	NR	30	*unknown*	*unknown*	digestion with (hydrofluoric acid and) aqua regia, analysis with ICP-OES	*unknown*
Germany	NR	45	*unknown*	*unknown*	pressure digestion	*unknown*
Germany	NR	6	*unknown*	*unknown*	HF	*unknown*
Germany	NR	26	*unknown*	*unknown*	digestion with nitric, perchloric and hydrofluoric acid	*unknown*
Germany	NR	20	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	133	*unknown*	*unknown*	HNO3 + 3 HCl (aqua-regia), AAS	*unknown*
Germany	NR	17	*unknown*	*unknown*	RFA	*unknown*

Total Cr content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Germany	NR	32	*unknown*	*unknown*	XRF (X-ray fluorescence) [with pressed powder pellet]	*unknown*
Greece	*unknown*	*unknown*	*unknown*	mg/kg	HF	*unknown*
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSZ-21470-50:1998
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
Ireland	IE01	*unknown*	all	*unknown*	HF - HCl - HNO3	*unknown*
Lithuania	LT_ATC	*unknown*	all	*unknown*	*unknown*	*unknown*
Lithuania	LT_ATC	*unknown*	all	*unknown*	*unknown*	*unknown*
Malta	MT02	*unknown*	all	*unknown*	aqua regia - Determination of Chromium by Electrothermal Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Malta	MT03	*unknown*	all	*unknown*	aqua regia - Determination of Chromium by Electrothermal Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Malta	MT04	*unknown*	all	*unknown*	aqua regia - Determination of Chromium by Electrothermal Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	aqua-regia digest	*unknown*
Polska	SMN PO 01	*unknown*	all	*unknown*	AAS-Flame	PN-ISO 11047:2001
Portugal	Project Piddac 906-99	*unknown*	*unknown*	mg kg-1	*unknown*	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	extracted with HF-HNO3-HCl	*unknown*
The Netherlands	DSQN (NL)	*unknown*	0-10 cm	*unknown*	*unknown*	*unknown*

Total Cr content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 47 : Extractable Cr

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Greece	*unknown*	*unknown*	*unknown*	mg/kg	EDTA	*unknown*
France	RMQS	all	all	mg/kg	Extractable trace elements by BCR method (EDTA solution 0.05 M)	*unknown*
Irlande du Nord	national	*unknown*	*unknown*	mg kg-1	0.05M EDTA-extractable, followed by ICP-AES	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	EDTA	*unknown*
Slovakia	SK 1	*unknown*	all	*unknown*	mobile forms extracted with 0.05 mol.dm-3 EDTA	*unknown*

Table 48 : Total Cu content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	all	mg/kg	aqua regia	Austrian Standard L 1089
Austria	AT1	all	partly	mg/kg	aqua regia	DIN 38414 S7
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT3	88	partly	mg/kg	0,1m BaCl2 1: 2,5	Blum et al., 1995
Austria	AT3	all	all	mg/kg	aqua regia	Austrian Standard L 1089
Austria	AT4	all	all	mg/kg	reversed aqua regia [HNO3+HCl =3+1]	n.a.
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1092
Austria	AT6	all	all	mg/kg	aqua regia	Austrian Standard L 1089
Austria	AT7	all	all	mg/kg	aqua regia	Austrian Standard L 1086
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT9	all	all	mg/kg	aqua regia	DIN 38414/7
Austria	AT10	all	all	mg/kg	Nitric acid	Austrian Standard L 1085
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_V	all	*unknown*	aqua regia	*unknown*
Austria	AT11	all BDB_OE	all	*unknown*	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085, Austrian Standard EN ISO 11885 (modified)
Austria	AT14	BDB_UBA	all	mg/kg	hydrofluoric acid	own methode
Belgium	BE03 (Heavy Metals Wflanders & Antwerp)	*unknown*	all	*unknown*	AAS (Varian spectrAA-10)	Verloo, 1997
Belgium	BE04 (Heavy Metals Eflanders)	*unknown*	all	*unknown*	AAS (Varian spectrAA-10)	Verloo, 1997
Bulgaria	European monitoring grid for Diffuse contamination	*unknown*	*unknown*	*unknown*	Flame spectrometer	*unknown*

Total Cu content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Bulgaria	National grid for Local contamination	*unknown*	*unknown*	*unknown*	Flame spectrometer	*unknown*
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
Finland	FI02	unknown	unknown	unknown	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na2EDTA (pH 4.65, AAAc-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	unknown
France	ICP	*unknown*	litter	*unknown*	*unknown*	*unknown*
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO4)	NF X 31-147
Germany	NR	45	*unknown*	*unknown*	pressure digestion	*unknown*
Germany	NR	11	*unknown*	*unknown*	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	5	*unknown*	*unknown*	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	369	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	6	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	14	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	53	*unknown*	*unknown*	digestion with perchloric and hydrofluoric acid	*unknown*
Germany	NR	30	*unknown*	*unknown*	digestion with (hydrofluoric acid and) aqua regia, analysis with ICP-OES	*unknown*
Germany	NR	45	*unknown*	*unknown*	pressure digestion	*unknown*
Germany	NR	6	*unknown*	*unknown*	HF	*unknown*
Germany	NR	26	*unknown*	*unknown*	digestion with nitric, perchloric and hydrofluoric acid	*unknown*

Total Cu content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Germany	NR	20	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	133	*unknown*	*unknown*	HNO3 + 3 HCl (aqua regia), AAS	*unknown*
Germany	NR	17	*unknown*	*unknown*	RFA	*unknown*
Germany	NR	32	*unknown*	*unknown*	XRF (X-ray fluorescence) [with pressed powder pellet]	*unknown*
Greece	unknown	unknown	*unknown*	mg/kg	HF	*unknown*
Hungary	HU1, HU2	unknown	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSZ-21470-50:1998
Hungary	HU1, HU2	unknown	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
Ireland	IE01	*unknown*	all	*unknown*	HF - HCl - HNO3	*unknown*
Lithuania	LT_ATC	*unknown*	all	*unknown*	*unknown*	*unknown*
Lithuania	LT_ATC	*unknown*	all	*unknown*	*unknown*	*unknown*
Malta	MT02	*unknown*	all	*unknown*	Extraction des éléments en traces solubles dans l'aqua regia - Determination of Copper by Flame Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Malta	MT03	*unknown*	all	*unknown*	Extraction des éléments en traces solubles dans l'aqua regia - Determination of Copper by Flame Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Malta	MT04	*unknown*	all	*unknown*	Extraction des éléments en traces solubles dans l'aqua regia - Determination of Copper by Flame Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	aqua-regia digest	*unknown*
Polska	SMN PO 01	*unknown*	all	*unknown*	AAS-Flame	PN-ISO 11047:2001

Total Cu content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Portugal	Project Piddac 906-99	*unknown*	*unknown*	mg kg-1	Aqua regia, by flame-AAS	ISO Standard 11466
Romania	RO01-3	*unknown*	all	*unknown*	Acid digestion with mixture of HclO4, H2SO4, HNO3 - Determination by flame atomic absorption spectrometry	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	extracted with HF-HNO3-HCl	*unknown*
Slovakia	SK 1	*unknown*	all	*unknown*	ISO/DIS 14 870 (extracted with DTPA solution	ISO 14870
The Nertherlands	DSQN (NL)	*unknown*	0-10 cm	*unknown*	between 1993 and 1998: destruction with Fleischmann acid and perchloric acid (1:1). Measurement mainly on AAS-flame technique. From 1999 on, aqua regina and ICP.	*Unknown*
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 49 : Extractable Cu

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_T	all	*unknown*	NH4NO3	*unknown*
Austria	AT6	all	all	mg/kg	0,05 m EDTA 1:10	Austrian Standard L 1089
Austria	AT7	all	all	mg/kg	0,05 m EDTA 1:10	Austrian Standard L 1089
Austria	AT13	AGES 17/601	all	mg/kg	0,05 m EDTA 1:10	Austrian Standard L 1089
France	RMQS	all	all	mg/kg	Extractable trace elements by BCR method (EDTA solution 0.05 M)	*unknown*
Greece	unknown	*unknown*	*unknown*	mg/kg	EDTA	*unknown*
Hungary	HU1, HU2	*unknown*	topsoil	*unknown*	EDTA extraction, ICP	MSZ-20135:1999
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	0.05M EDTA-extractable, followed by ICP-AES	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	EDTA	*unknown*
Slovakia	SK 1	*unknown*	all	*unknown*	mobile forms extracted with 0.05 mol.dm-3 EDTA	*unknown*
United Kingdom	national	*unknown*	*unknown*	mg/l	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) after shaking 10ml of soil with 50ml of 0.05M EDTA at pH 7.0 for 1h at 20 deg. C and then filtering	*unknown*

Table 50 : Cu available

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Estonia	ES01	*unknown*	all	*unknown*	Mehlich-3	*unknown*
Estonia	ES02	*unknown*	5%	*unknown*	Mehlich-3	*unknown*

Table 51 : Total F content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT6	all	all	mg/kg	water extract	LVA, Graz, Austria
United Kingdom	national	*unknown*	*unknown*	*unknown*	Flouride extracted with 1mol / l sulphuric acid and determined by Ion Selective Electrode (ISE)	*unknown*

Table 52 : Soluble F

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT2	all	all	mg/kg	water soluble substances (water extract 1:10)	Austrian Standard L 1092
Austria	AT4	171	partly	mg/kg	water soluble substances (water extract 1:10)	Austrian Standard L 1092
Austria	AT11	all BDB_OE	all	*unknown*	water soluble substances (water extract 1:10)	Austrian Standard L 1092
Romania	RO01-3	*unknown*	all	*unknown*	CaCl2 extraction (1:10), determination by potentiometric method	*unknown*
Romania	RO01-3	*unknown*	all	*unknown*	CaCl2 extraction (1:10), determination by potentiometric method	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	watersoluble with fluoride ionselective electrode	*unknown*

Table 53 : Total Fe content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT4	all	all	mg/kg	0,1m BaCl2 1:20 - unbuffered	Austrian Standard L 1086
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1093
Austria	AT7	all	all	mg/kg	aqua regia	Austrian Standard L 1086
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT10	all	all	mg/kg	Nitric acid	Austrian Standard L 1085
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_V	all	*unknown*	aqua regia	*unknown*
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085
Austria	*unknown*	*unknown*	*unknown*	mg/kg	hydrofluoric acid	own methode
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	o	*unknown*	digestion in aqua regia; AAS	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1702	o	*unknown*	digestion in aqua regia; AAS	ISO 11466
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
Finland	FI02	*unknown*	*unknown*	*unknown*	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na2EDTA (pH 4.65, AAAc-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	*unknown*
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HclO4)	NF X 31-147
Greece	*unknown*	*unknown*	*unknown*	g/100g	HF	*unknown*
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSZ-21470-50:1998
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466

Total Fe content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
Ireland	IE01	*unknown*	all	*unknown*	HF - HCl - HNO3	*unknown*
Lithuania	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	aqua-regia digest	*unknown*
Polska	SMN PO 01	*unknown*	all	*unknown*	AAS-Flame	PN ISO 14689-1
Scotland	National Soils Inventory for Scotland (NSIS)	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	ISO/DIS 14 870 (extracted with DTPA solution	*unknown*
The Netherlands	DSQN (NL)	*unknown*	0-10 cm	*unknown*	between 1993 and 1998: destruction with Fleischmann acid and perchloric acid (1:1). Measurement mainly on AAS-flame technique. From 1999 on, aqua regina and ICP.	*unknown*
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 54 : Extractable Fe

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT6	all	all	mg/kg	0,05 m EDTA 1:10	*unknown*
Austria	AT13	AGES 17/601	all	mg/kg	0,05 m EDTA 1:10	*unknown*
Austria	AT7	all	all	mg/kg	0,05 m EDTA 1:10	*unknown*
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	0.05M EDTA-extractable, followed by ICP-AES	*unknown*

Table 55 : free iron (Fe) and free iron oxides (Fe2O3)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	*unknown*	reduction of Fe using sodiumdithionite	*unknown*
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	*unknown*	reduction of Fe using sodiumdithionite	*unknown*
France	RMQS	all	all	g/100g	Tamm method (oxalate)	*unknown*
France	RMQS	all	all	g/100g	Mehra-Jackson method (citrate-bicarbonate-dithionite)	*unknown*
Greece	unknown	*unknown*	*unknown*	g/100g	Tamm	*unknown*

Table 56 : Total Hg content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	all	mg/kg	aqua regia	Austrian Standard L 1090
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT3	all	all	mg/kg	aqua regia	Austrian Standard L 1090
Austria	AT4	171	partly	mg/kg	Perchloric acid 70%	n.a.
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1094
Austria	AT6	all	all	mg/kg	aqua regia	Austrian Standard L 1090
Austria	AT7	50	partly	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT8	all	all	mg/kg	HCl:HNO3=1:9	n.a.
Austria	AT9	all	all	mg/kg	aqua regia	DIN 38414/7
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_OE	all	*unknown*	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085
Belgium	BE03 (Heavy Metals WFlanders & Antwerp)	*unknown*	all	*unknown*	AAS (Coleman Mercury Analyzer MAS-50B)	*unknown*
Belgium	BE04 (Heavy Metals EFlanders)	*unknown*	all	*unknown*	AAS (Coleman Mercury Analyzer MAS-50B)	*unknown*
Germany	NR	45	*unknown*	unknown	pressure digestion	*unknown*
Germany	NR	11	*unknown*	unknown	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	5	*unknown*	unknown	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	369	only for humus layers	unknown	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	6	only for humus layers	unknown	pressure digestion with nitric acid [only for humus layers]	*unknown*

Total Hg content (continued from previous table)

country	soil monitoring network ID	site ID	Samples concerned	unit	method	reference of method
Germany	NR	14	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	53	*unknown*	*unknown*	digestion with perchloric and hydrofluoric acid	*unknown*
Germany	NR	30	*unknown*	*unknown*	digestion with hydrofluoric acid + nitric acid + boric acid, analysis with ICP-OES	*unknown*
Germany	NR	45	*unknown*	*unknown*	pressure digestion	*unknown*
Germany	NR	6	*unknown*	*unknown*	HF	*unknown*
Germany	NR	26	*unknown*	*unknown*	digestion with nitric, perchloric and hydrofluoric acid	*unknown*
Germany	NR	20	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	133	*unknown*	*unknown*	HNO3 + 3 HCl (aqua regia), AAS	*unknown*
Germany	NR	17	*unknown*	*unknown*	RFA	*unknown*
Germany	NR	32	*unknown*	*unknown*	XRF (X-ray fluorescence) [with pressed powder pellet]	*unknown*
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
Ireland	IE01	*unknown*	all	*unknown*	HF - HCl - HNO3	*unknown*
Malta	MT01	31	*unknown*	*unknown*	Method D: Mercury in soils, sediments of related materials by flameless Atomic Absorption Spectroscopy - AAS (1987)	Standing Committee of Analysts, Dept. of Environment - 1972
Portugal	Project Piddac 906-99	*unknown*	*unknown*	mg kg-1	*unknown*	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	TMA 254 analysator	*unknown*
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Hydride AAS, digested in a nitric/sulphuric acid mixture	*unknown*

Table 57 : Extractable Hg

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_T	all	*unknown*	NH4NO3	*unknown*

Table 58 : Total K content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	all	mg/kg	CAL (calcium-acetate-lactate)	Austrian Standard L 1087
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT2	all	all	mg/kg	CAL (calcium-acetate-lactate)	Austrian Standard L 1087
Austria	AT3	all	all	mg/kg	CAL (calcium-acetate-lactate)	Austrian Standard L 1087
Austria	AT4	all	all	mg/kg	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1095
Austria	AT6	all	all	mg/kg	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087 and L 1088
Austria	AT7	all	all	%	aqua regia	Austrian Standard L 1085
Austria	AT7	40	partly	mg/kg	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087 and L 1088
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT10	all	all	mg/kg	Nitric acid	Austrian Standard L 1085
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_S	all	*unknown*	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087 and L 1088
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	*unknown*	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087 and L 1088
Austria	AT11	all BDB_OE	all	*unknown*	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087

Total K content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_OE	all	*unknown*	aqua regia	Austrian Standard L 1085
Austria	AT13	AGES 90/101	all	*unknown*	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087
Austria	AT13	AGES 17/601	all	*unknown*	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087
Austria	AT13	AGES 17/201	all	*unknown*	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard EN ISO 11885 (modified)
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	o	*unknown*	digestion in aqua regia; AAS	ISO 11466
Belgium	BE06 (ICP Forests-Sbelgium 1994)	*unknown*	o	*unknown*	digestion in aqua regia; AAS	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1202	o	*unknown*	digestion in aqua regia; AAS	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1702	o	*unknown*	digestion in aqua regia; AAS	ISO 11466
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
Finland	FI02	*unknown*	*unknown*	*unknown*	0.5 M ammonium acetate + 0.5 M acetic acid (pH 4.65, AAAc) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	*unknown*
France	ICP	*unknown*	litière	*unknown*	unknown	*unknown*
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO4)	NF X 31-147
Germany	NR	257	*unknown*	*unknown*	extraction with Ca lactate/Ca acetate/ acetic acid solution at pH 4.1, 1:20	*unknown*
Germany	NR	17	*unknown*	*unknown*	extraction with Ca lactate/Ca acetate/ acetic acid solution at pH 4.1, 1:20	*unknown*
Germany	NR	26	*unknown*	*unknown*	extraction with Ca lactate/HCl solution at pH 3.7, 1:50	*unknown*

Total K content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Germany	NR	8	*unknown*	*unknown*	extraction with Ca lactate/HCl solution at pH 3.7, 1:50	*unknown*
Germany	NR	21	*unknown*	*unknown*	extraction with Ca lactate/HCl solution at pH 3.7, 1:50	*unknown*
Germany	NR	133	*unknown*	*unknown*	VDLUFA Methode A6.2.1.1	*unknown*
Germany	NR	14	*unknown*	*unknown*	extraction with aqua regia, determination with AAS	*unknown*
Germany	NR	16	*unknown*	*unknown*	DIN 38 414 KW, HNO3	*unknown*
Germany	NR	53	*unknown*	*unknown*	DIN 38 414 KW, Perchlorsre-HF	*unknown*
Germany	NR	45	*unknown*	*unknown*	pressure digestion	*unknown*
Germany	NR	90	*unknown*	*unknown*	solution de HF/HClO4	*unknown*
Germany	NR	36	*unknown*	*unknown*	HF	*unknown*
Germany	NR	26	*unknown*	*unknown*	digestion with nitric, perchloric and hydrofluoric acid	*unknown*
Germany	NR	20	*unknown*	*unknown*	pressure digestion with nitric acid	*unknown*
Germany	NR	16	*unknown*	*unknown*	solution d'acide nitrique + eau régale	*unknown*
Germany	NR	133	*unknown*	*unknown*	in Anlehn. DIN 38406-22	*unknown*
Germany	NR	25	*unknown*	*unknown*	RFA	*unknown*
Germany	NR	32	*unknown*	*unknown*	XRF (X-ray fluorescence) [with pressed powder pellet]	*unknown*
Germany	NR	60	*unknown*	*unknown*	VDLUFA	*unknown*
Greece	unknown	*unknown*	*unknown*	g/100g	HF	*unknown*
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
Ireland	IE01	*unknown*	all	*unknown*	HF - HCl - HNO3	*unknown*
Lithuania	unknown	*unknown*	*unknown*	*unknown*	Egner-Rim-Domming method (used in Hungary and Sweden)	*unknown*

Total K content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Polska	SMN PO 01	*unknown*	all	*unknown*	AAS-Emission	PN ISO 14689-1
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 59 : Extractable K

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_OE	all	*unknown*	0,1 m BaCl2 1:20	Austrian Standard L 1086-1
Ireland	IE01	*unknown*	all	*unknown*	Morgan's Extract	*unknown*
Malta	MT01	*unknown*	all	*unknown*	Determination of potassium in soil by flame spectrometry	SSSA 1996
United Kingdom	national	*unknown*	*unknown*	mg/l	determined by shaking 10ml of air dry soil with 50ml of 1.0M ammonium nitrate for 30mins, filtering and then measuring the concentration by flame photometry	*unknown*

Table 60 : K available

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_V	all	*unknown*	CAL (calcium-acetate-lactate) or DL (double-lactate)	*unknown*
Estonia	ES01	*unknown*	all	*unknown*	Mehlich-3	*unknown*
Estonia	ES02	*unknown*	all	*unknown*	Mehlich-3	*unknown*
Hungary	HU1, HU2	*unknown*	topsoil	*unknown*	ammonium-lactate extraction, ICP	MSZ-20135:1999
Lithuania	LT_ATC	*unknown*	topsoil	*unknown*	A-L method	*unknown*
Northern Ireland	national	*unknown*	*unknown*	mg l-1	extracted using 1M ammonium acetate then flame photometry or AAS	*unknown*
Polska	unknown	*unknown*	*unknown*	*unknown*	calcium lactate-extractable K	BN-73/9180-01
Romania	RO01-2	*unknown*	all	*unknown*	Egnèr-Riehm-Domingo method = extraction in ammonium acetate – lactate solution at pH 3.75, followed by flame photometer dosage.	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	Schacht. and Mehlich II methods	*unknown*

Table 61 : Total La content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Polska	SMN PO 01	*unknown*	all	*unknown*	ICP-Emission	ISO-11466:2002

Table 62 : Total Li content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Polska	SMN PO 01	*unknown*	all	*unknown*	ICP-Emission	ISO-11466:2002

Table 63 : Total Mg content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSZ-21470-50:1998
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	*unknown*	*unknown*	unknown	aqua regia	ISO 11466
ICP	ICP	*unknown*	*unknown*	unknown	aqua regia	ISO 11466
Scotland	national	*unknown*	*unknown*	unknown	aqua regia extract	*unknown*

Table 64 : Extractable Mg

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Ireland	IE01	*unknown*	all	*unknown*	Morgan's Extract	*unknown*

Table 65 : Mg available

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Estonia	ES01	*unknown*	all	*unknown*	Mehlich-3	*unknown*
Estonia	ES02	*unknown*	20%	*unknown*	Mehlich-3	*unknown*
Hungary	HU1, HU2	*unknown*	topsoil	*unknown*	KCl extraction, ICP	MSZ-20135:1999
Northern Ireland	national	*unknown*	*unknown*	mg/l	extracted using 1M ammonium acetate then flame photometry or AAS	*unknown*
Polska	*unknown*	*unknown*	*unknown*	*unknown*	calcium chloride-extractable Mg	BN-79/9180-05
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	Mehlich II. Method	*unknown*

Table 66 : Soluble Mg

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Portugal	PT01	*unknown*	all	*unknown*	Determination of soluble Mg2+ by atomic absorption spectrophotometry	*unknown*
Portugal	PT01	*unknown*	all	*unknown*	Determination of soluble Mg2+ by atomic absorption spectrophotometry	*unknown*

Table 67 : Total Mn content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	all	mg/kg	aqua regia	Austrian Standard L 1091
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT3	88	partly	mg/kg	0,1m BaCl2 1: 2,5	Blum et al., 1995
Austria	AT3	all	all	mg/kg	aqua regia	Austrian Standard L 1091
Austria	AT4	all	all	mg/kg	reversed aqua regia [HNO3+HCl =3+1]	n.a.
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1097
Austria	AT7	all	all	mg/kg	aqua regia	Austrian Standard L 1087
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT10	all	all	mg/kg	Nitric acid	Austrian Standard L 1085
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_V	all	*unknown*	aqua regia	*unknown*
Austria	AT11	all BDB_OE	all	*unknown*	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085, Austrian Standard EN ISO 11885 (modified)
Austria	AT14	BDB_UBA	all	mg/kg	hydrofluoric acid	own methode
Austria	AT4	all	all	mg/kg	0,1m BaCl2 1:20 - unbuffered	Austrian Standard L 1086
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
Finland	FI02	*unknown*	*unknown*	*unknown*	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na2EDTA (pH 4.65, AAAc-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	*unknown*
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO4)	NF X 31-147

Total Mn content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Greece	*unknown*	*unknown*	*unknown*	mg/kg	HF	*unknown*
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSZ-08-1933:1986
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
Ireland	IE01	*unknown*	all	*unknown*	HF - HCl - HNO3	*unknown*
Lithuania	LT_ATC	*unknown*	all	*unknown*	*unknown*	*unknown*
Lithuania	LT_ATC	*unknown*	all	*unknown*	*unknown*	*unknown*
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	aqua-regia digest	*unknown*
Polska	SMN PO 01	*unknown*	all	*unknown*	AAS-Flame	PN-ISO 11047:2001
Romania	RO01-3	*unknown*	all	*unknown*	Acid digestion with mixture of HclO4, H2SO4, HNO3 - Determination by flame atomic absorption spectrometry	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*
Slovakia	SK 1	*unknown*	all	*unknown*	ISO/DIS 14 870 (extracted with DTPA solution	ISO 14870
The Netherlands	DSQN (NL)	*unknown*	0-10 cm	*unknown*	*unknown*	*unknown*
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 68 : Extractable Mn

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT13	AGES 17/601	all	mg/kg	0,05 m EDTA 1:10	Austrian Standard L 1089
Austria	AT7	all	all	mg/kg	0,05 m EDTA 1:10	Austrian Standard L 1089
Austria	AT6	all	all	mg/kg	0,05 m EDTA 1:10	Austrian Standard L 1089
Hungary	HU1, HU2	*unknown*	topsoil	*unknown*	EDTA extraction, ICP	MSZ-20135:1999
Northern Ireland	national	*unknown*	*unknown*	mg/kg	0.05M EDTA-extractable, followed by ICP-AES	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	EDTA	*unknown*
United Kingdom	national	*unknown*	*unknown*	mg/l	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) after shaking 10ml of soil with 50ml of 0.05M EDTA at pH 7.0 for 1h at 20 deg. C and then filtering	*unknown*

Table 69 : Mn available

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Estonia	ES01	*unknown*	all	*unknown*	Mehlich-3	*unknown*
Estonia	ES02	*unknown*	5%	*unknown*	Mehlich-3	*unknown*

Table 70 : Total Mo content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	all	mg/kg	aqua regia	Austrian Standard L 1092
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT3	all	all	mg/kg	dry combustion and acid absorption	n.a.
Austria	AT4	171	partly	mg/kg	dry combustion and acid absorption	n.a.
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1098
Austria	AT6	all	all	mg/kg	aqua regia	Austrian Standard L 1091
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT9	all	all	mg/kg	aqua regia	DIN 38414/7
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	mg/kg	hydrofluoric acid	own methode
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
Finland	FI02	*unknown*	*unknown*	*unknown*	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na2EDTA (pH 4.65, AAAc-EDTA) ; graphite furnace atomic absorption spectrometry (GF-AAS)	*unknown*
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HclO4)	NF X 31-147
Greece	*unknown*	*unknown*	*unknown*	mg/kg	HF	*unknown*
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSZ-08-1933:1986
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	aqua-regia digest	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*

Total Mo content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Atomic Adsorption Spectrometyr (AAS) in an aqua regia digest	*unknown*

Table 71 : Extractable Mo

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	0.05M EDTA-extractable, followed by ICP-AES	*unknown*

Table 72 : Total Na content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1099
Austria	AT7	all	all	mg/kg	aqua regia	Austrian Standard L 1088
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	*unknown*	*unknown*	*unknown*	mg/kg	hydrofluoric acid	own methode
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	m	*unknown*	digestion in aqua regia; AAS	ISO 11466
Belgium	*unknown*	*unknown*	*unknown*	*unknown*	digestion in aqua regia; AAS	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1202	m	*unknown*	digestion in aqua regia; AAS	ISO 11466
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HclO4)	NF X 31-147
Greece	*unknown*	*unknown*	*unknown*	g/100g	HF	*unknown*
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSZ-21470-50:1998
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	aqua-regia digest	*unknown*
Polska	SMN PO 01	*unknown*	all	*unknown*	AAS-Emission	PN ISO 14689-1
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 73 : Extractable Na

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Northern Ireland	national	*unknown*	*unknown*	mg/kg	0.05M EDTA-extractable, followed by ICP-AES	*unknown*

Table 74 : Na available

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Hungary	HU1, HU2	*unknown*	topsoil	*unknown*	ammonium-lactate extraction, ICP	MSZ-20135:1999

Table 75 : Soluble Na

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Portugal	PT01	*unknown*	all	*unknown*	Determination of soluble Na+ by atomic absorption spectrophotometry	*unknown*
Portugal	PT01	*unknown*	all	*unknown*	Determination of soluble Na+ by atomic absorption spectrophotometry	*unknown*

Table 76 : Total Ni content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	all	mg/kg	aqua regia	Austrian Standard L 1093
Austria	AT1	all	partly	mg/kg	aqua regia	DIN 38414 S7
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT3	88	partly	mg/kg	0,1m BaCl2 1: 2,5	Blum et al., 1995
Austria	AT3	all	all	mg/kg	aqua regia	Austrian Standard L 1092
Austria	AT4	all	all	mg/kg	reversed aqua regia [HNO3+HCl =3+1]	n.a.
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1100
Austria	AT6	all	all	mg/kg	aqua regia	Austrian Standard L 1092
Austria	AT7	50	partly	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT9	all	all	mg/kg	aqua regia	DIN 38414/7
Austria	AT10	all	all	mg/kg	Nitric acid	Austrian Standard L 1085
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_V	all	*unknown*	aqua regia	*unknown*
Austria	AT11	all BDB_OE	all	*unknown*	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085, Austrian Standard EN ISO 11885 (modified)
Austria	AT14	BDB_UBA	all	mg/kg	hydrofluoric acid	own methode
Belgium	BE03 (Heavy Metals Wflanders & Antwerp)	*unknown*	all	*unknown*	AAS (Varian spectrAA-10)	Verloo, 1997
Belgium	BE04 (Heavy Metals Eflanders)	*unknown*	all	*unknown*	AAS (Varian spectrAA-10)	Verloo, 1997
Bulgaria	European monitoring grid for Diffuse contamination	*unknown*	*unknown*	*unknown*	Flame spectrometer	*unknown*

Total Ni content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Bulgaria	National grid for Local contamination	*unknown*	*unknown*	*unknown*	Flame spectrometer	*unknown*
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO4)	NF X 31-147
Germany	NR	45	*unknown*	*unknown*	pressure digestion	*unknown*
Germany	NR	11	*unknown*	*unknown*	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	5	*unknown*	*unknown*	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	369	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	6	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	14	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	53	*unknown*	*unknown*	digestion with perchloric and hydrofluoric acid	*unknown*
Germany	NR	30	*unknown*	*unknown*	digestion with (hydrofluoric acid and) aqua regia, analysis with ICP-OES	*unknown*
Germany	NR	45	*unknown*	*unknown*	pressure digestion	*unknown*
Germany	NR	6	*unknown*	*unknown*	HF	*unknown*
Germany	NR	26	*unknown*	*unknown*	digestion with nitric, perchloric and hydrofluoric acid	*unknown*
Germany	NR	20	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	133	*unknown*	*unknown*	HNO3 + 3 HCl (aqua regia), AAS	*unknown*
Germany	NR	17	*unknown*	*unknown*	RFA	*unknown*
Germany	NR	32	*unknown*	*unknown*	XRF (X-ray fluorescence) [with pressed powder pellet]	*unknown*

Total Ni content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Greece	*unknown*	*unknown*	*unknown*	mg/kg	HF	*unknown*
Greece	GRPRES24	*unknown*	all	*unknown*	Extraction des éléments en traces solubles dans l'aqua regia - Digestion with Nitric Acid and Perchloric Acid in a block Digester	Miller and Mcfee, 1984
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSZ-08-1933:1986
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	*unknown*	*unknown*	unknown	aqua regia	ISO 11466
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
Lithuania	LT_ATC	*unknown*	all	*unknown*	unknown	*unknown*
Lithuania	LT_ATC	*unknown*	all	*unknown*	unknown	*unknown*
Malta	MT02	*unknown*	all	*unknown*	Determination of nickel by Flame Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Malta	MT03	*unknown*	all	*unknown*	Extraction des éléments en traces solubles dans l'aqua regia - Determination of nickel by Flame Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Malta	MT04	*unknown*	all	*unknown*	Extraction des éléments en traces solubles dans l'aqua regia - Determination of nickel by Flame Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	aqua-regia digest	*unknown*
Polska	SMN PO 01	*unknown*	all	*unknown*	AAS-Flame	PN-ISO 11047:2001
Portugal	Project Piddac 906-99	*unknown*	*unknown*	mg kg-1	Aqua regia, by flame-AAS	ISO Standard 11466
Romania	RO01-3	*unknown*	all	*unknown*	Acid digestion with mixture of HclO4, H2SO4, HNO3 - Determination by flame atomic absorption spectrometry	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*

Total Ni content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	extracted with HF-HNO3-HCl	*unknown*
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 77 : Extractable Ni

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
France	RMQS	all	all	mg/kg	Extractable trace elements by BCR method (EDTA solution 0.05 M)	*unknown*
Greece	*unknown*	*unknown*	*unknown*	mg/kg	EDTA	*unknown*
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	0.05M EDTA-extractable, followed by ICP-AES	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	EDTA	*unknown*
Slovakia	SK 1	*unknown*	all	mobile forms	extracted with 0.05 mol.dm-3 EDTA	*unknown*
United Kingdom	national	*unknown*	*unknown*	mg/l	Extractable Nickel concentration (mg/l) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) after shaking 10ml of soil with 50ml of 0.05M EDTA at pH 7.0 for 1h at 20 deg. C and then filtering	*unknown*

Table 78 : Total P content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT4	all	all	mg/kg	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1101
Austria	AT6	all	all	mg/kg	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087 and L 1088
Austria	AT7	all	all	mg/kg	aqua regia	Austrian Standard L 1089
Austria	AT7	40	partly	mg/kg	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087 and L 1088
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT10	all	all	mg/kg	Nitric acid	Austrian Standard L 1085
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_S	all	*unknown*	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087 and L 1088
Austria	AT11	all BDB_T	all	*unknown*	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087 and L 1088
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_V	all	*unknown*	aqua regia	*unknown*
Austria	AT11	all BDB_OE	all	*unknown*	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087
Austria	AT11	all BDB_OE	all	*unknown*	aqua regia	Austrian Standard L 1085
Austria	AT13	AGES 90/101	all	*unknown*	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087
Austria	AT13	AGES 17/601	all	*unknown*	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087
Austria	AT13	AGES 17/201	all	*unknown*	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085, Austrian Standard EN ISO 11885 (modified)
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	o	*unknown*	digestion in aqua regia; colorimetry	ISO 11466

Total P content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Belgium	BE06 (ICP Forests-Sbelgium 1994)	*unknown*	all	*unknown*	digestion in aqua regia; colorimetry	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1202	o	*unknown*	digestion in aqua regia; colorimetry	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1702	o	*unknown*	digestion in aqua regia; colorimetry	ISO 11466
Bulgaria	European monitoring grid for Diffuse contamination	*unknown*	*unknown*	*unknown*	spectrophptometer after extraction in aqua regia, reagent vanadat-molibdate, UV/VIS	*unknown*
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
Finland	FI02	*unknown*	*unknown*	*unknown*	0.5 M ammonium acetate + 0.5 M acetic acid (pH 4.65, AAAc) ; spectrometry	*unknown*
France	ICP	*unknown*	litter	*unknown*	*unknown*	*unknown*
France	ICP	*unknown*	*unknown*	*unknown*	colorimétrie	*unknown*
Germany	NR	257	*unknown*	*unknown*	extraction with Ca lactate/Ca acetate/ acetic acid solution at pH 4.1, 1:20	DIN 38 414 Koenigswasser
Germany	NR	17	*unknown*	*unknown*	extraction with Ca lactate/Ca acetate/ acetic acid solution at pH 4.1, 1:20	*unknown*
Germany	NR	26	*unknown*	*unknown*	extraction with Ca lactate/HCl solution at pH 3.7, 1:50	*unknown*
Germany	NR	8	*unknown*	*unknown*	extraction with Ca lactate/HCl solution at pH 3.7, 1:50	*unknown*
Germany	NR	21	*unknown*	*unknown*	extraction with Ca lactate/HCl solution at pH 3.7, 1:50	*unknown*
Germany	NR	133	*unknown*	*unknown*	VDLUFA Methode A6.2.1.1	*unknown*
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSZ-21470-50:1998
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466

Total P content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Latvia	LV03	*unknown*	all	*unknown*	Aqua regia, Colorimetry	*unknown*
Lithuania	unknown	*unknown*	*unknown*	*unknown*	Egner-Rim-Domming method (used in Hungary and Sweden)	*unknown*
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	*unknown*	*unknown*
Polska	SMN PO 01	*unknown*	all	*unknown*	vanadomolybdate spectrophotometric method	PN-ISO 14869-1
Scotland	National Soils Inventory for Scotland (NSIS)	*unknown*	*unknown*	mg/100g	*unknown*	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*
The Netherlands	DSQN (NL)	*unknown*	0-10 cm	*unknown*	total phosphorus (SFA, colorimetric)	*unknown*
The Netherlands	DSQN (NL)	*unknown*	0-10 cm	*unknown*	between 1993 and 1998: destruction with Fleischmann acid and perchloric acid (1:1). Measurement mainly on AAS-flame technique. From 1999 on, aqua regina and ICP.	*Unknown*
United Kingdom	national	*unknown*	*unknown*	*unknown*	Total Phosphorus concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 79 : Extractable P

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Greece	GRARG75	*unknown*	*unknown*	*unknown*	NaHCO3 or Bray extraction	Olsen, Murphy-Rilley
Ireland	IE01	*unknown*	all	*unknown*	Morgan's Extract	*unknown*
The Netherlands	DSQN (NL)	*unknown*	0-10 cm	*unknown*	extractable phosphorus	*unknown*

Table 80 : Soluble P

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
France	RMQS	all	all	*unknown*	Spectrometric determination on phosphorus soluble in sodium hydrogen carbonate solution	NF ISO 11263
The Netherlands	DSQN (NL)	*unknown*	0-10 cm	*unknown*	water soluble phosphorus	*unknown*

Table 81 : P available

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_V	all	*unknown*	CAL (calcium-acetate-lactate) or DL (double-lactate)	*unknown*
Estonia	ES01	*unknown*	all	*unknown*	Mehlich-3	*unknown*
Estonia	ES02	*unknown*	all	*unknown*	Mehlich-3	*unknown*
Greece	unknown	*unknown*	*unknown*	*unknown*	Olsen	*unknown*
Hungary	HU1, HU2	*unknown*	topsoil	*unknown*	ammonium-lactate extraction, ICP	MSZ-20135:1999
Lithuania	LT_ATC	*unknown*	topsoil	*unknown*	A-L method	*unknown*
Northern Ireland	national	*unknown*	*unknown*	mg l-1	Olsen-P by bicarbonate reagent	*unknown*
Polska	unknown	*unknown*	*unknown*	*unknown*	calcium lactate-extractable P	BN-73/9180-01
Romania	RO01-2	*unknown*	all	*unknown*	Egnèr-Riehm-Domingo method = extraction in ammonium acetate – lactate solution at pH 3.75, followed by colorimetric (715 nm) dosage with ammonium molibdate and sulphuric acid solution and a mixture of SnCl2×H2O and ascorbic acid as reducing agent.	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	Egner´s and Mehlich II methods	*unknown*
United kingdom	national	*unknown*	*unknown*	*unknown*	Extractable Phosphorus concentration (mg/l) determined by shaking 5ml of air dry soil with 100ml of 0.5M sodium bicarbonate for 30mins at 20 deg.C, filtering and then measuring the absorbance at 880 nm colorimetrically with acid ammonium molybdate solution	*unknown*

Table 82 : Total Pb content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	all	mg/kg	aqua regia	Austrian Standard L 1094
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT3	88	partly	mg/kg	0,1m BaCl2 1: 2,5	Blum et al., 1995
Austria	AT3	all	all	mg/kg	aqua regia	Austrian Standard L 1093
Austria	AT4	all	all	mg/kg	reversed aqua regia [HNO3+HCl =3+1]	n.a.
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1102
Austria	AT6	all	all	mg/kg	aqua regia	Austrian Standard L 1093
Austria	AT7	all	all	mg/kg	aqua regia	Austrian Standard L 1087
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT9	all	all	mg/kg	aqua regia	DIN 38414/7
Austria	AT10	all	all	mg/kg	Nitric acid	Austrian Standard L 1085
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_V	all	*unknown*	aqua regia	*unknown*
Austria	AT11	all BDB_OE	all	*unknown*	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085, Austrian Standard EN ISO 11885 (modified)
Austria	AT14	BDB_UBA	all	mg/kg	hydrofluoric acid	own methode
Belgium	BE03 (Heavy Metals Wflanders & Antwerp)	*unknown*	all	*unknown*	AAS (Varian spectrAA-10)	Verloo, 1997
Belgium	BE04 (Heavy Metals Eflanders)	*unknown*	all	*unknown*	AAS (Varian spectrAA-10)	Verloo, 1997
Bulgaria	European monitoring grid for Diffuse contamination	*unknown*	*unknown*	*unknown*	Flame spectrometer	*unknown*
Bulgaria	National grid for Local contamination	*unknown*	*unknown*	*unknown*	Flame spectrometer	*unknown*

Total Pb content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
France	ICP	*unknown*	litter	*unknown*	*unknown*	*unknown*
France	RMQS	*unknown*	*unknown*	*unknown*	Total solubilizing by acid attack (HF - HClO4)	NF X 31-147
Germany	NR	45	*unknown*	*unknown*	pressure digestion	*unknown*
Germany	NR	11	*unknown*	*unknown*	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	5	*unknown*	*unknown*	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	369	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	6	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	14	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	53	*unknown*	*unknown*	digestion with perchloric and hydrofluoric acid	*unknown*
Germany	NR	30	*unknown*	*unknown*	digestion with (hydrofluoric acid and) aqua regia, analysis with ICP-OES	*unknown*
Germany	NR	45	*unknown*	*unknown*	pressure digestion	*unknown*
Germany	NR	6	*unknown*	*unknown*	HF	*unknown*
Germany	NR	26	*unknown*	*unknown*	digestion with nitric, perchloric and hydrofluoric acid	*unknown*
Germany	NR	20	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	133	*unknown*	*unknown*	HNO3 + 3 HCl (aqua regia), AAS	*unknown*
Germany	NR	17	*unknown*	*unknown*	RFA	*unknown*
Germany	NR	32	*unknown*	*unknown*	XRF (X-ray fluorescence) [with pressed powder pellet]	*unknown*
Greece	*unknown*	*unknown*	*unknown*	mg/kg	HF	*unknown*

Total Pb content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSZ-08-1933:1986
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
Ireland	IE01	*unknown*	all	*unknown*	HF - HCl - HNO3	*unknown*
Lithuania	LT_ATC	*unknown*	all	*unknown*	*unknown*	*unknown*
Lithuania	LT_ATC	*unknown*	all	*unknown*	*unknown*	*unknown*
Malta	MT02	*unknown*	all	*unknown*	Extraction des éléments en traces solubles dans l'aqua regia - Determination of Lead by Flame Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Malta	MT03	*unknown*	all	*unknown*	Extraction des éléments en traces solubles dans l'aqua regia - Determination of Lead by Flame Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Malta	MT04	*unknown*	all	*unknown*	Extraction des éléments en traces solubles dans l'aqua regia - Determination of Lead by Flame Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	aqua-regia digest	*unknown*
Polska	SMN PO 01	*unknown*	all	*unknown*	AAS-Flame	PN-ISO 11047:2001
France	Project Piddac 906-99	*unknown*	*unknown*	mg kg-1	*unknown*	*unknown*
Romania	RO01-3	*unknown*	all	*unknown*	Acid digestion with mixture of HclO4, H2SO4, HNO3 - Determination by flame atomic absorption spectrometry	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	extracted with HF-HNO3-HCl	*unknown*

Total Pb content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 83 : Extractable Pb

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_T	all	*unknown*	NH4NO3	*unknown*
Austria	AT7	all	all	mg/kg	0,05 m EDTA 1:10	Austrian Standard L 1089
France	RMQS	all	all	mg/kg	Extractable trace elements by BCR method (EDTA solution 0.05 M)	*unknown*
Greece	*unknown*	*unknown*	*unknown*	mg/kg	EDTA	*unknown*
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	0.05M EDTA-extractable, followed by ICP-AES	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	EDTA	*unknown*
Slovakia	SK 1	*unknown*	all	*unknown*	mobile forms extracted with 0.05 mol.dm-3 EDTA	*unknown*
United Kingdom	national	*unknown*	*unknown*	mg/l	Extractable Lead concentration (mg/l) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) after shaking 10ml of soil with 50ml of 0.05M EDTA at pH 7.0 for 1h at 20 deg. C and then filtering	*unknown*

Table 84 : Total Pt content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT9	all	all	mg/kg	aqua regia	DIN 38414/7

Table 85 : Total S content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT2	all	all	%	microelementary analysis and oxidation	according to Austrian Standard G1071 or Austrian Standard G1072
Austria	AT5	all	all	%	microelementary analysis	according to Austrian Standard G1071 or Austrian Standard G1072
Austria	AT10	all	all	%	elementary analysis	n.a.
Austria	AT11	all BDB_OE	all	*unknown*	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	%	oxidation	Austrian Standard EN ISO 11885 (modified)
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
Finland	FI02	*unknown*	*unknown*	*unknown*	0.5 M ammonium acetate + 0.5 M acetic acid (pH 4.65, AAAc) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	*unknown*
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
Polska	SMN PO 01	*unknown*	all	*unknown*	nefelometric method	PN 79/C-04566/10

Table 86 : Extractable S

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Northern Ireland	national	*unknown*	*unknown*	mg/kg	0.05M EDTA-extractable, followed by ICP-AES	*unknown*

Table 87 : S available

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Hungary	HU1, HU2	*unknown*	topsoil	*unknown*	KCl extraction, ICP	MSZ-20135:1999
Northern Ireland	national	*unknown*	*unknown*	mg l-1	extracted using 1M ammonium acetate then flame photometry or AAS	*unknown*
Polska	*unknown*	*unknown*	*unknown*	*unknown*	calcium dihydrogen phosphate-extractable S	PN 79/C-04566/10

Table 88 : Soluble S

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT2	all	all	mg/kg	water soluble substances (water extract 1:10)	Austrian Standard L 1092
Austria	AT4	171	partly	mg/kg	water soluble substances (water extract 1:10)	Austrian Standard L 1092
Austria	AT11	all BDB_OE	all	*unknown*	water soluble substances (water extract 1:10)	Austrian Standard L 1092
Romania	RO01-3	*unknown*	all	*unknown*	Water extraction (1:5), determination by gravimetric method	*unknown*

Table 89 : Total Sb content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085

Table 90 : Total Se content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	all	mg/kg	Perchloric acid 70%	n.a.
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT3	all	all	mg/kg	aqua regia	Austrian Standard L 1094
Austria	AT4	171	partly	mg/kg	Perchloric acid 70%	n.a.
Austria	AT9	all	all	mg/kg	aqua regia	DIN 38414/7
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_OE	all	*unknown*	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085
Finland	FI02	*unknown*	*unknown*	*unknown*	boiling water ; inductively coupled plasma mass spectrometry (ICP-MS)	*unknown*
Ireland	IE01	*unknown*	all	*unknown*	HF - HCl - HNO3	*unknown*
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSZ-21470-50:1998
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	extracted with HF-HNO3-HCl	*unknown*
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Hydride Atomic Absorption Spectrometry (AAS), extracted into hydrochloric acid after digestion with nitric acid and ashing with magnesium nitrate	*unknown*

Table 91 : Total Sr content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Polska	SMN PO 01	*unknown*	all	*unknown*	ICP-Emission	ISO-11466:2002
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 92 : Total St content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*

Table 93 : Total Ti content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Ireland	IE01	*unknown*	all	*unknown*	HF - HCl - HNO3	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*

Table 94 : Total Ti content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT4	171	partly	mg/kg	Nitric acid 65%	n.a.
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HclO4)	NF X 31-147
Greece	*unknown*	*unknown*	*unknown*	mg/kg	HF	*unknown*

Table 95 : Total V content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT4	171	partly	mg/kg	Nitric acid 65%	n.a.
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1103
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT9	all	all	mg/kg	aqua regia	DIN 38414/7
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_OE	all	*unknown*	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
Polska	SMN PO 01	*unknown*	all	*unknown*	ICP-Emission - Méthodes de dosage par spectrométrie d'absorption atomique dans la flamme et électrothermique	PN-ISO 11047:2001
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Atomic Adsorption Spectrometyr (AAS) in an aqua regia digest	*unknown*

Table 96 : Total Zn content

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	all	mg/kg	aqua regia	Austrian Standard L 1095
Austria	AT2	all	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT3	88	partly	mg/kg	0,1m BaCl2 1: 2,5	Blum et al., 1995
Austria	AT3	all	all	mg/kg	aqua regia	Austrian Standard L 1095
Austria	AT4	all	all	mg/kg	reversed aqua regia [HNO3+HCl =3+1]	n.a.
Austria	AT5	all	all	mg/kg	aqua regia	Austrian Standard L 1104
Austria	AT6	all	all	mg/kg	aqua regia	Austrian Standard L 1094
Austria	AT7	all	all	mg/kg	aqua regia	Austrian Standard L 1088
Austria	AT8	all	all	mg/kg	aqua regia	n.a.
Austria	AT9	all	all	mg/kg	aqua regia	DIN 38414/7
Austria	AT10	all	all	mg/kg	Nitric acid	Austrian Standard L 1085
Austria	AT11	all BDB_S	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_T	all	mg/kg	aqua regia	Austrian Standard L 1085
Austria	AT11	all BDB_V	all	*unknown*	aqua regia	unknown
Austria	AT11	all BDB_OE	all	*unknown*	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085, Austrian Standard EN ISO 11885 (modified)
Austria	AT14	BDB_UBA	all	mg/kg	hydrofluoric acid	own methode
Belgium	BE03 (Heavy Metals Wflanders & Antwerp)	*unknown*	all	*unknown*	AAS (Varian spectrAA-10)	Verloo, 1997
Belgium	BE04 (Heavy Metals Eflanders)	*unknown*	all	*unknown*	AAS (Varian spectrAA-10)	Verloo, 1997
Bulgaria	European monitoring grid for Diffuse contamination	*unknown*	*unknown*	*unknown*	Flame spectrometer	*unknown*
Bulgaria	National grid for Local contamination	*unknown*	*unknown*	*unknown*	Flame spectrometer	*unknown*

Total Zn content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Finland	FIN	number	all	*unknown*	aqua regia	ISO 11466?
Finland	FI02	*unknown*	*unknown*	*unknown*	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na2EDTA (pH 4.65, AAAc-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	*unknown*
France	ICP	*unknown*	litter	*unknown*	unknown	*unknown*
France	RMQS	all	*unknown*	mg/kg	Total solubilizing by acid attack (HF - HClO4)	NF X 31-147
Germany	NR	45	*unknown*	*unknown*	pressure digestion	*unknown*
Germany	NR	11	*unknown*	*unknown*	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	5	*unknown*	*unknown*	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	369	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	6	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	14	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*
Germany	NR	53	*unknown*	*unknown*	digestion with perchloric and hydrofluoric acid	*unknown*
Germany	NR	30	*unknown*	*unknown*	digestion with (hydrofluoric acid and) aqua regia, analysis with ICP-OES	*unknown*
Germany	NR	45	*unknown*	*unknown*	pressure digestion	*unknown*
Germany	NR	6	*unknown*	*unknown*	HF	*unknown*
Germany	NR	26	*unknown*	*unknown*	digestion with nitric, perchloric and hydrofluoric acid	*unknown*
Germany	NR	20	only for humus layers	*unknown*	pressure digestion with nitric acid [only for humus layers]	*unknown*

Total Zn content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Germany	NR	133	*unknown*	*unknown*	HNO3 + 3 HCl (eau régale), AAS	*unknown*
Germany	NR	17	*unknown*	*unknown*	RFA	*unknown*
Germany	NR	32	*unknown*	*unknown*	XRF (X-ray fluorescence) [with pressed powder pellet]	*unknown*
Greece	*unknown*	*unknown*	*unknown*	mg/kg	HF	*unknown*
Greece	GRPRES24	*unknown*	all	*unknown*	Digestion with Nitric Acid and Perchloric Acid in a block Digester	Miller and Mcfee, 1986
Hungary	HU1, HU2	*unknown*	all	*unknown*	cc. HNO3 + H2O2 digestion, ICP	MSZ-08-1933:1986
Hungary	HU1, HU2	*unknown*	all	*unknown*	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
ICP	ICP	*unknown*	*unknown*	*unknown*	aqua regia	ISO 11466
Ireland	IE01	*unknown*	all	*unknown*	HF - HCl - HNO3	*unknown*
Lithuania	LT_ATC	*unknown*	all	*unknown*	*unknown*	*unknown*
Lithuania	LT_ATC	*unknown*	all	*unknown*	*unknown*	*unknown*
Malta	MT02	*unknown*	all	*unknown*	aqua-regia - Determination of zinc by Flame Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Malta	MT03	*unknown*	all	*unknown*	aqua-regia - Determination of zinc by Flame Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Malta	MT04	*unknown*	all	*unknown*	Extraction des éléments en traces solubles dans l'eau régale - Determination of zinc by Flame Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Northern Ireland	national	*unknown*	*unknown*	mg kg-1	aqua-regia digest	*unknown*
Polska	SMN PO 01	*unknown*	all	*unknown*	AAS-Flame	PN-ISO 11047:2001
Portugal	Project Piddac 906-99	*unknown*	*unknown*	mg kg-1	Aqua regia, by flame-AAS	ISO Standard 11466

Total Zn content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Romania	RO01-3	*unknown*	all	*unknown*	Acid digestion with mixture of HClO4, H2SO4, HNO3 - Determination by flame atomic absorption spectrometry	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	aqua regia extract	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	extracted with HF-HNO3-HCl	*unknown*
Slovakia	SK 1	*unknown*	all	*unknown*	ISO/DIS 14 870 (extracted with DTPA solution	ISO 14870
The Netherlands	DSQN (NL)	*unknown*	0-10 cm	*unknown*	between 1993 and 1998: destruction with Fleischmann acid and perchloric acid (1:1). Measurement mainly on AAS-flame technique. From 1999 on, aqua regina and ICP.	Blgg
United Kingdom	national	*unknown*	*unknown*	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	*unknown*

Table 97 : Extractable Zn

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_T	all	*unknown*	NH4NO3	*unknown*
Austria	AT7	all	all	mg/kg	0,05 m EDTA 1:10	Austrian Standard L 1089
Austria	AT6	all	all	mg/kg	0,05 m EDTA 1:10	Austrian Standard L 1089
Austria	AT13	AGES 17/601	all	mg/kg	0,05 m EDTA 1:10	Austrian Standard L 1089
France	RMQS	all	all	mg/kg	Extractable trace elements by BCR method (EDTA solution 0.05 M)	*unknown*
Greece	unknown	*unknown*	*unknown*	mg/kg	EDTA	*unknown*
Hungary	HU1, HU2	*unknown*	topsoil	*unknown*	EDTA extraction, ICP	MSZ-20135:1999
Irlande du Nord	national	*unknown*	*unknown*	mg/kg	0.05M EDTA-extractable, followed by ICP-AES	*unknown*
Scotland	national	*unknown*	*unknown*	*unknown*	EDTA	*unknown*
Slovakia	SK 1	*unknown*	all	*unknown*	mobile forms extracted with 0.05 mol.dm-3 EDTA	*unknown*
United Kingdom	national	*unknown*	*unknown*	mg/l	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) after shaking 10ml of soil with 50ml of 0.05M EDTA at pH 7.0 for 1h at 20 deg. C and then filtering	*unknown*

Table 98 : pH KCl

country	soil monitoring network identification	site identification	Samples concerned	dilution	method	reference of method
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	1/2.5	glass electrode in a 1:2.5 suspension of soil in 1N KCl	unknown
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	1/2.5	glass electrode in a 1:2.5 suspension of soil in 1N KCl	unknown
Estonia	ES01	*unknown*	all	1/5	ph-meter	ISO 10390
Estonia	ES02	*unknown*	all	1/5	ph-meter	ISO 10390
Germany	NR	16	*unknown*	1/5	*unknown*	ISO 10390
Germany	NR	12	*unknown*	1/5	*unknown*	ISO 10390
Germany	NR	3	*unknown*	1/5	CaCl2 DIN 19 684 + H2O and KCl, H2O	ISO 10390
Germany	NR	20	*unknown*	1/5	CaCl2 DIN 19 684 and KCl	ISO 10390
Germany	NR	21	*unknown*	1/5	CaCl2 DIN 19 684 and KCl, DIN 19684, T 2	ISO 10390
Germany	NR	23	*unknown*	1/5	CaCl2 DIN 19 684 and KCl, H2O	ISO 10390
Germany	NR	63	*unknown*	1/5	*unknown*	ISO 10390
Hungary	HU1, HU2	*unknown*	all	1/2.5	1:2.5 suspension in 1 n KCl, digital pH meter	MSZ-08-0206/2:1978
Latvia	unknown	*unknown*	unknown	1/2.5	*unknown*	*unknown*
Lithuania	LT_ATC	*unknown*	topsoil	*unknown*	KCl 1N	*unknown*
Polska	SMN PO 01	*unknown*	all	1/5	hydrometer method	PN-ISO 10390:1997
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	potentiometrically in 1 mol.dm-3 KCl	0.2M KCl
The Netherlands	DSQN (NL)	*unknown*	0 - 10 cm	*unknown*	KCl	*unknown*

Table 99 : pH in water

country	soil monitoring network identification	site identification	Samples concerned	dilution	method	reference of method
Austria	AT2	all	all	*unknown*	pH in water	Austrian Standard L 1083
Austria	AT3	all	all	*unknown*	and water	Austrian Standard L 1084
Austria	AT7	all	all	*unknown*	pH in water	Austrian Standard L 1083
Austria	AT8	all	all	*unknown*	water saturation (fraction<10mm)	HUSZ, 1986
Austria	AT10	all	all	*unknown*	pH in water	Austrian Standard L 1083
Austria	AT11	BDB_V1/V2	all	*unknown*	water	*unknown*
Austria	AT14	BDB_UBA	all	*unknown*	water	Austrian Standard L 1083
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	1/2.5	glass electrode	*unknown*
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	1/2.5	glass electrode	*unknown*
Belgium	BE03 (Heavy Metals WFlanders & Antwerp)	*unknown*	all	1/2.5	glass electrode	ISRIC, 1987
Belgium	BE04 (Heavy Metals EFlanders)	*unknown*	all	1/5	glass electrode	Van Ranst et al., 1999
Finland	FI02	*unknown*	*unknown*	1/2.5	soil-water suspension	unknown
France	RMQS	all	all	1/5	Determination of pH water	NF ISO 10390
France	ICP	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*
France	ICP	*unknown*	litter	*unknown*	*unknown*	*unknown*
Germany	NR	12	*unknown*	1/5	*unknown*	ISO 10390
Germany	NR	93	*unknown*	1/5	CaCl2 DIN 19 684 + H2O	ISO 10390
Germany	NR	3	*unknown*	1/5	CaCl2 DIN 19 684 + H2O and KCl, H2O	ISO 10390
Germany	NR	21	*unknown*	1/5	CaCl2 DIN 19 684 and H2O	ISO 10390
Germany	NR	23	*unknown*	1/5	CaCl2 DIN 19 684 and KCl, H2O	ISO 10390
Germany	NR	63	*unknown*	1/5	*unknown*	ISO 10390

pH in water (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	dilution	method	reference of method
Greece	GRARG12	*unknown*	*unknown*	1/1	*unknown*	*unknown*
Hungary	HU1, HU2	*unknown*	all	1/2.5	digital pH meter	MSZ-08-0206/2:1978
ICP	ICP	*unknown*	*unknown*	1/5	pH-electrode	ISO 10390
Ireland	IE01	*unknown*	all	*unknown*	Soil in water	*unknown*
Latvia	unknown	*unknown*	*unknown*	1/5	*unknown*	*unknown*
Northern Ireland	national	*unknown*	*unknown*	1/2.5	in both deionised water	*unknown*
Polska	SMN PO 01	*unknown*	all	1/5	hydrometer method	PN-ISO 10390:1997
Portugal	Project Piddac 906-99	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*
Romania	RO01-2	*unknown*	all	1/2.5	Determination in water suspension (1:2,5) by potentiometric method	*unknown*
Scotland	National Soils Inventory for Scotland (NSIS)	*unknown*	*unknown*	*unknown*	pH in water	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	1/2.5	potentiometrically in water suspension (soil: water ratio 1:2.5)	*unknown*
Sweden	national	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*
The Netherlands	DSQN (NL)	*unknown*	0 - 10 cm	*unknown*	water	*unknown*
United Kingdom	national	*unknown*	*unknown*	1/2.5	pH of soil measure after shaking 10ml of soil for 15 minutes with 25ml of water	*unknown*

Table 100 : pH CaCl2

country	soil monitoring network identification	site identification	Samples concerned	dilution	method	reference of method
Austria	AT1	all	all	*unknown*	0,01m CaCl2	Austrian Standard L 1083
Austria	AT2	all	all	*unknown*	0,01m CaCl2	Austrian Standard L 1083
Austria	AT3	all	all	*unknown*	0,01m CaCl2	Austrian Standard L 1083
Austria	AT4	all	all	*unknown*	0,01m CaCl2	Austrian Standard L 1083
Austria	AT5	all	all	*unknown*	0,01m CaCl2	Austrian Standard L 1083
Austria	AT6	all	all	*unknown*	0,01m CaCl2	Austrian Standard L 1083
Austria	AT7	all	all	*unknown*	0,01m CaCl2	Austrian Standard L 1083
Austria	AT10	all	all	*unknown*	0,01m CaCl2	Austrian Standard L 1083
Austria	AT11	all BDB_S	all	*unknown*	0,01m CaCl2	Austrian Standard L 1083
Austria	AT11	all BDB_T	all	*unknown*	0,01m CaCl2	Austrian Standard L 1083
Austria	AT11	all BDB_V	all	*unknown*	CaCl2	*unknown*
Austria	AT13	AGES 90/101	all	*unknown*	0,01m CaCl2	Austrian Standard L 1083
Austria	AT13	AGES 17/601	all	*unknown*	0,01m CaCl2	Austrian Standard L 1083
Austria	AT13	AGES 17/201	all	*unknown*	0,01m CaCl2	Austrian Standard L 1083
Austria	AT14	BDB_UBA	all	*unknown*	0,01m CaCl2	Austrian Standard L 1083
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	all	1/5	extractant 0.01 CaCL2; measurement pH-electrode	ISO 10390
Belgium	BE06 (ICP Forests-Sbelgium 1994)	*unknown*	litter	1/2	extractant 0.01 CaCL2; measurement pH-electrode	*unknown*
Belgium	BE06 (ICP Forests-Sbelgium 1994)	*unknown*	all	1/5	extractant 0.01 CaCL2; measurement pH-electrode	*unknown*
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1202	all	1/5	extractant 0.01 CaCL2; measurement pH-electrode	ISO 10390
France	ICP	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*
France	ICP	*unknown*	litter	*unknown*	*unknown*	*unknown*

pH CaCl2 (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	dilution	method	reference of method
Germany	NR	180	*unknown*	1/5	*unknown*	ISO 10390
Germany	NR	16	*unknown*	1/5	*unknown*	ISO 10390
Germany	NR	12	*unknown*	1/5	*unknown*	ISO 10390
Germany	NR	240	*unknown*	1/5	CaCl2 DIN 19 684	ISO 10390
Germany	NR	93	*unknown*	1/5	CaCl2 DIN 19 684 + H2O	ISO 10390
Germany	NR	3	*unknown*	1/5	CaCl2 DIN 19 684 + H2O and KCl, H2O	ISO 10390
Germany	NR	25	*unknown*	1/5	CaCL2 DIN 19 684 and DIN 19 684 Teil 1 u. 2	ISO 10390
Germany	NR	21	*unknown*	1/5	CaCl2 DIN 19 684 and H2O	ISO 10390
Germany	NR	20	*unknown*	1/5	CaCl2 DIN 19 684 and KCl	ISO 10390
Germany	NR	21	*unknown*	1/5	CaCl2 DIN 19 684 and KCl, DIN 19684, T 2	ISO 10390
Germany	NR	23	*unknown*	1/5	CaCl2 DIN 19 684 and KCl, H2O	ISO 10390
Germany	NR	32	*unknown*	1/5	CaCl2 DIN ISO 10390	ISO 10390
ICP	ICP	*unknown*	*unknown*	1/5	pH-electrode	ISO 10390
Latvia	LV03	*unknown*	all	1/5	This liquid is made up of a 0.01 mol/l solution of calcium chloride in water pH(CaCl2) or water pH(H2O)	*unknown*
Northern Ireland	national	*unknown*	*unknown*	1/2.5	0.01M CaCl2	*unknown*
Scotland	National Soils Inventory for Scotland (NSIS)	*unknown*	*unknown*	*unknown*	pH in Calcium chloride	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	1/5	potentiometrically in 0.01 mol.dm-3 CaCl2	ISO 10390
Sweden	national	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*

Table 101 : conductivity

country	soil monitoring network identification	site identification	Samples concerned	Unit	method	reference of method
Austria	AT1	all	all	mS/m	water soluble substances (Electrical conductivity [mS / m])	Austrian Standard L 1092, S 2021
Austria	AT3	all	all	mS/m	water soluble substances (Electrical conductivity [mS / m])	Austrian Standard L 1092, S 2021
Austria	AT4	all	all	mS/m	water soluble substances (Electrical conductivity [mS / m])	Austrian Standard L 1092, S 2021
Austria	AT11	all BDB_S	partly	*unknown*	n.a.	own methode
Austria	AT11	all BDB_S	all	*unknown*	hydraulic conductivity of saturated soil samples	Austrian Standard L 1065
Austria	AT11	all BDB_T	all	*unknown*	hydraulic conductivity of saturated soil samples	Austrian Standard L 1065
Austria	AT11	BDB_V1/V2	all	*unknown*	unknown	*unknown*
Austria	AT11	all BDB_OE	all	*unknown*	water soluble substances (water extract 1:10)	Austrian Standard L 1092
Finland	FI02	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*
Germany	NR	133	*unknown*	*unknown*	Determination of the saturated hydraulic water conductivity in the cylindrical core-cutter	DIN 19 683
Germany	NR	40	*unknown*	*unknown*	Determination of the saturated hydraulic water conductivity in the cylindrical core-cutter	DIN 19 683, Bl. 9
Germany	NR	32	*unknown*	*unknown*	Determination of the saturated hydraulic water conductivity in the cylindrical core-cutter	DIN 19683-9
Germany	NR	79	*unknown*	*unknown*	HARTGE & HORN (1989)	*unknown*
Germany	NR	20	*unknown*	*unknown*	Laborpermeameter	Instrument permettant de mesurer la conductivité hydrolique du sol
Greece	GR01, GR02, GR03	*unknown*	all	*unknown*	trickle irrigation	Boffin and Monnier 1985
Greece	GRPRES23	*unknown*	*unknown*	*unknown*	saturated-paste method	*unknown*

Conductivity (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	Unit	method	reference of method
Hungary	HU1, HU2	*unknown*	all	*unknown*	electric conductivity of the water saturated soil (saturated to the sticky point)	MSZ-08-0206/2:1978
Malta	MT02	*unknown*	all	*unknown*	Determination of electrical conductivity using the conductivity meter	ISO 11265:1994
Malta	MT04	*unknown*	all	*unknown*	Determination of electrical conductivity using the conductivity meter	ISO 11265:1994
Malta	MT05	*unknown*	all	*unknown*	Determination of electrical conductivity using the conductivity meter	ISO 11265:1994
Malta	MT05	*unknown*	all	*unknown*	Determination of electrical conductivity using the conductivity meter	ISO 11265:1994
Polska	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*	ISO 7888
Portugal	PT01	*unknown*	all	*unknown*	Determination of electrical conductivity	*unknown*
Portugal	PT01	*unknown*	all	*unknown*	Determination of specific electrical conductivity	ISSO 11265/1994
Romania	*unknown*	*unknown*	*unknown*	*unknown*	Water mixture of 1:5 ratio and measurement of the electric conductivity	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	STN ISO 11265 (in saturated soil paste)	ISO 11265

Table 102: bulk density

country	soil monitoring network identification	site identification	Samples concerned	Unit	method	reference of method
Austria	AT2	most	partly	dB g/cm³	Soil density	Austrian Standard L 1068
Austria	AT4	288	*unknown*	dB g/cm³	Soil density	Austrian Standard L 1068
Austria	AT11	all BDB_S	all	*unknown*	Soil density	Austrian Standard L 1068
Austria	AT11	all BDB_T	all	*unknown*	*unknown*	*unknown*
Austria	AT11	all BDB_T	all	*unknown*	*unknown*	*unknown*
Austria	AT11	all BDB_OE	all	*unknown*	Soil density	Austrian Standard L 1068
Austria	AT11	all BDB_OE	all	*unknown*	Soil density	Austrian Standard L 1068
Austria	AT13	AGES 90/101	partly	*unknown*	unknown	Austrian Standard L 1068
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	m	*unknown*	Détermination de la masse volumique apparente sèche	ISO 11272
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	1202	*unknown*	*unknown*	ISO 11272
Bulgaria	European soil monitoring grig for diffuse contamination	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*
Estonia	ES01	*unknown*	all	*unknown*	cylinder	*unknown*
France	ICP	*unknown*	*unknown*	*unknown*	*unknown*	*unknown*
France	RMQS	all	all	*unknown*	Determination of dry bulk density	NF ISO 11272
Germany	NR	554	*unknown*	*unknown*	determination of bulk density	DIN 19 683
Germany	NR	165	*unknown*	*unknown*	determination of bulk density	DIN 19 683-12
Hungary	HU1, HU2	*unknown*	all	*unknown*	gravimetry	MSZ- 08-0205:1978
ICP	ICP	*unknown*	*unknown*	*unknown*	steel cylinder recommended (100, 400 cm3)	ISO 11272
Latvia	LV03	*unknown*	all	*unknown*	Undisturbed core sampling	*unknown*
Romania	RO01-1	*unknown*	all	*unknown*	*unknown*	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	using cylinders	*unknown*

Table 103 : distribution of pores

country	soil monitoring network identification	site identification	Samples concerned	Unit	method	reference of method
Austria	AT3	113	partly	%	relation pressure potential versus water content of undisturbed soil samples	Austrian Standard L 1063
Austria	AT11	all BDB_S	all	*unknown*	relation pressure potential versus water content of undisturbed soil samples	Austrian Standard L 1063
Austria	AT11	all BDB_OE	all	*unknown*	Soil density	Austrian Standard L 1068
Austria	AT13	AGES 90/101	partly	*unknown*	*unknown*	Austrian Standard L 1063

Table 104 : volume of pores

country	soil monitoring network identification	site identification	Samples concerned	Unit	method	reference of method
Austria	AT11	all BDB_S	all	*unknown*	Soil density	Austrian Standard L 1068
Austria	AT13	AGES 90/101	partly	*unknown*	*unknown*	Austrian Standard L 1068

Table 105 : soil erosion intensity

country	soil monitoring network identification	site identification	Samples concerned	Unit	method	reference of method
Greece	GR01	1(SPA)	*unknown*	*unknown*	runoff collection	*unknown*
Greece	GR02	2(SPA)	*unknown*	*unknown*	runoff collection	*unknown*
Greece	GR03	3(THI)	*unknown*	*unknown*	runoff collection	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	*unknown*	deluometrically by the 137Cs and remote sensing methods	*unknown*

Table 106 : Moisture Content

country	soil monitoring network identification	site identification	Samples concerned	precision	method	reference of method
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	moisture content of airdry soil	drying at 105°C using Brabender oven	*unknown*
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	moisture content of airdry soil	drying at 105°C using Brabender oven	*unknown*
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	o	weight organic layer	measuring fresh weight and moisture content	*unknown*
Belgium	BE06 (ICP Forests-Sbelgium 1994)	*unknown*	o	weight organic layer	measuring fresh weight and moisture content	*unknown*
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	1202	weight organic layer	measuring fresh weight and moisture content	*unknown*
Finland	FI02	*unknown*	*unknown*	Water content	*unknown*	*unknown*
France	RMQS	all	all	residual water content	Determination of dry matter and water content on a mass basis - Gravimetric method	NF ISO 11465
France	RMQS	all	all	water content	Determination of dry matter and water content on a mass basis - Gravimetric method	NF ISO 11465
Greece	GR01	*unknown*	all	soil moisture	TDR	Campbell Scientific
Hungary	HU1, HU2	*unknown*	all	sticky point	amount of water needed to reach a certain consistency	MSZ- 08-0205:1978
Hungary	HU1, HU2	*unknown*	all	hygroscopy	gravimetry	MSZ- 08-0205:1978
ICP	ICP	*unknown*	*unknown*	Moisture Content	gravimetric method	ISO 11465
ICP	ICP	*unknown*	Organic layer	Moisture	gravimetric method	*unknown*
Malta	MT01	*unknown*	all	Moisture	Determination of dry matter and water in Oven-dry soil	*unknown*
Malta	MT02	*unknown*	all	Moisture	Determination of dry matter and water in Oven-dry soil	*unknown*

Moisture content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	precision	method	reference of method
Malta	MT03	*unknown*	all	Moisture	Determination of dry matter and water in Oven-dry soil	*unknown*
Malta	MT04	*unknown*	all	Moisture	Determination of dry matter and water in Oven-dry soil	*unknown*
Romania	RO01-2	*unknown*	all	Soil water content at Mitscherlich hygroscopicity	*unknown*	*unknown*
The Netherlands	DSQN (NL)	*unknown*	0-10 cm	field humidity	water content of soil sample	105 degrees C

Table 107 : penetration resistance

country	soil monitoring network identification	site identification	Samples concerned	Unit	method	reference of method
Romania	RO01-1	*unknown*	all	*unknown*	*unknown*	*unknown*
The Netherlands	DSQN + BISQ (NL)	*unknown*	*unknown*	*unknown*	hardness of topsoil	*unknown*

Table 108 : pF

country	soil monitoring network identification	site identification	Samples concerned	precision	method	reference of method
Austria	AT11	all BDB_T	all	pF-curve (watercontent, suction power)	*unknown*	*unknown*
Hungary	HU1, HU2	*unknown*	all	soil moisture boud to soil particles with different forces (pF)	gravimetry	MSZ- 08-0205:1978
Romania	RO01-1	*unknown*	all	Soil water at pf=0	Ceramic plate boxes	*unknown*
Romania	RO01-1	*unknown*	all	Soil water at pf=1	*unknown*	*unknown*
Romania	RO01-1	*unknown*	all	Soil water at pf=1.4	*unknown*	*unknown*
Romania	RO01-1	*unknown*	all	Soil water at pf=1.6	*unknown*	*unknown*
Romania	RO01-1	*unknown*	all	Soil water at pf=2	*unknown*	*unknown*

Table 109 : stability of aggregates

country	soil monitoring network identification	site identification	Samples concerned	precision	method	reference of method
Austria	AT11	all BDB_S	all	*unknown*	*unknown*	Siebtauchverfahren Murer E.J.et al. (1993)
Austria	AT11	all BDB_T	all	*unknown*	*unknown*	*unknown*
Austria	AT11	all BDB_OE	all	*unknown*	*unknown*	DIN 19683-16
Austria	AT13	AGES 90/101	partly	*unknown*	*unknown*	Kemper und Rosenau, 1986
Greece	GR01, GR02	*unknown*	*unknown*	*unknown*	wet sieving	Yoder 1936
Romania	RO01-2	*unknown*	all	*unknown*	*unknown*	*unknown*
Romania	RO01-2	*unknown*	all	*unknown*	*unknown*	*unknown*

Table 110 : Particle size

country	soil monitoring network identification	site identification	Samples concerned	fraction	particle size (µm)	Unit	method	reference of method
Austria	AT1	all	all	sand	63 - 2000	%	particle size distribution in the mineral soil	Austrian Standard L 1061-88
Austria	AT1	all	all	silt	2 - 63	%	particle size distribution in the mineral soil	Austrian Standard L 1061-89
Austria	AT1	all	all	clay	<2	%	particle size distribution in the mineral soil	Austrian Standard L 1061-90
Austria	AT1	all	all	sand	63 - 2000	%	particle size distribution in the mineral soil	Austrian Standard L 1061-87
Austria	AT1	all	all	silt	2 - 63	%	particle size distribution in the mineral soil	Austrian Standard L 1061-88
Austria	AT1	all	all	clay	<2	%	particle size distribution in the mineral soil	Austrian Standard L 1061-89
Austria	AT2	all	all	coarse sand	630 - 2000	%	Sedigraph	n.a.
Austria	AT2	all	all	middle sand	200 - 630	%	Sedigraph	n.a.
Austria	AT2	all	all	fine sand	63 - 200	%	Sedigraph	n.a.
Austria	AT2	all	all	coarse sil	20 - 63	%	Sedigraph	n.a.
Austria	AT2	all	all	middle silt	6,3 - 20	%	Sedigraph	n.a.
Austria	AT2	all	all	fine silt	2 - 6,3	%	Sedigraph	n.a.
Austria	AT2	all	all	clay	<2	%	Sedigraph	n.a.
Austria	AT3	all	all	sand	63 - 2000	%	particle size distribution in the mineral soil	Austrian Standard L 1061-88
Austria	AT3	all	all	silt	2 - 63	%	particle size distribution in the mineral soil	Austrian Standard L 1061-88
Austria	AT3	all	all	clay	<2	%	particle size distribution in the mineral soil	Austrian Standard L 1061-88
Austria	AT3	all	all	sand	63 - 2000	%	particle size distribution in the mineral soil	Austrian Standard L 1061-88
Austria	AT3	all	all	silt	2 - 63	%	particle size distribution in the mineral soil	Austrian Standard L 1061-88

Particle size (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	fraction	particle size (µm)	Unit	method	reference of method
Austria	AT3	all	all	clay	<2	%	particle size distribution in the mineral soil	Austrian Standard L 1061-88
Austria	AT4	all	all	sand	63 - 2000	%	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT4	all	all	silt	2 - 63	%	particle size distribution in the mineral soil	Austrian Standard L 1062
Austria	AT4	all	all	clay	<2	%	particle size distribution in the mineral soil	Austrian Standard L 1063
Austria	AT5	all	all	coarse silt	20 - 63	%	Sedigraph	n.a.
Austria	AT5	all	all	middle silt	6,3 - 20	%	Sedigraph	n.a.
Austria	AT5	all	all	fine silt	2 - 6,3	%	Sedigraph	n.a.
Austria	AT5	all	all	clay	<2	%	Sedigraph	n.a.
Austria	AT5	all	all	coarse sand	630 - 2000	%	particle size distribution in the mineral soil: with H2O2	Austrian Standard L 1061-88
Austria	AT5	all	all	middle sand	200 - 630	%	particle size distribution in the mineral soil: with H2O2	Austrian Standard L 1061-88
Austria	AT5	all	all	fine sand	63 - 200	%	particle size distribution in the mineral soil: with H2O2	Austrian Standard L 1061-88
Austria	AT6	all	all	sand	63 - 2000	%	particle size distribution in the mineral soil (with and without H2O2)	Austrian Standard L 1061
Austria	AT6	all	all	silt	2 - 63	%	particle size distribution in the mineral soil (with and without H2O2)	Austrian Standard L 1061
Austria	AT6	all	all	clay	<2	%	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT6	all	all	sand	63 - 2000	%	particle size distribution in the mineral soil	Austrian Standard L 1062

Particle size (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	fraction	particle size (µm)	Unit	method	reference of method
Austria	AT6	all	all	silt	2 - 63	%	particle size distribution in the mineral soil	Austrian Standard L 1063
Austria	AT6	all	all	clay	<2	%	particle size distribution in the mineral soil	Austrian Standard L 1064
Austria	AT7	50	partly	sand	63 - 2000	%	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT7	50	partly	silt	2 - 63	%	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT7	50	partly	clay	<2	%	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT10	all	all	fine silt	2 - 6,3	%	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT10	all	all	coarse silt	20 - 63	%	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT10	all	all	middle silt	6,3 - 20	%	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT10	all	all	sand	63 - 2000	%	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT10	all	all	silt	2 - 63	%	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT10	all	all	clay	<2	%	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT11	all	all	sand	63 - 2000	%	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT11	all	all	silt	2 - 63	%	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT11	all	all	clay	<2	%	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT11	all BDB_T	all	soil texture	*unknown*	*unknown*	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT11	BDB_V1/V2	all	soil texture	*unknown*	*unknown*	*unknown*	*unknown*
Austria	AT11	all BDB_OE	all	soil texture	unknown	%	soil as plant site	Austrian Standard L 1050

Particle size (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	fraction	particle size (µm)	Unit	method	reference of method
Austria	AT13	AGES 90/101	all	fine silt	2 - 6,3	%	soil texture	Austrian Standard L 1061
Austria	AT13	AGES 90/101	all	coarse silt	20 - 63	%	soil texture	Austrian Standard L 1061
Austria	AT13	AGES 90/101	all	middle silt	6,3 - 20	%	soil texture	Austrian Standard L 1061
Austria	AT13	AGES 90/101	all	sand	63 - 2000	%	soil texture	Austrian Standard L 1061
Austria	AT13	AGES 90/101	all	silt	2 - 63	%	soil texture	Austrian Standard L 1061
Austria	AT13	AGES 90/101	all	clay	<2	%	soil texture	Austrian Standard L 1061
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	clay	0-2	*unknown*	Köhn pipette method	De Leenheer en Maes, 1952; De Leenheer en Van Ruymbeke, 1954; De Leenheer en Van Hove, 1957
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	silt	2-50	*unknown*	Köhn pipette method	De Leenheer en Maes, 1952; De Leenheer en Van Ruymbeke, 1954; De Leenheer en Van Hove, 1967
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	sand	50-2000	*unknown*	wet sieving to separate sand	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	fine silt	2-10	*unknown*	Köhn pipette method	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	medium silt	10-20	*unknown*	Köhn pipette method	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	coarse silt	20-50	*unknown*	Köhn pipette method	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968

Particle size (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	fraction	particle size (µm)	Unit	method	reference of method
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	very fine sand	50-100	*unknown*	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	fine sand	100-200	*unknown*	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	medium sand	200-500	*unknown*	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	coarse and very coarse sand	500-2000	*unknown*	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE01 (Aardewerk-NBelgium)	*unknown*	all	coarse fragments	>2000	*unknown*	dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	clay	0-2	*unknown*	Köhn pipette method	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	fine silt	2-10	*unknown*	Köhn pipette method	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	medium silt	10-20	*unknown*	Köhn pipette method	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968

Particle size (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	fraction	particle size (µm)	Unit	method	reference of method
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	coarse silt	20-50	*unknown*	Köhn pipette method	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	very fine sand	50-100	*unknown*	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	fine sand	100-200	*unknown*	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	medium sand	200-500	*unknown*	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	coarse and very coarse sand	500-2000	*unknown*	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	*unknown*	all	coarse fragments	>2000	*unknown*	dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE03 (Heavy Metals WFlanders & Antwerp)	*unknown*	*unknown*	sand	50-2000	*unknown*	sieving - oven drying	ISRIC, 1987 modified by Lab Soil Science for presence of CaCO3
Belgium	BE03 (Heavy Metals WFlanders & Antwerp)	*unknown*	*unknown*	clay	0-2	*unknown*	Köhn pipette method	ISRIC, 1987 modified by Lab Soil Science for presence of CaCO3

Particle size (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	fraction	particle size (µm)	Unit	method	reference of method
Belgium	BE04 (Heavy Metals EFlanders)	*unknown*	*unknown*	sand	50-2000	*unknown*	sieving - oven drying	Gee and Bauder, 1986
Belgium	BE04 (Heavy Metals EFlanders)	*unknown*	*unknown*	clay	0-2	*unknown*	Köhn pipette method	Gee and Bauder, 1986
Belgium	BE05 (ICP Forests-Nbelgium 1993)	*unknown*	M	texture	*unknown*	*unknown*	finger test on 1 composite of each layer, USDA FAO texture triangle	*unknown*
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1202	m	texture	*unknown*	*unknown*	finger test on 1 composite of each layer, USDA FAO texture triangle	*unknown*
Bulgaria	European soil monitoring grig for diffuse contamination	*unknown*	*unknown*	Clay	<1	*unknown*	Method of Kachinsky, with follows particle size distribution	*unknown*
Bulgaria	European soil monitoring grig for diffuse contamination	*unknown*	*unknown*	Silt	5-1	*unknown*	Method of Kachinsky, with follows particle size distribution	*unknown*
Bulgaria	European soil monitoring grig for diffuse contamination	*unknown*	*unknown*	Silt	10-5	*unknown*	Method of Kachinsky, with follows particle size distribution	*unknown*
Bulgaria	European soil monitoring grig for diffuse contamination	*unknown*	*unknown*	Silt	50-10	*unknown*	Method of Kachinsky, with follows particle size distribution	*unknown*

Particle size (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	fraction	particle size (µm)	Unit	method	reference of method
Bulgaria	European soil monitoring grig for diffuse contamination	*unknown*	*unknown*	Sand	250-50	*unknown*	Method of Kachinsky, with follows particle size distribution	*unknown*
Bulgaria	European soil monitoring grig for diffuse contamination	*unknown*	*unknown*	Sand	1000-250	*unknown*	Method of Kachinsky, with follows particle size distribution	*unknown*
Denmark	DK01	*unknown*	*unknown*	Texture	<2	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK01	*unknown*	*unknown*	Texture	2-20	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK01	*unknown*	*unknown*	Texture	20-200	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK01	*unknown*	*unknown*	Texture	20-2000	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK02	*unknown*	*unknown*	Texture	<2	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK02	*unknown*	*unknown*	Texture	2-20	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.

Particle size (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	fraction	particle size (µm)	Unit	method	reference of method
Denmark	DK02	*unknown*	*unknown*	Texture	20-200	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK02	*unknown*	*unknown*	Texture	20-2000	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK03	*unknown*	*unknown*	Texture	<2	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK03	*unknown*	*unknown*	Texture	2-20	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK03	*unknown*	*unknown*	Texture	20-200	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK03	*unknown*	*unknown*	Texture	20-2000	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK04	*unknown*	*unknown*	Texture	<2	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK04	*unknown*	*unknown*	Texture	2-20	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.

Particle size (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	fraction	particle size (µm)	Unit	method	reference of method
Denmark	DK04	*unknown*	*unknown*	Texture	20-200	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK04	*unknown*	*unknown*	Texture	20-2000	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK05	*unknown*	*unknown*	Texture	<2	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK05	*unknown*	*unknown*	Texture	2-20	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK05	*unknown*	*unknown*	Texture	20-200	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK05	*unknown*	*unknown*	Texture	20-2000	*unknown*	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Estonia	ES01	*unknown*	all	particle size analysis	50-2000	*unknown*	pipette method and laser difraction analyser	*unknown*
Estonia	ES01	*unknown*	all	particle size analysis	2-50	*unknown*	pipette method and laser difraction analyser	*unknown*
Estonia	ES01	*unknown*	all	particle size analysis	< 2	*unknown*	pipette method and laser difraction analyser	*unknown*
Finland	*unknown*	*unknown*	*unknown*	Silt	50 - 2	*unknown*	*unknown*	*unknown*
Finland	unknown	*unknown*	*unknown*	Clay	*unknown*	*unknown*	*unknown*	*unknown*

Particle size (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	fraction	particle size (μm)	Unit	method	reference of method
Finland	unknown	*unknown*	*unknown*	sand	*unknown*	*unknown*	*unknown*	*unknown*
France	RMQS	all	all	clay fraction	0-2	‰	Particle size distribution by sedimentation - Pipette method	NF X 31-107
France	RMQS	all	all	fine silt fraction	2-20	‰	sedimentation - Pipette method	NF X 31-107
France	RMQS	all	all	coarse silt fraction	20-50	‰	sedimentation - Pipette method	NF X 31-107
France	RMQS	all	all	fine sand fraction	50-200	‰	sedimentation - Pipette method	NF X 31-107
France	RMQS	all	all	coarse sand fraction	200-2000	‰	sedimentation - Pipette method	NF X 31-107
France	RMQS	all	all	coarse fragments	> 2000	%	Determination of dry bulk density	NF ISO 11272
France	RMQS	all	all	particle density	*unknown*	*unknown*	Determination of particle density	*unknown*
Germany	*unknown*	unknown	*unknown*	*unknown*	unknown	unknown	sedimentation	ISO 11277
Germany	NR	548	*unknown*	texture	unknown	unknown	sedimentation	ISO 11277
Germany	NR	165	*unknown*	texture	unknown	unknown	sedimentation	ISO 11278
Germany	NR	45	*unknown*	texture	unknown	unknown	combined sedimentation and sieve analysis	*unknown*
Greece	*unknown*	unknown	unknown	sand	unknown	unknown	*unknown*	*unknown*
Greece	*unknown*	unknown	unknown	clay	unknown	unknown	*unknown*	*unknown*
Greece	*unknown*	unknown	unknown	silt	*silt <= 50*	unknown	*unknown*	*unknown*
Greece	*GRARG7*	unknown	unknown	mechanical composition	unknown	unknown	*Hydrometer method*	*Bouyoukos 1951*
Hungary	*HU1, HU2*	unknown	*all*	particle size distribution	unknown	unknown	*sedimentation gravimetry*	*MSZ- 08-0205:1978*

Particle size (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	fraction	particle size (µm)	Unit	method	reference of method
ICP	ICP	*unknown*	*unknown*	Clay	*unknown*	*unknown*	*pipette method*	*ISO 11277*
ICP	ICP	*unknown*	*unknown*	Sand	*unknown*	*unknown*	pipette method	ISO 11277
ICP	ICP	*unknown*	*unknown*	Silt	*unknown*	*unknown*	pipette method	ISO 11277
ICP	ICP	*unknown*	*unknown*	Texture Class codes	*unknown*	*unknown*	*unknown*	*unknown*
Latvia	LV03	*unknown*	all	Texture	Silt limit is 63	*unknown*	Pipette	*unknown*
Lithuania	unknown	*unknown*	*unknown*	stones	>3000	*unknown*	*unknown*	*unknown*
Lithuania	unknown	*unknown*	*unknown*	gravel	3000 - 1000	*unknown*	*unknown*	*unknown*
Lithuania	unknown	*unknown*	*unknown*	course sand	1000 - 50	*unknown*	*unknown*	*unknown*
Lithuania	unknown	*unknown*	*unknown*	medium sand	500 - 250	*unknown*	*unknown*	*unknown*
Lithuania	unknown	*unknown*	*unknown*	fine sand	250 - 20	*unknown*	*unknown*	*unknown*
Lithuania	unknown	*unknown*	*unknown*	course silt	50 - 10	*unknown*	*unknown*	*unknown*
Lithuania	unknown	*unknown*	*unknown*	medium silt	10 - 5	*unknown*	*unknown*	*unknown*
Lithuania	unknown	*unknown*	*unknown*	fine silt	5 - 1	*unknown*	*unknown*	*unknown*
Lithuania	unknown	*unknown*	*unknown*	Clay	< 1	*unknown*	*unknown*	*unknown*
Malta	unknown	*unknown*	*unknown*	Silt	53	*unknown*	*unknown*	*unknown*
Northern Ireland	national	*unknown*	*unknown*	Stone content	*unknown*	*unknown*	*unknown*	*unknown*
Norway	unknown	*unknown*	*unknown*	gravel and coarser fragments	*> 2000*	*unknown*	*unknown*	*unknown*
Norway	unknown	*unknown*	*unknown*	coarse sand	*2000 – 600*	*unknown*	*unknown*	*unknown*
Norway	unknown	*unknown*	*unknown*	medium sand	*600 – 200*	*unknown*	*unknown*	*unknown*
Norway	unknown	*unknown*	*unknown*	fine sand	*200 – 60*	*unknown*	*unknown*	*unknown*

Particle size (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	fraction	particle size (µm)	Unit	method	reference of method
Norway	unknown	*unknown*	*unknown*	coarse silt	*60 – 20*	*unknown*	*unknown*	*unknown*
Norway	unknown	*unknown*	*unknown*	medium silt	*20 – 6*	*unknown*	*unknown*	*unknown*
Norway	unknown	*unknown*	*unknown*	fine silt	*6 – 2*	*unknown*	*unknown*	*unknown*
Norway	*unknown*	*unknown*	*unknown*	clay	< 2	*unknown*	*unknown*	*unknown*
Polska	SMN PO 01	*unknown*	all	Particle size distribution	*unknown*	*unknown*	hydrometer method	unknown
Portugal	Project Piddac 906-99	*unknown*	*unknown*	texture	*unknown*	*unknown*	pipette and sieve method	unknown
Romania	RO01-2	*unknown*	all	Soil texture	2000-200	*unknown*	*unknown*	*unknown*
Romania	RO01-2	*unknown*	all	Soil texture	200-20	*unknown*	*unknown*	*unknown*
Romania	RO01-2	*unknown*	all	Soil texture	20 -2	*unknown*	*unknown*	*unknown*
Romania	RO01-2	*unknown*	all	Soil texture	< 2	*unknown*	*unknown*	*unknown*
Romania	RO01-2	*unknown*	all	Soil texture	50 - 2	*unknown*	*unknown*	*unknown*
Romania	RO01-2	*unknown*	all	Soil texture	< 10	*unknown*	*unknown*	*unknown*
Scotland	National Soils Inventory for Scotland (NSIS)	*unknown*	*unknown*	Clay	<2	%	Gravimetric measurement	*unknown*
Scotland	National Soils Inventory for Scotland (NSIS)	*unknown*	*unknown*	UBSand	50/60- 2000	%	USDA/FAO/BSTC. Gravimetric measurement	*unknown*
Scotland	National Soils Inventory for Scotland (NSIS)	*unknown*	*unknown*	Sand	20- 2000	%	International. Gravimetric measurement	*unknown*
Scotland	National Soils Inventory for Scotland (NSIS)	*unknown*	*unknown*	Silt	2- 20	%	International. Gravimetric measurement expressed as a percentage	*unknown*
Sweden	national	*unknown*	*unknown*	texture	unknown	unknown	unknown	*unknown*

Particle size (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	fraction	particle size (μm)	Unit	method	reference of method
The Netherlands	DSQN (NL)	*unknown*	*0-10 cm*	Clay	<2	unknown	pipet method	*Sedimentation*
The Netherlands	DSQN (NL)	*unknown*	*0-10 cm*	unknown	63	unknown	pipet method	*unknown*
The Netherlands	DSQN (NL)	*unknown*	*0-10 cm*	unknown	unknown	unknown	pipet method	*unknown*
United Kingdom	national	*unknown*	*unknown*	Clay	<2	%	including CaCO3	*unknown*
United Kingdom	national	*unknown*	*unknown*	Silt	2 - 60	%	including CaCO3	*unknown*
United Kingdom	national	*unknown*	*unknown*	Very fine sand	60 - 100	*unknown*	including CaCO3	*unknown*
United Kingdom	national	*unknown*	*unknown*	Very fine sand	60-100	*unknown*	including CaCO3	*unknown*
United Kingdom	national	*unknown*	*unknown*	Moderately fine sand	100-200	%	including CaCO3	*unknown*
United Kingdom	national	*unknown*	*unknown*	Medium sand	200 - 600	%	including CaCO3	*unknown*
United Kingdom	national	*unknown*	*unknown*	Coarse sand	600 - 2000	%	including CaCO3	*unknown*

Table 111 : pesticides and organic pollutants

country	soil monitoring network identification	site identification	Samples concerned	molecule	Unit	method	reference of method
Austria	AT4	101	partly	Acenaphthen	µg/kg	Soxhlet/Petrolet/Silicagel-Cyano-extraction	n.a.
Austria	AT2	40	partly	Alachlor	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT2	40	partly	Alpha-HCH	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT4	162	partly	Alpha-HCH	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT2	40	partly	Anthracen	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT4	101	partly	Anthracen	µg/kg	Soxhlet/Petrolet/Silicagel-Cyano-extraction	n.a.
Austria	AT6	all	topsoil horizon	Anthracen	µg/kg	cold extraction (Silica gel-Sephadex)	n.a.
Česká Zbrojovka	national	*unknown*	*unknown*	AOCl	*unknown*	*unknown*	UKZUZ (2002): Analyza pud I-III (Soil Analysis I-III).ISBN 80-86548-15-5
Austria	AT2	40	partly	Atrazin	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT4	120	partly	Atrazin	µg/kg	cold extraction (Silica gel-Sephadex)	n.a.
Austria	AT6	all arable sites	topsoil horizon	Atrazin	µg/kg	cold extraction (Silica gel)	n.a.
Austria	AT2	40	partly	Benzo(a)anthracen	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT4	101	partly	Benzo(a)anthracen	µg/kg	Soxhlet/Petrolet/Silicagel-Cyano-extraction	n.a.
Austria	AT2	40	partly	Benzo(a)pyren	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT4	101	partly	Benzo(a)pyren	µg/kg	Soxhlet/Petrolet/Silicagel-Cyano-extraction	n.a.
Austria	AT6	all	topsoil horizon	Benzo(a)pyren	µg/kg	cold extraction (Silica gel-Sephadex)	n.a.

pesticides and organic pollutants (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	molecule	Unit	method	reference of method
Austria	AT2	40	partly	Benzo(b)fluoranthen	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT4	101	partly	Benzo(b)fluoranthen	µg/kg	Soxhlet/Petrolet/Silicagel-Cyano-extraction	n.a.
Austria	AT6	all	topsoil horizon	Benzo€pyren	µg/kg	cold extraction (Silica gel-Sephadex)	n.a.
Austria	AT2	40	partly	Benzo(g,h,i)perylen	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT4	101	partly	Benzo(g,h,i)perylen	µg/kg	Soxhlet/Petrolet/Silicagel-Cyano-extraction	n.a.
Austria	AT6	all	topsoil horizon	Benzo(g,h,i)perylen	µg/kg	cold extraction (Silica gel-Sephadex)	n.a.
Austria	AT2	40	partly	Benzo(k)fluoranthen	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT4	101	partly	Benzo(k)fluoranthen	µg/kg	Soxhlet/Petrolet/Silicagel-Cyano-extraction	n.a.
Austria	AT2	40	partly	Beta-Heptachlorepoxid	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT2	40	partly	Chrysen	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT4	101	partly	Chrysen	µg/kg	Soxhlet/Petrolet/Silicagel-Cyano-extraction	n.a.
Austria	AT2	40	partly	DDD	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT4	162	partly	DDD	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT2	40	partly	DDE	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT4	162	partly	DDE	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT2	40	partly	DDT	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.

pesticides and organic pollutants (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	molecule	Unit	method	reference of method
Austria	AT6	all	topsoil horizon	DDT	µg/kg	cold extraction (Al-oxide-Silica gel)	n.a.
Austria	AT2	40	partly	Desethylatrazin	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT4	120	partly	Desethylatrazin	µg/kg	cold extraction (Silica gel-Sephadex)	n.a.
Austria	AT4	101	partly	Dibenzo(a,h)anthracen	µg/kg	Soxhlet/Petrolet/Silicagel-Cyano-extraction	n.a.
Austria	AT2	40	partly	Dieldrin	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT4	162	partly	Dieldrin	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.
Česká Zbrojovka	national	*unknown*	*unknown*	EOCl	*unknown*	*unknown*	UKZUZ (2002): Analyza pud I-III (Soil Analysis I-III).ISBN 80-86548-15-5
Austria	AT2	40	partly	Fluoranthen	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT4	101	partly	Fluoranthen	µg/kg	Soxhlet/Petrolet/Silicagel-Cyano-extraction	n.a.
Austria	AT6	all	topsoil horizon	Fluoranthen	µg/kg	cold extraction (Silica gel-Sephadex)	n.a.
Austria	AT2	40	partly	Gamma-Chlordan	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT4	162	partly	Gamma-Chlordan	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT4	162	partly	Gamma-HCH (Lindan	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT2	40	partly	Gamma-HCH (Lindan)	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT6	all	topsoil horizon	Gamma-HCH (Lindan)	µg/kg	cold extraction (Al-oxide-Silica gel)	n.a.
Austria	AT2	40	partly	Heptachlor	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.

pesticides and organic pollutants (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	molecule	Unit	method	reference of method
Austria	AT4	162	partly	Heptachlor	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT2	40	partly	Hexachlorbenzol	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT4	162	partly	Hexachlorbenzol	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT6	all	topsoil horizon	Hexachlorbenzol	µg/kg	cold extraction (Al-oxide-Silica gel)	n.a.
Austria	AT2	40	partly	Indeno(1,2,3-c,d)pyren	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT4	101	partly	Indeno(1,2,3-c,d)pyren	µg/kg	Soxhlet/Petrolet/Silicagel-Cyano-extraction	n.a.
France	ICP	*unknown*	litter	Masse sèche	*unknown*	unknown	
Austria	AT2	40	partly	Metazachlor	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT4	162	partly	op' DDT	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.
Romania	RO01-3	*unknown*	all	Organochlorine insecticides residues (HCH, DDT)	*unknown*	Extraction with petroleum ether - acetone (2:1) and gas-chromatographic determination	*unknown*
Česká Zbrojovka	national	*unknown*	*unknown*	PAH	*unknown*	modified ISO 13877	UKZUZ (2002): Analyza pud I-III (Soil Analysis I-III).ISBN 80-86548-15-5
Austria	AT9	all	all	PAH (EPA, Σ16)	*unknown*	soild phase extraction (SPE)	n.a.
Austria	AT11	all BDB_S	partly	PAH (EPA, Σ16)	*unknown*	HRGC, HRMS, isotop dilution	*unknown*
Austria	AT11	BDB_T1/T3	topsoil horizon	PAH (Σacc. EPA)	unknown	anaerobic incubation	*unknown*

pesticides and organic pollutants (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	molecule	Unit	method	reference of method
Austria	AT11	all BDB_OE	partly	PAHs	*unknown*	consequent measurement of the samples on 2 GC columes of different polarity, Electron Captur-Detection	*unknown*
Slovakia	SK 1	*unknown*	*unknown*	PAHs	*unknown*	by chromatographic methods (ISO 18 287)	ISO 18287
Polska	SMN PO 01	*unknown*	all	PAHs content	*unknown*	HPLC method	ISO 13877:1998
Česká Zbrojovka	national	*unknown*	*unknown*	PCB	*unknown*	*unknown*	UKZUZ (2002): Analyza pud I-III (Soil Analysis I-III).ISBN 80-86548-15-5
Slovakia	SK 1	*unknown*	*unknown*	PCB	*unknown*	by chromatographic methods (ISO 18 287)	ISO/DIS 10383
Austria	AT11	all BDB_S	partly	PCB (Ballschmitter)	*unknown*	HRGC, HRMS, isotop dilution	*unknown*
Austria	AT11	BDB_T1/T3	topsoil horizon	PCB ($\Sigma 6$) ,	*unknown*	anaerobic incubation	*unknown*
Austria	AT2	40	partly	PCB 101	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT2	40	partly	PCB 138	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT4	162	partly	PCB 138	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT2	40	partly	PCB 153	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT4	162	partly	PCB 153	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT2	40	partly	PCB 180	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT4	162	partly	PCB 180	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT2	40	partly	PCB 28	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.

pesticides and organic pollutants (continued from previous table)

country	soil monitoring network ID	site identification	Samples concerned	molecule	Unit	method	reference of method
Austria	AT4	162	partly	PCB 28	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT2	40	partly	PCB 52	µg/kg	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT4	162	partly	PCB 52	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT11	all BDB_OE	partly	PCBs, Organochlorpesticides	*unknown*	extraction, HPLC, isotop dilution	*unknown*
Česká Zbrojovka	national	unknown	*unknown*	PCDD	*unknown*	*unknown*	UKZUZ (2002): Analyza pud I-III (Soil Analysis I-III).ISBN 80-86548-15-5
Austria	AT11	BDB_T1/T3	topsoil horizon	PCDD and PCDF (BGA/UBA-TE; NATO/CCMS-TE)	*unknown*	polycyclic aromatic hydrocarbons (PAH) in soils, sewage sludges and composts	Austrian Standard L 1200
Austria	AT11	all BDB_S	partly	PCDD/PCDF (TE: NATO/CCMS and BGA)	*unknown*	HRGC, HRMS, isotop dilution	*unknown*
Česká Zbrojovka	national	*unknown*	*unknown*	PCDF	*unknown*	*unknown*	UKZUZ (2002): Analyza pud I-III (Soil Analysis I-III).ISBN 80-86548-15-5
Austria	AT11	all BDB_OE	partly	PDCC and PCDF	*unknown*	*unknown*	*unknown*
Austria	AT6	all	topsoil horizon	Perylen	µg/kg	cold extraction (Silica gel-Sephadex)	n.a.
Austria	AT2	40	partly	Phenanthren	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT4	101	partly	Phenanthren	µg/kg	Soxhlet/Petrolet/Silicagel-Cyano-extraction	n.a.
Austria	AT6	all	topsoil horizon	Phenanthren	µg/kg	cold extraction (Silica gel-Sephadex)	n.a.
Austria	AT4	162	partly	pp' DDT	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.

pesticides and organic pollutants (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	molecule	Unit	method	reference of method
Austria	AT6	all	topsoil horizon	pp' DDT	µg/kg	cold extraction (Al-oxide-Silica gel)	n.a.
Austria	AT2	40	partly	Prometryn;Metolachlor	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT2	40	partly	Propazin;Simazin	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT2	40	partly	Pyren	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT4	101	partly	Pyren	µg/kg	Soxhlet/Petrolet/Silicagel-Cyano-extraction	n.a.
Austria	AT6	all	topsoil horizon	Pyren	µg/kg	cold extraction (Silica gel-Sephadex)	n.a.
Austria	AT4	162	partly	Quintozen	µg/kg	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT11	all BDB_OE	partly	Radionucides	*unknown*	*unknown*	*unknown*
Austria	AT11	all BDB_S	partly	radionulides	*unknown*	*unknown*	*unknown*
Austria	AT4	120	partly	Simazin	µg/kg	cold extraction (Silica gel-Sephadex)	n.a.
Austria	AT2	40	partly	Terbuthylazin	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.

Partner Number	Partner Name	Country
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3	Umweltbundesamt (UBA-A)	Austria
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5	Szent István University (SIU)	Hungary
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9	Bundesamt für Wasserwirtschaft (BAW)	Austria
11	Universiteit Gent (UGENT)	Belgium
12	Nikola Poushkarov Insitute of Soil Science (ISSNP)	Bulgaria
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39	Sachsisches Landesamt fur Umwelt und Geologie (LfUG)	Germany
40	The Agricultural and Food Development Authority (TEAGASC)	Ireland
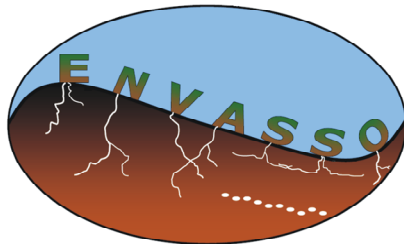
Abstract
The ENVASSO Project (Contract 022713) was funded 2006-8, under the European Commission 6th Framework Programme of Research, with the objective of defining and documenting a soil monitoring system appropriate for soil protection at continental level. The ENVASSO Consortium, comprising 37 partners drawn from 25 EU Member States, reviewed almost 300 soil indicators, identified existing soil inventories and monitoring programmes in the Member States, designed and programmed a database system to capture, store and supply soil profile data, and drafted procedures and protocols appropriate for inclusion in a European soil monitoring network of sites that are geo-referenced and at which a qualified sampling process is or could be conducted. This volume (IIb), a Survey of National Networks, is the second of two reports that together constitute the most comprehensive study to date of the soil inventory and monitoring activities in the European Union. It contains comprehensive fact sheets for each national network, listing the purpose, sampling strategy adopted, analytical methods used and the number of monitoring sites.

The other ENVASSO volumes are listed below.
hey can be downloaded from the JRC website: http://eusoils.jrc.ec.europa.eu

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Huber, S., Prokop, G., Arrouays, D., Banko, G., Bispo, A., Jones, R.J.A., Kibblewhite, M.G., Lexer, W., Möller, A., Rickson, R.J., Shishkov, T., Stephens, M., Toth, G. Van den Akker, J.J.H., Varallyay, G., Verheijen, F.G.A., Jones, A.R. (eds) (2008). Environmental Assessment of Soil for Monitoring: Volume I Indicators & Criteria. EUR 23490 EN/1, Office for the Official Publications of the European Communities, Luxembourg, 339pp. {DOI 10.2788/93515}

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ENVASSO Volume IVb
Stephens, M., Micheli, E., Jones, A.R., Jones, R.J.A. (eds) (2008). Environmental Assessment of Soil for Monitoring Volume IVb: Prototype Evaluation – Pilot Studies. EUR 23490 EN/4B, Office for the Official Publications of the European Communities, Luxembourg, 497pp. {DOI 10.2788/94364}

ENVASSO Volume V
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