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

Dominique D. Arrouays, Anne C Richer-De-Forges, Xavier Morvan, Nicolas  
N. Saby, A.R. Jones, Christine Le Bas

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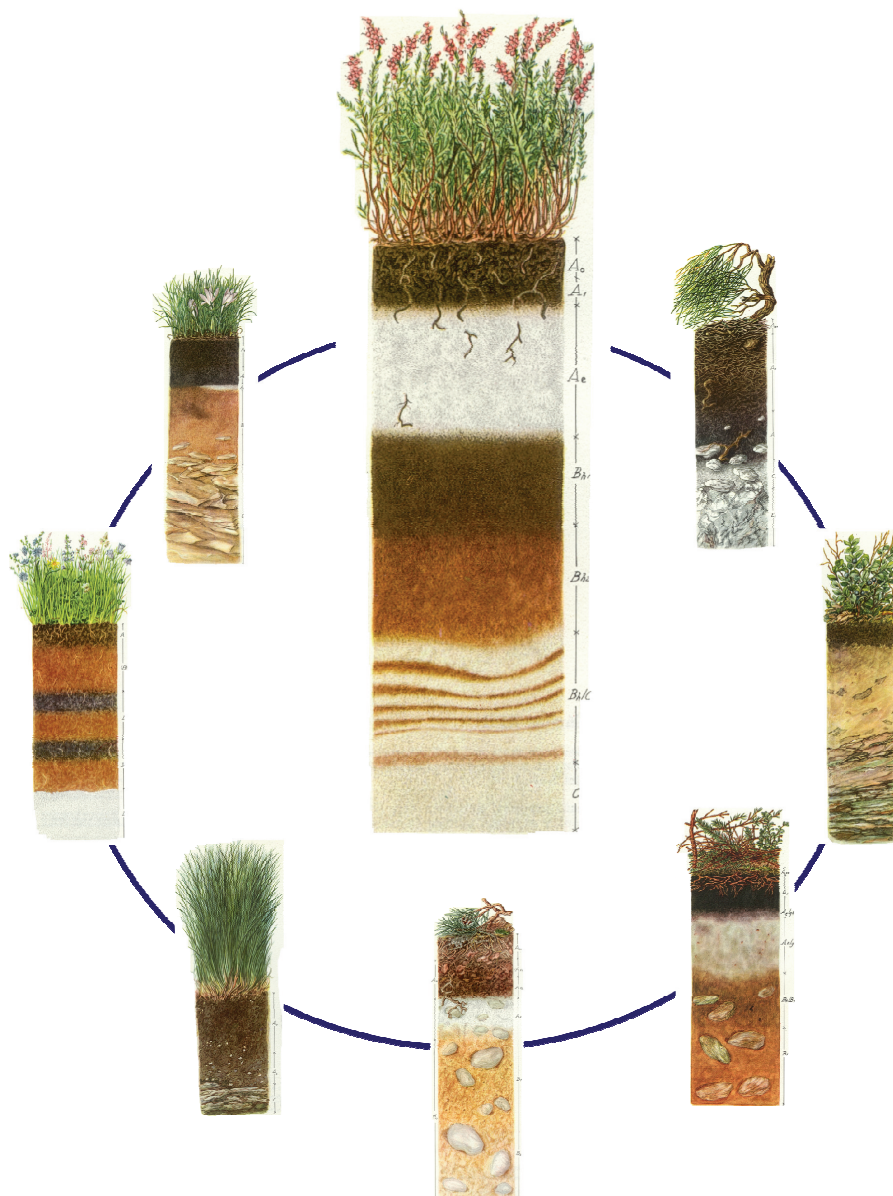
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D. Arrouays, A. Richer de Forges, X. Morvan, N.P.A. Saby,  
A.R. Jones, C. Le Bas (eds).



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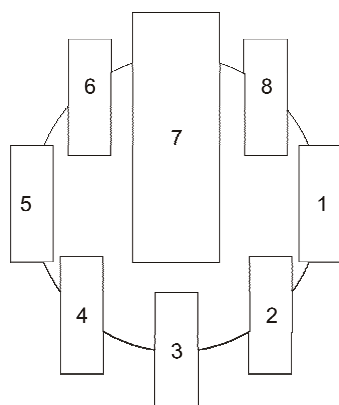
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The Frontispiece is a collage of soil profile drawings from the *Soils of Europe* by W. Kubienska (1953).

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D. Arrouays<sup>1</sup>, A. Richer de Forges, X. Morvan<sup>1</sup>, N.P.A. Saby<sup>1</sup>,  
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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 6<sup>th</sup> 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	description of the site			
				Choose between the following possibilities: 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
<i>FR01</i>	<i>soil contamination</i>	<i>France</i>	<i>X. Morvan</i>	<i>2</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>no</i>

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)
<i>yes</i>	<i>yes</i>	<i>fixed depth</i>	<i>0-30 and 30-50</i>	<i>topsoil</i>	<i>grid</i>	<i>20x20m, resolution 2x2m</i>	<i>composite</i>	<i>16</i>	<i>disturbed</i>	<i>2000</i>

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)
<i>subsoil</i>	<i>grid</i>	<i>20x20m, resolution 2x2m</i>	<i>composite</i>	<i>16</i>	<i>disturbed</i>	<i>2000</i>

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

**Table 2: Site enquiry**

soil monitoring network identification	site identification	coordinates (with the following projection system: longitude/latitude, decimal degrees, WGS 84 ellipsoid)	
		longitude	latitude
<i>FR01</i>	<i>1</i>	<i>xxx</i>	<i>xxx</i>
<i>FR01</i>	<i>2</i>	<i>xxx</i>	<i>xxx</i>

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)						
	<i>Arenosol</i>	<i>Arenosol</i>	<i>Arenosol</i>	<i>212</i>	<i>yes</i>	<i>yes</i>	<i>1995</i>	<i>2</i>	<i>7</i>
	<i>Cambisol</i>	<i>Cambisol</i>	<i>Cambisol</i>	<i>211</i>	<i>yes</i>	<i>yes</i>	<i>2003</i>	<i>1</i>	<i>5</i>

**Table 3: site specific analysis**

<b>soil monitoring network identification</b>	<b>site identification</b>
<i>FR01</i>	<i>1</i>

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

**Table 4: National analysis**

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

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 - HClO <sub>4</sub>	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 cm <sup>3</sup> )	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			





## 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?*

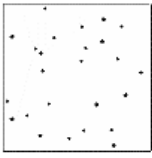
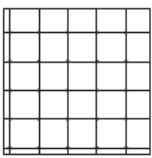
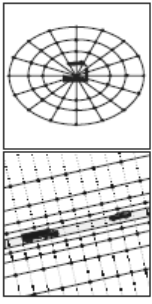

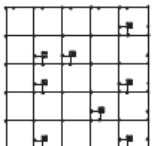
Distribution	Procedure
<p><b>Random</b></p> 	<p>Distribution of the sampling sites using random numbers and with complete exclusion of professional knowledge</p>
<p><b>Systematic</b></p> 	<p>Distribution of the sampling sites on a geometrical grid:</p> <ul style="list-style-type: none"> <li>- square grid</li> <li>- rectangular grid</li> <li>- triangular grid</li> </ul>
<p><b>Judgmental</b></p> 	<p>Distribution of the sampling sites based on expert judgement and considerations of plausibility (contamination hypothesis):</p> <ul style="list-style-type: none"> <li>- point sources: polar distribution</li> <li>- line sources: line distribution</li> <li>- other sources: in accordance with contamination hypothesis</li> <li>- greater sampling density in vicinity of source</li> </ul>
<p><b>Stratified pattern</b></p> 	<p>Appropriate distribution in more homogeneous sub-areas. Number of sampling sites proportional to the area. Distribution within the area: random, systematic or directed</p>
<p><b>Nested pattern</b></p> 	<p>Systematic distribution of the sampling sites and higher local sampling density as predefined in a diagram (random or systematic)</p>

Figure 1: Description of the different national sampling strategies (Hämann and Desales, 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**

<b>CLC code</b>	<b>LABEL1</b>	<b>LABEL2</b>	<b>LABEL3</b>
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., Desales 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 m<sup>2</sup>

**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 m<sup>2</sup>

**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 m<sup>2</sup>

**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 m<sup>2</sup>

**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 m<sup>2</sup>

**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 m<sup>2</sup>

**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 m<sup>2</sup>

**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 10-30m<sup>2</sup>

**Size and resolution of the sampling area:** 10 to 30 m<sup>2</sup>

**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 m<sup>2</sup>

**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 500m<sup>2</sup>

**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



## 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 not accurate enough (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):** A.Verdoedt, 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 not accurate enough (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.Verdoedt, 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) 2826m<sup>2</sup>

**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.Verdoedt, 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) 2826m<sup>2</sup>

**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.

## 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 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 University 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 University 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:**

### Monitoring sites (MS)

**Number of MS:**

**Year of first sampling:**

**Number of campaign:**

**Time step:**

### Comments

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 University 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

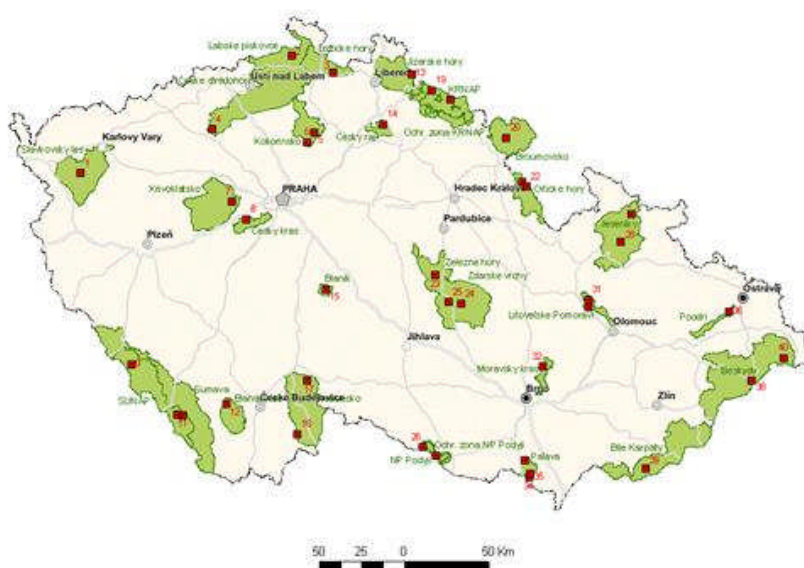
**Year of first sampling:**

**Number of campaign:**

**Time step:**

**Comments**

Coordinates of the sites not provided.



<p style="text-align: center;"><b>Description of soil monitoring networks Denmark</b></p>
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**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 and 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 and 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

## Description of soil monitoring networks Germany

**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 1000m<sup>2</sup>

**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 (frozen 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 exists 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 BDF 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 m<sup>2</sup>

**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

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

**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 m<sup>2</sup>

**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	

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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.

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

**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 m<sup>2</sup>

**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 m<sup>2</sup>

**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 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 m<sup>2</sup>

**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 m<sup>2</sup>

**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 m<sup>2</sup>

**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 m<sup>2</sup>

**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 ( $r=17.84\text{m}(1000\text{m}^2)$ )

**Size and resolution of the sampling area:** 1000 m<sup>2</sup>

**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 3000m<sup>2</sup>

**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 horizon 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.Verdoedt, 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

## 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 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

### Monitoring sites (MS)

**Number of MS:** 25

**Year of first sampling:** 2004

**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:** 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:**

### Monitoring sites (MS)

**Number of MS:** 582

**Year of first sampling:**

**Number of campaign:**

**Time step:**

### Comments

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

<p style="text-align: center;"><b>Description of soil monitoring networks The Netherlands</b></p>
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**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 to 30 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 m<sup>2</sup>

**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 m<sup>2</sup>

**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 m<sup>2</sup>

**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

## 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 (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 m<sup>2</sup>

**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 m<sup>2</sup>

**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 m<sup>2</sup>

**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 m<sup>2</sup>

**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 m<sup>2</sup>

**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:** 314m<sup>2</sup>

**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

### Monitoring sites (MS)

**Number of MS:** 191

**Year of first sampling:** 2004

**Number of campaign:** 1

**Time step:** 1 year

### Comments

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 m<sup>2</sup>

**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**





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**Table 5 : Exchangeable K**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	partly	mmol lÄ/kg	0,1m BaCl2 1:20 - buffered	Austrian Standard L 1086
Austria	AT1	all	partly	mmol lÄ/kg	0,1m BaCl2 1:20 - unbuffered	Austrian Standard L 1086
Austria	AT2	all	partly	mmol lÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol lÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol lÄ/kg	0,1 m BaCl2 1:20 - buffered	Austrian Standard L 1086
Austria	AT3	all	all	mmol lÄ/kg	0,1 m BaCl2 1:20 - unbuffered	Austrian Standard L 1086
Austria	AT4	all	all	mmol lÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT4	all	all	mmol lÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol lÄ/kg	0,1m BaCl2 1:20 - buffered	Austrian Standard L 1086
Austria	AT5	all	all	mmol lÄ/kg	0,1m BaCl2 1:20 - unbuffered	Austrian Standard L 1086
Austria	AT6	all	all	mmol lÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT7	all	all	mmol lÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT10	all	all	mmol lÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT13	AGES 90/101	all	mmol lÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT14	BDB_UBA	all	mmol lÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT14	BDB_UBA	all	mmol lÄ/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)	<i>unknown</i>	m	<i>unknown</i>	0.1M BaCl <sub>2</sub> extraction; FES	NF ISO 11260 ?
Denmark	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extraction with 1M ammoniumacetate at pH 7.0. determined by FES.	<i>unknown</i>
France	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	BaCl <sub>2</sub>	absorption atomique
France	RMQS	all	all	meq/100g	cobalt hexamine trichloride method	NF X 31-130
Greece	GRPRES17	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	NH <sub>4</sub> OAc extraction	Rhoades 1985
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	modified Mehlich method, flame emission spectrometry	MSZ-08-0214:1978
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Barium chloride solution	ISO 11260 & ISO 14254
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Barium chloride solution	ISO 11260 & ISO 14254
Latvia	LV03	<i>unknown</i>	all	<i>unknown</i>	0.1 M BaCl <sub>2</sub> , ICP, AAS	<i>unknown</i>
Malta	MT01	<i>unknown</i>	topsoil (B)	<i>unknown</i>	barium chloride solution buffered at pH 8.1	ISO 13536:1995
Portugal	Project Piddac 906-99	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extracted by ammonium acetate 1M	<i>unknown</i>
Scotland	National Soils Inventory for Scotland (NSIS)	<i>unknown</i>	<i>unknown</i>	meq/100g	<i>unknown</i>	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	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 BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT6	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086
Austria	AT7	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086
Austria	AT10	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086
Austria	AT13	AGES 90/101	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086
Austria	AT14	BDB_UBA	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT4	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT4	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Belgium	BE05 (ICP Forests-Nbelgium 1993)	<i>unknown</i>	m	<i>unknown</i>	0.1 m BaCl <sub>2</sub> 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	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extraction with 1M ammoniumacetate at pH 7.0. determined by AAS	<i>unknown</i>
France	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	BaCl <sub>2</sub>	NF ISO 11260 ?
Austria	AT11	all BDB_OE	all	<i>Unknown</i>	0,1 m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086-1
France	RMQS	all	all	meq/100g	Cobalt hexamine trichloride method	NF X 31-130
Greece	GRPRES17	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	NH <sub>4</sub> OAc extraction	Rhoades 1982
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	modified Mehlich method, AAS	MSZ-08-0214:1978
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Barium chloride solution	ISO 11260 & ISO 14254
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Barium chloride solution	ISO 11260 & ISO 14254
Latvia	LV03	<i>unknown</i>	all	<i>unknown</i>	0.1 m BaCl <sub>2</sub> , ICP, AAS	<i>unknown</i>
Portugal	Project Piddac 906-99	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extracted by ammonium acetate 1M	<i>unknown</i>
Portugal	PT01	<i>Unknown</i>	all	<i>Unknown</i>	Method according to Bascomb at pH 8.2	ISSO 13536/1997
Scotland	National Soils Inventory for Scotland (NSIS)	<i>unknown</i>	<i>unknown</i>	meq/100g	<i>unknown</i>	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Barium chloride solution buffered at pH 8.1	ISO 13536
Sweden	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>

**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 BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT4	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT4	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT6	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086
Austria	AT7	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086
Austria	AT10	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086
Austria	AT13	AGES 90/101	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086
Austria	AT11	all BDB_OE	all	<i>unknown</i>	0,1 m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086-1
Austria	AT14	BDB_UBA	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Belgium	BE05 (ICP Forests-Nbelgium 1993)	<i>unknown</i>	m	<i>unknown</i>	0.1M BaCl <sub>2</sub> extraction unbuffered; FES	NF ISO 11260 ?
Denmark	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extraction with 1M ammoniumacetate at pH 7.0. determined by AAS	<i>unknown</i>



## Exchangeable Mg (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
France	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	BaCl <sub>2</sub>	absorption atomique
France	RMQS	all	all	meq/100g	cobalt hexamine trichloride method	NF X 31-130
Greece	GRPRES17	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	NH <sub>4</sub> OAc extraction	Rhoades 1984
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	modified Mehlich method, AAS	MSZ-08-0214:1978
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Barium chloride solution	ISO 11260 & ISO 14254
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Barium chloride solution	ISO 11260 & ISO 14254
Latvia	LV03	<i>unknown</i>	all	<i>unknown</i>	0.1 M BaCl <sub>2</sub> , ICP, AAS	<i>unknown</i>
Malta	MT01	<i>unknown</i>	topsoil (B)	<i>unknown</i>	barium chloride solution buffered at pH 8.1	ISO 13536:1995
Portugal	Project Piddac 906-99	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extracted by ammonium acetate 1M	<i>unknown</i>
Portugal	PT01	<i>unknown</i>	all	<i>unknown</i>	Method according to Bascomb at pH 8.3	ISSO 13536/1998
Scotland	National Soils Inventory for Scotland (NSIS)	<i>unknown</i>	<i>unknown</i>	meq/100g	<i>unknown</i>	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Barium chloride solution buffered at pH 8.1	ISO 13536
Sweden	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>

**Table 8 : Exchangeable Na**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	partly	mmol lÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT1	all	partly	mmol lÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol lÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol lÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol lÄ/kg	0,1 m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT3	all	all	mmol lÄ/kg	0,1 m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT4	all	all	mmol lÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT4	all	all	mmol lÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol lÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT5	all	all	mmol lÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT6	all	all	mmol lÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT7	all	all	mmol lÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT13	AGES 90/101	all	mmol lÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT14	BDB_UBA	all	mmol lÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT11	all BDB_OE	all	<i>unknown</i>	0,1 m BaCl2 1:20	Austrian Standard L 1086-1
Austria	AT14	BDB_UBA	all	mmol lÄ/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)	<i>unknown</i>	m	<i>unknown</i>	0.1M BaCl <sub>2</sub> extraction; FES	NF ISO 11260 ?
Denmark	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extraction with 1M ammoniumacetate at pH 7.0. determined by FES.	<i>unknown</i>
France	RMQS	all	all	meq/100g	cobalt hexamine trichloride method	NF X 31-130
Greece	GR06	<i>unknown</i>	all	<i>unknown</i>	ammonium acetate	Sumner and Miller 1997
Greece	GRPRES17	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	NH <sub>4</sub> OAc extraction	Rhoades 1983
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	modified Mehlich method, flame emission spectrometry	MSZ-08-0214:1978
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Barium chloride solution	ISO 11260 & ISO 14254
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Barium chloride solution	ISO 11260 & ISO 14254
Latvia	LV03	<i>unknown</i>	all	<i>unknown</i>	0.1 M BaCl <sub>2</sub> , ICP, AAS	<i>unknown</i>
Malta	MT01	<i>unknown</i>	topsoil (B)	<i>unknown</i>	barium chloride solution buffered at pH 8.1	ISO 13536:1995
Portugal	Project Piddac 906-99	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extracted by ammonium acetate 1M	<i>unknown</i>
Portugal	PT01	<i>unknown</i>	all	<i>unknown</i>	Method according to Bascomb at pH 8.1	ISSO 13536/1996
Romania	RO01-2	<i>unknown</i>	all	<i>unknown</i>	Bower method = percolation with ammonium acetate 1n, dosage using flame photometer and correction with soluble sodium	<i>unknown</i>
Scotland	National Soils Inventory for Scotland (NSIS)	<i>unknown</i>	<i>unknown</i>	meq/100g	<i>unknown</i>	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Barium chloride solution buffered at pH 8.1	ISO 13536
Sweden	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Austria	AT1	all	partly	mmol lÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086

**Table 9 : Exchangeable H<sup>+</sup>**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT4	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT10	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT10	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Denmark	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	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 BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT7	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086
Austria	AT10	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086
Austria	AT14	BDB_UBA	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 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	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	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 BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT1	all	partly	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT3	all	all	mmol IÄ/kg	0,1 m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT5	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT7	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT10	all	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT14	BDB_UBA	all	mmol IÄ/kg	0,1m BaCl <sub>2</sub> 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
France	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Barium chloride solution	ISO 11260 & ISO 14254
Latvia	LV03	<i>unknown</i>	all	<i>unknown</i>	0.1 M BaCl <sub>2</sub> , ICP, AAS	<i>unknown</i>
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Barium chloride solution	ISO 11260 & ISO 14254
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	cmol/kg	1 M KCl extraction	<i>unknown</i>
Romania	RO01-2	<i>unknown</i>	all	<i>unknown</i>	Sokolov method = determination of the exchange acidity (As) at equilibrium; Al <sup>3+</sup> and H <sup>+</sup> 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 <sup>+</sup> exchangeable determining after block up Al <sup>3+</sup> in extract. The value for Al <sup>3+</sup> exchangeable establish from difference As-H <sup>+</sup>	<i>unknown</i>
France	RMQS	all	all	meq/100g	cobalt hexamine trichloride method	NF X 31-130
Slovakia	SK1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Sokolov's method = Exchangeable aluminium (at samples with pH 5,8) - Sokolov method - determination of the exchange acidity (As) at equilibrium; Al <sup>3+</sup> and H <sup>+</sup> 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 <sup>+</sup> exchangeable determining after block up Al <sup>3+</sup> in extract. The value for Al <sup>3+</sup> exchangeable establish from difference As-H <sup>+</sup> .	<i>unknown</i>
Sweden	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>

Table 12 : Exchangeable Mn

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT1	all	partly	mmol lÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT1	all	partly	mmol lÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT2	all	partly	mmol lÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT3	all	all	mmol lÄ/kg	0,1 m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT3	all	all	mmol lÄ/kg	0,1 m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT5	all	all	mmol lÄ/kg	0,1m BaCl2 1:20 - buffered	NF ISO 13536 = Austrian Standard L 1086
Austria	AT5	all	all	mmol lÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
Austria	AT7	all	all	mmol lÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT10	all	all	mmol lÄ/kg	0,1m BaCl2 1:20	Austrian Standard L 1086
Austria	AT14	BDB_UBA	all	mmol lÄ/kg	0,1m BaCl2 1:20 - unbuffered	NF ISO 11260 = Austrian Standard L 1086
France	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Barium chloride solution	ISO 11260 & ISO 14254
France	RMQS	all	all	meq/100g	cobalt hexamine trichloride method	NF X 31-130
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Barium chloride solution	ISO 11260 & ISO 14254
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	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 IÅ/kg	0,1 m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086
Austria	AT11	all BDB_T	all	<i>unknown</i>	0,1 m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086
Austria	AT11	all BDB_V	all	<i>unknown</i>	BaCl <sub>2</sub> -Extrakt	NF ISO 11260 ?
Austria	AT11	all BDB_OE	all	<i>unknown</i>	0,1 m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086
Belgium	BE01 (Aardewerk-NBelgium)	<i>unknown</i>	all	<i>unknown</i>	Metson : amonium acetate method, pH 7	Menlich, 1948; De Leenheer & Maes, 1954
Belgium	BE01 (Aardewerk-NBelgium)	<i>unknown</i>	all	<i>unknown</i>	Metson : amonium acetate method, pH 7	Menlich, 1948; De Leenheer & Maes, 1954
Belgium	BE01 (Aardewerk-NBelgium)	<i>unknown</i>	all	<i>unknown</i>	CEC-OM = (CEC-total- (1-O.C*1,724)*CEC-mineral)/ (O.C*1,724)	<i>unknown</i>
Belgium	BE02 (Aardewerk-SBelgium)	<i>unknown</i>	all	<i>unknown</i>	Metson : amonium acetate method, pH 7	Menlich, 1948; De Leenheer & Maes, 1954
Belgium	BE02 (Aardewerk-SBelgium)	<i>unknown</i>	all	<i>unknown</i>	Metson : amonium acetate method, pH 7	Menlich, 1948; De Leenheer & Maes, 1954
Belgium	BE02 (Aardewerk-SBelgium)	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Belgium	BE05 (ICP Forests-Nbelgium 1993)	<i>unknown</i>	m	<i>unknown</i>	BCE + AcExc	<i>unknown</i>
Belgium	BE05 (ICP Forests-Nbelgium 1993)	<i>unknown</i>	m	<i>unknown</i>	titration of a 0.1M BaCL <sub>2</sub> extraction to pH 7.8	ISO 11260
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1702	m	<i>unknown</i>	BCE + AcExc	<i>unknown</i>
France	RMQS	all	all	meq/100g	cobalt hexamine trichloride method	NF X 31-130
Greece	GR06	<i>unknown</i>	all	<i>unknown</i>	Metson : amonium acetate method, pH 7	Sumner and Miller 1996
Greece	GRARG53	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	NH <sub>4</sub> OAc extraction	Rhoades 1982
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	modified Mehlich method	MSZ-08-0215:1978
Latvia	LV03	<i>unknown</i>	all	<i>unknown</i>	0.1 M BaCl <sub>2</sub>	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	Method according to Bascomb at pH 8.1	ISSO 13536/1995
Portugal	Project Piddac 906-99	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Metson : amonium acetate method, pH 7	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	STN ISO 13536	ISO 13536
The Netherlands	DSQN (NL)	<i>unknown</i>	0-10 cm	<i>unknown</i>	extraction with BaCl <sub>2</sub> , with is replaced with MgSO <sub>4</sub>	<i>unknown</i>

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	<i>unknown</i>	microelementary analysis	<i>unknown</i>
Austria	AT11	all BDB_OE	all	<i>unknown</i>	total nitrogen by dry combustion	Austrian Standard L 1095
Austria	AT13	AGES 90/101	all	<i>unknown</i>	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)	<i>unknown</i>	all	<i>unknown</i>	dry combustion	ISO 13878
Belgium	BE06 (ICP Forests-Sbelgium 1994)	<i>unknown</i>	all	<i>unknown</i>	dry combustion	<i>unknown</i>

**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	<i>unknown</i>	dry combustion	ISO 13878
Bulgaria	European monitoring grid for Diffuse contamination	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Estonia	ES01	<i>unknown</i>	all	<i>unknown</i>	Kjeldahl	ISO 11261
France	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	kjeldahl	<i>unknown</i>
France	ICP	<i>unknown</i>	litter	<i>unknown</i>	unknown	<i>unknown</i>
France	RMQS	all	all	g/kg	dry combustion (elemental analysis)	NF ISO 13878
Germany	NR	290	<i>unknown</i>	<i>unknown</i>	dry combustion	ISO 13878 = DIN 19 684
Germany	NR	160	<i>unknown</i>	<i>unknown</i>	dry combustion	ISO 13878 = DIN 19 684 DIN EN 25663
Germany	NR	131	<i>unknown</i>	<i>unknown</i>	dry combustion	ISO 13878 = DIN 19 684-4
Germany	NR	2	<i>unknown</i>	<i>unknown</i>	Elementaranalyse	ISO 13878
Germany	NR	6	<i>unknown</i>	<i>unknown</i>	Kjeldahl	ISO 11261 (approx.)
Germany	NR	133	<i>unknown</i>	<i>unknown</i>	Dumas method, total combustion in an surplus of oxygen	<i>unknown</i>
Greece	GRPRES28	<i>unknown</i>	all	<i>unknown</i>	Salicylic Sulfuric acid digestion	Bremner 1965
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	digestion with ccH <sub>2</sub> SO <sub>4</sub> and phenol, fotometry	MSZ-08-0458, FIA13:1991
ICP	ICP	<i>unknown</i>	unknown	<i>unknown</i>	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	<i>unknown</i>	unknown	<i>unknown</i>	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	<i>unknown</i>	all	<i>unknown</i>	Dry Combustion	<i>unknown</i>
Lithuania	LT_ATC	<i>unknown</i>	topsoil	<i>unknown</i>	Kjeldahl method	<i>unknown</i>
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	%	dry combustion using elemental analyser	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	Kjeldahl method	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	Kjeldahl method	PN-ISO 11261
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	Kjeldahl method	PN-ISO 11261
Romania	RO01-2	<i>unknown</i>	all	<i>unknown</i>	Kjeldahl method	<i>unknown</i>
Scotland	National Soils Inventory for Scotland (NSIS)	<i>unknown</i>	<i>unknown</i>	%	Elemental Nitrogen content	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Jodlbauer's method	STN ISO 11261
Sweden	national	<i>unknown</i>	<i>unknown</i>	%	<i>unknown</i>	<i>unknown</i>
The Netherlands	DSQN (NL)	<i>unknown</i>	0-10 cm	<i>unknown</i>	total nitrogen (Keldjal)	<i>unknown</i>

**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	<i>unknown</i>	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	<i>unknown</i>	Elementaranalysator	<i>unknown</i>
Austria	AT14	BDB_UBA	all	%	dry combustion	Austrian Standard L 1080
Belgium	BE01 (Aardewerk-NBelgium)	<i>unknown</i>	all	<i>unknown</i>	dichromate method of Walkley and Black	Walkley and Black, 1934; De Leenheer et al., 1957
Belgium	BE02 (Aardewerk-SBelgium)	<i>unknown</i>	all	<i>unknown</i>	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 W Flanders & Antwerp)	<i>unknown</i>	all	<i>unknown</i>	dichromate method of Walkley and Black	ISRIC, 1987
Belgium	BE04 (Heavy Metals E Flanders)	<i>unknown</i>	all	<i>unknown</i>	dichromate method of Walkley and Black	Nelson and Sommers, 1982
Belgium	BE05 (ICP Forests- Nbelgium 1993)	<i>unknown</i>	all	<i>unknown</i>	dry combustion at temperature > 900°C	ISO 10694
Belgium	BE06 (ICP Forests- Sbelgium 1994)	<i>unknown</i>	o	<i>unknown</i>	dry combustion at temperature > 900°C	ISO 10694
Belgium	BE05 (ICP Forests- Nbelgium 1993)	1202	all	<i>unknown</i>	dry combustion at temperature > 900°C	ISO 10694
Belgium	BE05 (ICP Forests- Nbelgium 1993)	1702	all	<i>unknown</i>	dry combustion at temperature > 900°C	ISO 10694
Bulgaria	European soil monitoring grig for diffuse contamination	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Estonia	ES01	<i>unknown</i>	all	<i>unknown</i>	NIRS (also Tjurin-Black method)	<i>unknown</i>
Estonia	ES02	<i>unknown</i>	30%	<i>unknown</i>	NIRS (also Tjurin-Black method)	<i>unknown</i>
France	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	modified Anne method (colorimetry)	<i>unknown</i>

**Organic carbon (continued from previous table)**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
France	ICP	<i>unknown</i>	litter	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
France	RMQS	all	all	g/kg	dry combustion (elementary analysis)	NF ISO 10694
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	an automated dry ashing method (LECO CR-12, St. Joseph, MI, USA)	<i>unknown</i>
Germany	NR	408	<i>unknown</i>	<i>unknown</i>	dry combustion at temperature > 900°C	ISO 10694 = DIN 19 684
Germany	NR	92	<i>unknown</i>	<i>unknown</i>	dry combustion at temperature > 900°C	ISO 10694 = DIN 19684/2
Germany	NR	32	<i>unknown</i>	<i>unknown</i>	Determination of organic and total carbon after dry combustion (elementary analysis)	ISO 10694 = DIN ISO 10694
Germany	NR	6	<i>unknown</i>	<i>unknown</i>	nasse Oxidation = wet oxidation	<i>unknown</i>
Germany	NR	133	<i>unknown</i>	<i>unknown</i>	Dumas method, total combustion in an surplus of oxygen	<i>unknown</i>
Germany	NR	2	<i>unknown</i>	<i>unknown</i>	Elementaranalyse	ISO 10694
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	g/kg	Walkey Black modified wet combustion	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> and cH <sub>2</sub> SO <sub>4</sub> colorimetry	MSZ-08-0452:1980
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Dry Combustion at >900°C	ISO 10694
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Dry Combustion at >900°C	ISO 10694
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	Dry Combustion	<i>unknown</i>
Latvia	LV03	<i>unknown</i>	all	<i>unknown</i>	Dry Combustion	<i>unknown</i>
Malta	MT02	<i>unknown</i>	all	<i>unknown</i>	Determination of soil organic C by Walkley – black method	BS 1377:1975
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	%	loss in wt at 850C	<i>unknown</i>
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	%	dry combustion using elemental analyser	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	all	<i>unknown</i>	Tjurin method-K dichromate digestion	PN-ISO 14235:2003
Portugal	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Dry Combustion at >900°C	ISO 10694
Portugal	Project Piddac 906-99	<i>unknown</i>	<i>unknown</i>	%	dry combustion	<i>unknown</i>
Romania	RO01-2	<i>unknown</i>	all	<i>unknown</i>	Wet digestion, Walkley-Black (modified by Gogoășă) method	<i>unknown</i>
Scotland	National Soils Inventory for Scotland (NSIS)	<i>unknown</i>	unknown	<i>unknown</i>	Elemental Carbon content (gravimetric measurement expressed as a percentage)	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	according to STN ISO 10694 ((by sulfochromic oxidation)	ISO 14235
Sweden	national	<i>unknown</i>	<i>unknown</i>	%	<i>unknown</i>	<i>unknown</i>
The Netherlands	DSQN (NL)	<i>unknown</i>	0-10 cm	<i>unknown</i>	Dumas method, total combustion in an surplus of oxygen	Elemental analyser (Dumas's method)
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	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.	<i>unknown</i>



**Table 16 : Arylsulfatase activity**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_S	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>

**Table 17 : C/N**

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

**Table 18 : Cellulose decomposition activity**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Hungary	HU1, HU2	<i>unknown</i>	topsoil	<i>unknown</i>	weight reduction of the Whatman No1. filter paper (size and weight 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	<i>unknown</i>	mg CO <sub>2</sub> . 100 g <sup>-1</sup> TS . h <sup>-1</sup>	<i>unknown</i>

**Table 20 : pot. denitrification**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_S	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Austria	AT13	AGES 90/101	all	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>

**Table 22 : N-mineralisation**

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

**Table 23 : Phosphatase activity**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_S	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Austria	AT13	AGES 90/101	all	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Austria	AT13	AGES 90/101	all	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>	topsoil	<i>unknown</i>	measuring the CO <sub>2</sub> 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	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>

**Table 27 : Xylanase activity**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_S	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Austria	AT13	AGES 90/101	all	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>	topsoil	<i>unknown</i>	reduction of 2,3,5-triphenyl-tetrazolium-chloride by enzymatic 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 BaCl <sub>2</sub> 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)	<i>unknown</i>	m	<i>unknown</i>	digestion in aqua regia; AAS	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1702	m	<i>unknown</i>	digestion in aqua regia; AAS	ISO 11466
Finland	FIN	number	all	<i>unknown</i>	aqua regia	ISO 11466?
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na <sub>2</sub> EDTA (pH 4.65, AAac-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	<i>unknown</i>
France	RMQS	all	all	mg/kg	HF - HClO <sub>4</sub>	NF ISO 14689-1
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO <sub>4</sub> )	NF X 31-147
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	g/100g	HF	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	HF - HCl - HNO <sub>3</sub>	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	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)	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Pyrophosphate extractable aluminium	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	<i>unknown</i>

**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:HNO <sub>3</sub> =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	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Flame spectrometer	<i>unknown</i>
Bulgaria	National grid for Local contamination	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Flame spectrometer	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSZ-21470-50:1998
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	HF - HCl - HNO <sub>3</sub>	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extracted with HF-HNO <sub>3</sub> -HCl	<i>unknown</i>



**Total As content (continued from previous table)**

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

**Table 31 : extractable As**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_T	all	<i>unknown</i>	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	<i>unknown</i>	aqua regia	ISO 11466?
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	boiling water ; inductively coupled plasma emission optic spectrometry (ICS-OES)	<i>unknown</i>
Greece	GRPRES42	<i>unknown</i>	all	<i>unknown</i>	Na <sub>2</sub> CO <sub>3</sub> digestion	Bingham, 1982
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> 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	<i>unknown</i>	all	mg/kg	Berger and Truog = Extraction of boron soluble in boiling water	<i>unknown</i>
Estonia	ES02	<i>unknown</i>	5%	mg/kg	Berger and Truog = Extraction of boron soluble in boiling water	<i>unknown</i>
France	RMQS	all	all	mg/kg	Extraction of boron soluble in boiling water	NF X 31-122
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	water soluble	<i>unknown</i>

**Table 34 : Total Ba content**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSz-08-1933:1986
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	ICP-Emission	ISO-11466:2002
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	<i>unknown</i>

**Table 35 : Total Be content**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	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)	<i>unknown</i>	o	<i>unknown</i>	digestion in aqua regia; AAS	ISO 11466
Belgium	BE06 (ICP Forests-Sbelgium 1994)	<i>unknown</i>	o	<i>unknown</i>	digestion in aqua regia; AAS	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1202	o	<i>unknown</i>	digestion in aqua regia; AAS	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1702	o	<i>unknown</i>	digestion in aqua regia; AAS	ISO 11466
Finland	FIN	number	all	<i>unknown</i>	aqua regia	ISO 11466?
Finland	FI02	<i>unknown</i>	unknown	<i>unknown</i>	0.5 M ammonium acetate + 0.5 M acetic acid (pH 4.65, AAAC) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	<i>unknown</i>
France	ICP	<i>unknown</i>	litière	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO <sub>4</sub> )	NF X 31-147
Greece	unknown	<i>unknown</i>	<i>unknown</i>	g/100g	HF	<i>unknown</i>

**Total Ca content (continued from previous table)**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSZ-21470-50:1998
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	<i>Unknown</i>	<i>Unknown</i>	<i>Unknown</i>	aqua regia	ISO 11466
ICP	ICP	<i>Unknown</i>	<i>Unknown</i>	<i>Unknown</i>	aqua regia	ISO 11466
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	aqua-regia digest	<i>unknown</i>
Polska	SMN PO 01	unknown	all	unknown	AAS-Flame	PN ISO 14689-1
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	<i>unknown</i>

**Table 37 : Extractible Ca**

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

**Table 38 : Ca available**

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

Table 39 : Soluble Ca

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Portugal	PT01	<i>unknown</i>	all	<i>unknown</i>	Determination of soluble Ca <sup>2+</sup> by atomic absorption spectrophotometry	<i>unknown</i>
Portugal	PT01	<i>unknown</i>	all	<i>unknown</i>	Determination of soluble Ca <sup>2+</sup> by atomic absorption spectrophotometry	<i>unknown</i>

Table 40 : CaCO<sub>3</sub>

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	%	<i>unknown</i>	Austrian Standard L 1084
Austria	AT11	all BDB_T	all	<i>unknown</i>	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)	<i>unknown</i>	all	<i>unknown</i>	titrimetrie	De Leenheer et al., 1954
Belgium	BE02 (Aardewerk-SBelgium)	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	titrimetrie	De Leenheer et al., 1954
France	RMQS	all	all	g/kg	Determination of carbonate content - Volumetric method	NF ISO 10693
France	ICP	<i>unknown</i>	si pH > 6	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
France	ICP	<i>unknown</i>	litter	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	g/kg	<i>unknown</i>	<i>unknown</i>

**CaCO<sub>3</sub>** (continued from previous table)

<b>country</b>	<b>soil monitoring network identification</b>	<b>site identification</b>	<b>Samples concerned</b>	<b>unit</b>	<b>method</b>	<b>reference of method</b>
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Scheibler method	MSZ-08-0206/2:1978
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Calcimeter	ISO 10693
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	Scheibler method : Méthode volumétrique	PN-ISO 10693
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	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 BaCl <sub>2</sub> 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 [HNO <sub>3</sub> +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)	<i>unknown</i>	all	<i>unknown</i>	spectrophotométrie d'absorption atomique (AAS) with graphite oven (Varian spectrAA-800, GTA 100)	Verloo, 1997
Belgium	BE04 (Heavy Metals Eflanders)	<i>unknown</i>	all	<i>unknown</i>	AAS with graphite oven (Varian spectrAA-800, GTA 100)	Verloo, 1997
Bulgaria	European monitoring grid for Diffuse contamination	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Flame spectrometer	<i>unknown</i>

**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	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Flame spectrometer	<i>unknown</i>
Finland	FIN	number	all	<i>unknown</i>	aqua regia	ISO 11466?
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na <sub>2</sub> EDTA (pH 4.65, AAAC-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	<i>unknown</i>
France	ICP	<i>unknown</i>	litter	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO <sub>4</sub> )	NF X 31-147
Germany	NR	45	<i>unknown</i>	<i>unknown</i>	pressure digestion	<i>unknown</i>
Germany	NR	11	<i>unknown</i>	<i>unknown</i>	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	5	<i>unknown</i>	<i>unknown</i>	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	369	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	6	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	14	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	53	<i>unknown</i>	<i>unknown</i>	digestion with perchloric and hydrofluoric acid	<i>unknown</i>
Germany	NR	30	<i>unknown</i>	<i>unknown</i>	digestion with (hydrofluoric acid and) aqua regia, analysis with ICP-OES	<i>unknown</i>
Germany	NR	45	<i>unknown</i>	<i>unknown</i>	pressure digestion	<i>unknown</i>
Germany	NR	6	<i>unknown</i>	<i>unknown</i>	HF	<i>unknown</i>
Germany	NR	26	<i>unknown</i>	<i>unknown</i>	digestion with nitric, perchloric and hydrofluoric acid	<i>unknown</i>

**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	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	133	<i>unknown</i>	<i>unknown</i>	HNO <sub>3</sub> + 3 HCl (aqua regia), AAS	<i>unknown</i>
Germany	NR	17	<i>unknown</i>	<i>unknown</i>	RFA	<i>unknown</i>
Germany	NR	32	<i>unknown</i>	<i>unknown</i>	XRF (X-ray fluorescence) [with pressed powder pellet]	<i>unknown</i>
Greece		<i>unknown</i>	<i>unknown</i>	mg/kg	HF	<i>unknown</i>
Greece	GRPRES24	<i>unknown</i>	all	<i>unknown</i>	Digestion with Nitric Acid and Perchloric Acid in a block Digester	Miller and Mcfee, 1983
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSz-08-1933:1986
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
Lithuania	LT_ATC	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Lithuania	LT_ATC	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	aqua-regia digest	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	Méthodes de dosage par spectrométrie d'absorption atomique dans la flamme et électrothermique AAS-Flame	PN-ISO 11047:2001
Portugal	Project Piddac 906-99	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	Aqua regia, determination by Graphite furnace-AAS	ISO Standard 11466
Romania	RO01-3	<i>unknown</i>	all	<i>unknown</i>	Acid digestion with mixture of HClO <sub>4</sub> , H <sub>2</sub> SO <sub>4</sub> , HNO <sub>3</sub> - Determination by flame atomic absorption spectrometry	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extracted with HF-HNO <sub>3</sub> -HCl	<i>unknown</i>

**Total Cd content (continued from previous table)**

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

**Table 42 : Extractable Cd**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_T	all	<i>unknown</i>	NH <sub>4</sub> NO <sub>3</sub>	<i>unknown</i>
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	EDTA	<i>unknown</i>
France	RMQS	all	all	mg/kg	Extractable trace elements by BCR method (EDTA solution 0.05 M)	<i>unknown</i>
Irlande du Nord	national	<i>unknown</i>	<i>unknown</i>	mg/kg	0.05M EDTA-extractable, followed by ICP-AES	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	all	<i>unknown</i>	mobile forms extracted with 0.05 mol.dm <sup>-3</sup> EDTA	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	EDTA	<i>unknown</i>
Austria	AT7	all	all	mg/kg	0,05 m EDTA 1:10	Austrian Standard L 1089

**Table 43 : Soluble CI**

<b>country</b>	<b>soil monitoring network identification</b>	<b>site identification</b>	<b>Samples concerned</b>	<b>unit</b>	<b>method</b>	<b>reference of method</b>
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	<i>unknown</i>	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 BaCl <sub>2</sub> 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 [HNO <sub>3</sub> +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	<i>unknown</i>	aqua regia	Austrian Standard L 1085
Finland	FIN	number	all	<i>unknown</i>	aqua regia	ISO 11466?
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na <sub>2</sub> EDTA (pH 4.65, AAAC-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	<i>unknown</i>
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO <sub>4</sub> )	NF X 31-147
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	HF	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSZ-21470-50:1998
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	HF - HCl - HNO <sub>3</sub>	<i>unknown</i>
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	aqua-regia digest	<i>unknown</i>

**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	<i>unknown</i>	all	<i>unknown</i>	dosage by flame atomic absorption spectrometry and electrothermic AAS-Flame	PN-ISO 11047:2001
Romania	RO01-3	<i>unknown</i>	all	<i>unknown</i>	Acid digestion with mixture of HClO <sub>4</sub> , H <sub>2</sub> SO <sub>4</sub> , HNO <sub>3</sub> - Determination by flame atomic absorption spectrometry	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extracted with HF-HNO <sub>3</sub> -HCl	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	<i>unknown</i>

**Table 45 : Extractable Co**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg/kg	0.05M EDTA-extractable, followed by ICP-AES	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	all	mobile forms	extracted with 0.05 mol.dm <sup>-3</sup> EDTA	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>

**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 BaCl <sub>2</sub> 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 [HNO <sub>3</sub> +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	<i>unknown</i>	aqua regia	<i>unknown</i>
Austria	AT11	all BDB_OE	all	<i>unknown</i>	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)	<i>unknown</i>	all	<i>unknown</i>	AAS (Varian spectrAA-10)	Verloo, 1997
Belgium	BE04 (Heavy Metals EFlanders)	<i>unknown</i>	all	<i>unknown</i>	AAS (Varian spectrAA-10)	Verloo, 1997
Bulgaria	European monitoring grid for Diffuse contamination	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Flame spectrometer	<i>unknown</i>
Bulgaria	National grid for Local contamination	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Flame spectrometer	<i>unknown</i>



## 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	<i>unknown</i>	aqua regia	ISO 11466?
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na <sub>2</sub> EDTA (pH 4.65, AAAC-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	<i>unknown</i>
France	RMQS	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Total solubilizing by acid attack (HF - HClO <sub>4</sub> )	NF X 31-147
Germany	NR	45	<i>unknown</i>	<i>unknown</i>	pressure digestion	<i>unknown</i>
Germany	NR	11	<i>unknown</i>	<i>unknown</i>	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	5	<i>unknown</i>	<i>unknown</i>	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	369	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	6	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	14	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	53	<i>unknown</i>	<i>unknown</i>	digestion with perchloric and hydrofluoric acid	<i>unknown</i>
Germany	NR	30	<i>unknown</i>	<i>unknown</i>	digestion with (hydrofluoric acid and) aqua regia, analysis with ICP-OES	<i>unknown</i>
Germany	NR	45	<i>unknown</i>	<i>unknown</i>	pressure digestion	<i>unknown</i>
Germany	NR	6	<i>unknown</i>	<i>unknown</i>	HF	<i>unknown</i>
Germany	NR	26	<i>unknown</i>	<i>unknown</i>	digestion with nitric, perchloric and hydrofluoric acid	<i>unknown</i>
Germany	NR	20	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	133	<i>unknown</i>	<i>unknown</i>	HNO <sub>3</sub> + 3 HCl (aqua-regia), AAS	<i>unknown</i>
Germany	NR	17	<i>unknown</i>	<i>unknown</i>	RFA	<i>unknown</i>

**Total Cr content (continued from previous table)**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Germany	NR	32	<i>unknown</i>	<i>unknown</i>	XRF (X-ray fluorescence) [with pressed powder pellet]	<i>unknown</i>
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	HF	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSZ-21470-50:1998
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	HF - HCl - HNO <sub>3</sub>	<i>unknown</i>
Lithuania	LT_ATC	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Lithuania	LT_ATC	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Malta	MT02	<i>unknown</i>	all	<i>unknown</i>	aqua regia - Determination of Chromium by Electrothermal Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Malta	MT03	<i>unknown</i>	all	<i>unknown</i>	aqua regia - Determination of Chromium by Electrothermal Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Malta	MT04	<i>unknown</i>	all	<i>unknown</i>	aqua regia - Determination of Chromium by Electrothermal Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	aqua-regia digest	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	AAS-Flame	PN-ISO 11047:2001
Portugal	Project Piddac 906-99	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	<i>unknown</i>	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extracted with HF-HNO <sub>3</sub> -HCl	<i>unknown</i>
The Netherlands	DSQN (NL)	<i>unknown</i>	0-10 cm	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>

**Total Cr content (continued from previous table)**

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

**Table 47 : Extractable Cr**

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

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 BaCl <sub>2</sub> 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 [HNO <sub>3</sub> +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	<i>unknown</i>	aqua regia	<i>unknown</i>
Austria	AT11	all BDB_OE	all	<i>unknown</i>	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)	<i>unknown</i>	all	<i>unknown</i>	AAS (Varian spectrAA-10)	Verloo, 1997
Belgium	BE04 (Heavy Metals Eflanders)	<i>unknown</i>	all	<i>unknown</i>	AAS (Varian spectrAA-10)	Verloo, 1997
Bulgaria	European monitoring grid for Diffuse contamination	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Flame spectrometer	<i>unknown</i>

## 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	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Flame spectrometer	<i>unknown</i>
Finland	FIN	number	all	<i>unknown</i>	aqua regia	ISO 11466?
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na <sub>2</sub> EDTA (pH 4.65, AAAC-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	<i>unknown</i>
France	ICP	<i>unknown</i>	litter	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO <sub>4</sub> )	NF X 31-147
Germany	NR	45	<i>unknown</i>	<i>unknown</i>	pressure digestion	<i>unknown</i>
Germany	NR	11	<i>unknown</i>	<i>unknown</i>	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	5	<i>unknown</i>	<i>unknown</i>	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	369	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	6	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	14	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	53	<i>unknown</i>	<i>unknown</i>	digestion with perchloric and hydrofluoric acid	<i>unknown</i>
Germany	NR	30	<i>unknown</i>	<i>unknown</i>	digestion with (hydrofluoric acid and) aqua regia, analysis with ICP-OES	<i>unknown</i>
Germany	NR	45	<i>unknown</i>	<i>unknown</i>	pressure digestion	<i>unknown</i>
Germany	NR	6	<i>unknown</i>	<i>unknown</i>	HF	<i>unknown</i>
Germany	NR	26	<i>unknown</i>	<i>unknown</i>	digestion with nitric, perchloric and hydrofluoric acid	<i>unknown</i>

**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	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	133	<i>unknown</i>	<i>unknown</i>	HNO <sub>3</sub> + 3 HCl (aqua regia), AAS	<i>unknown</i>
Germany	NR	17	<i>unknown</i>	<i>unknown</i>	RFA	<i>unknown</i>
Germany	NR	32	<i>unknown</i>	<i>unknown</i>	XRF (X-ray fluorescence) [with pressed powder pellet]	<i>unknown</i>
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	HF	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSZ-21470-50:1998
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	HF - HCl - HNO <sub>3</sub>	<i>unknown</i>
Lithuania	LT_ATC	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Lithuania	LT_ATC	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Malta	MT02	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	aqua-regia digest	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	Aqua regia, by flame-AAS	ISO Standard 11466
Romania	RO01-3	<i>unknown</i>	all	<i>unknown</i>	Acid digestion with mixture of HClO <sub>4</sub> , H <sub>2</sub> SO <sub>4</sub> , HNO <sub>3</sub> - Determination by flame atomic absorption spectrometry	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extracted with HF-HNO <sub>3</sub> -HCl	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	all	<i>unknown</i>	ISO/DIS 14 870 (extracted with DTPA solution)	ISO 14870
The Netherlands	DSQN (NL)	<i>unknown</i>	0-10 cm	<i>unknown</i>	between 1993 and 1998: destruction with Fleischmann acid and perchloric acid (1:1). Measurement mainly on AAS-flame technique. From 1999 on, aqua regia and ICP.	<i>Unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	<i>unknown</i>

**Table 49 : Extractable Cu**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_T	all	<i>unknown</i>	NH <sub>4</sub> NO <sub>3</sub>	<i>unknown</i>
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)	<i>unknown</i>
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	EDTA	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	topsoil	<i>unknown</i>	EDTA extraction, ICP	MSZ-20135:1999
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	0.05M EDTA-extractable, followed by ICP-AES	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	EDTA	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	all	<i>unknown</i>	mobile forms extracted with 0.05 mol.dm <sup>-3</sup> EDTA	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>

**Table 50 : Cu available**

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



**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	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Flouride extracted with 1mol / l sulphuric acid and determined by Ion Selective Electrode (ISE)	<i>unknown</i>

**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	<i>unknown</i>	water soluble substances (water extract 1:10)	Austrian Standard L 1092
Romania	RO01-3	<i>unknown</i>	all	<i>unknown</i>	CaCl <sub>2</sub> extraction (1:10), determination by potentiometric method	<i>unknown</i>
Romania	RO01-3	<i>unknown</i>	all	<i>unknown</i>	CaCl <sub>2</sub> extraction (1:10), determination by potentiometric method	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	watersoluble with fluoride ionselective electrode	<i>unknown</i>

**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 BaCl <sub>2</sub> 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	<i>unknown</i>	aqua regia	<i>unknown</i>
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085
Austria	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	hydrofluoric acid	own methode
Belgium	BE05 (ICP Forests-Nbelgium 1993)	<i>unknown</i>	o	<i>unknown</i>	digestion in aqua regia; AAS	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1702	o	<i>unknown</i>	digestion in aqua regia; AAS	ISO 11466
Finland	FIN	number	all	<i>unknown</i>	aqua regia	ISO 11466?
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na <sub>2</sub> EDTA (pH 4.65, AAAC-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	<i>unknown</i>
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO <sub>4</sub> )	NF X 31-147
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	g/100g	HF	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSZ-21470-50:1998
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	HF - HCl - HNO <sub>3</sub>	<i>unknown</i>
Lithuania	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	aqua-regia digest	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	AAS-Flame	PN ISO 14689-1
Scotland	National Soils Inventory for Scotland (NSIS)	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	ISO/DIS 14 870 (extracted with DTPA solution)	<i>unknown</i>
The Netherlands	DSQN (NL)	<i>unknown</i>	0-10 cm	<i>unknown</i>	between 1993 and 1998: destruction with Fleischmann acid and perchloric acid (1:1). Measurement mainly on AAS-flame technique. From 1999 on, aqua regia and ICP.	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	<i>unknown</i>

**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	<i>unknown</i>
Austria	AT13	AGES 17/601	all	mg/kg	0,05 m EDTA 1:10	<i>unknown</i>
Austria	AT7	all	all	mg/kg	0,05 m EDTA 1:10	<i>unknown</i>
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg kg-1	0.05M EDTA-extractable, followed by ICP-AES	<i>unknown</i>

**Table 55 : free iron (Fe) and free iron oxides (Fe<sub>2</sub>O<sub>3</sub>)**

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

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:HNO <sub>3</sub> =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	<i>unknown</i>	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)	<i>unknown</i>	all	<i>unknown</i>	AAS (Coleman Mercury Analyzer MAS-50B)	<i>unknown</i>
Belgium	BE04 (Heavy Metals EFlanders)	<i>unknown</i>	all	<i>unknown</i>	AAS (Coleman Mercury Analyzer MAS-50B)	<i>unknown</i>
Germany	NR	45	<i>unknown</i>	<i>unknown</i>	pressure digestion	<i>unknown</i>
Germany	NR	11	<i>unknown</i>	<i>unknown</i>	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	5	<i>unknown</i>	<i>unknown</i>	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	369	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	6	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>

**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	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	53	<i>unknown</i>	<i>unknown</i>	digestion with perchloric and hydrofluoric acid	<i>unknown</i>
Germany	NR	30	<i>unknown</i>	<i>unknown</i>	digestion with hydrofluoric acid + nitric acid + boric acid, analysis with ICP-OES	<i>unknown</i>
Germany	NR	45	<i>unknown</i>	<i>unknown</i>	pressure digestion	<i>unknown</i>
Germany	NR	6	<i>unknown</i>	<i>unknown</i>	HF	<i>unknown</i>
Germany	NR	26	<i>unknown</i>	<i>unknown</i>	digestion with nitric, perchloric and hydrofluoric acid	<i>unknown</i>
Germany	NR	20	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	133	<i>unknown</i>	<i>unknown</i>	HNO <sub>3</sub> + 3 HCl (aqua regia), AAS	<i>unknown</i>
Germany	NR	17	<i>unknown</i>	<i>unknown</i>	RFA	<i>unknown</i>
Germany	NR	32	<i>unknown</i>	<i>unknown</i>	XRF (X-ray fluorescence) [with pressed powder pellet]	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	HF - HCl - HNO <sub>3</sub>	<i>unknown</i>
Malta	MT01	31	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	<i>unknown</i>	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	TMA 254 analysator	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	mg/kg	determined by Hydride AAS, digested in a nitric/sulphuric acid mixture	<i>unknown</i>

**Table 57 : Extractable Hg**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_T	all	<i>unknown</i>	NH4NO3	<i>unknown</i>

**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	<i>unknown</i>	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	<i>unknown</i>	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087 and L 1088
Austria	AT11	all BDB_OE	all	<i>unknown</i>	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	<i>unknown</i>	aqua regia	Austrian Standard L 1085
Austria	AT13	AGES 90/101	all	<i>unknown</i>	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087
Austria	AT13	AGES 17/601	all	<i>unknown</i>	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087
Austria	AT13	AGES 17/201	all	<i>unknown</i>	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)	<i>unknown</i>	o	<i>unknown</i>	digestion in aqua regia; AAS	ISO 11466
Belgium	BE06 (ICP Forests-Sbelgium 1994)	<i>unknown</i>	o	<i>unknown</i>	digestion in aqua regia; AAS	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1202	o	<i>unknown</i>	digestion in aqua regia; AAS	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1702	o	<i>unknown</i>	digestion in aqua regia; AAS	ISO 11466
Finland	FIN	number	all	<i>unknown</i>	aqua regia	ISO 11466?
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	0.5 M ammonium acetate + 0.5 M acetic acid (pH 4.65, AAAC) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	<i>unknown</i>
France	ICP	<i>unknown</i>	litière	<i>unknown</i>	unknown	<i>unknown</i>
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO <sub>4</sub> )	NF X 31-147
Germany	NR	257	<i>unknown</i>	<i>unknown</i>	extraction with Ca lactate/Ca acetate/ acetic acid solution at pH 4.1, 1:20	<i>unknown</i>
Germany	NR	17	<i>unknown</i>	<i>unknown</i>	extraction with Ca lactate/Ca acetate/ acetic acid solution at pH 4.1, 1:20	<i>unknown</i>
Germany	NR	26	<i>unknown</i>	<i>unknown</i>	extraction with Ca lactate/HCl solution at pH 3.7, 1:50	<i>unknown</i>



**Total K content (continued from previous table)**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Germany	NR	8	<i>unknown</i>	<i>unknown</i>	extraction with Ca lactate/HCl solution at pH 3.7, 1:50	<i>unknown</i>
Germany	NR	21	<i>unknown</i>	<i>unknown</i>	extraction with Ca lactate/HCl solution at pH 3.7, 1:50	<i>unknown</i>
Germany	NR	133	<i>unknown</i>	<i>unknown</i>	VDLUFA Methode A6.2.1.1	<i>unknown</i>
Germany	NR	14	<i>unknown</i>	<i>unknown</i>	extraction with aqua regia, determination with AAS	<i>unknown</i>
Germany	NR	16	<i>unknown</i>	<i>unknown</i>	DIN 38 414 KW, HNO <sub>3</sub>	<i>unknown</i>
Germany	NR	53	<i>unknown</i>	<i>unknown</i>	DIN 38 414 KW, Perchlorsre-HF	<i>unknown</i>
Germany	NR	45	<i>unknown</i>	<i>unknown</i>	pressure digestion	<i>unknown</i>
Germany	NR	90	<i>unknown</i>	<i>unknown</i>	solution de HF/HClO <sub>4</sub>	<i>unknown</i>
Germany	NR	36	<i>unknown</i>	<i>unknown</i>	HF	<i>unknown</i>
Germany	NR	26	<i>unknown</i>	<i>unknown</i>	digestion with nitric, perchloric and hydrofluoric acid	<i>unknown</i>
Germany	NR	20	<i>unknown</i>	<i>unknown</i>	pressure digestion with nitric acid	<i>unknown</i>
Germany	NR	16	<i>unknown</i>	<i>unknown</i>	solution d'acide nitrique + eau régale	<i>unknown</i>
Germany	NR	133	<i>unknown</i>	<i>unknown</i>	in Anlehn. DIN 38406-22	<i>unknown</i>
Germany	NR	25	<i>unknown</i>	<i>unknown</i>	RFA	<i>unknown</i>
Germany	NR	32	<i>unknown</i>	<i>unknown</i>	XRF (X-ray fluorescence) [with pressed powder pellet]	<i>unknown</i>
Germany	NR	60	<i>unknown</i>	<i>unknown</i>	VDLUFA	<i>unknown</i>
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	g/100g	HF	<i>unknown</i>
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	HF - HCl - HNO <sub>3</sub>	<i>unknown</i>
Lithuania	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Egner-Rim-Domming method (used in Hungary and Sweden)	<i>unknown</i>

**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	<i>unknown</i>	all	<i>unknown</i>	AAS-Emission	PN ISO 14689-1
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	<i>unknown</i>

**Table 59 : Extractable K**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_OE	all	<i>unknown</i>	0,1 m BaCl <sub>2</sub> 1:20	Austrian Standard L 1086-1
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	Morgan's Extract	<i>unknown</i>
Malta	MT01	<i>unknown</i>	all	<i>unknown</i>	Determination of potassium in soil by flame spectrometry	SSSA 1996
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>

Table 60 : K available

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

**Table 61 : Total La content**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSZ-21470-50:1998
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>

**Table 64 : Extractable Mg**

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

Table 65 : Mg available

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

Table 66 : Soluble Mg

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Portugal	PT01	<i>unknown</i>	all	<i>unknown</i>	Determination of soluble Mg <sup>2+</sup> by atomic absorption spectrophotometry	<i>unknown</i>
Portugal	PT01	<i>unknown</i>	all	<i>unknown</i>	Determination of soluble Mg <sup>2+</sup> by atomic absorption spectrophotometry	<i>unknown</i>

**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 BaCl <sub>2</sub> 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 [HNO <sub>3</sub> +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	<i>unknown</i>	aqua regia	<i>unknown</i>
Austria	AT11	all BDB_OE	all	<i>unknown</i>	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 BaCl <sub>2</sub> 1:20 - unbuffered	Austrian Standard L 1086
Finland	FIN	number	all	<i>unknown</i>	aqua regia	ISO 11466?
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na <sub>2</sub> EDTA (pH 4.65, AAac-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	<i>unknown</i>
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO <sub>4</sub> )	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	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	HF	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSZ-08-1933:1986
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	HF - HCl - HNO <sub>3</sub>	<i>unknown</i>
Lithuania	LT_ATC	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Lithuania	LT_ATC	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	aqua-regia digest	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	AAS-Flame	PN-ISO 11047:2001
Romania	RO01-3	<i>unknown</i>	all	<i>unknown</i>	Acid digestion with mixture of HClO <sub>4</sub> , H <sub>2</sub> SO <sub>4</sub> , HNO <sub>3</sub> - Determination by flame atomic absorption spectrometry	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	all	<i>unknown</i>	ISO/DIS 14 870 (extracted with DTPA solution)	ISO 14870
The Netherlands	DSQN (NL)	<i>unknown</i>	0-10 cm	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	<i>unknown</i>

**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	<i>unknown</i>	topsoil	<i>unknown</i>	EDTA extraction, ICP	MSZ-20135:1999
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg/kg	0.05M EDTA-extractable, followed by ICP-AES	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	EDTA	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>

**Table 69 : Mn available**

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



**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	<i>unknown</i>	aqua regia	ISO 11466?
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na <sub>2</sub> EDTA (pH 4.65, AAAC-EDTA) ; graphite furnace atomic absorption spectrometry (GF-AAS)	<i>unknown</i>
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO <sub>4</sub> )	NF X 31-147
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	HF	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSZ-08-1933:1986
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	aqua-regia digest	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>

**Total Mo content (continued from previous table)**

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

**Table 71 : Extractable Mo**

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

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	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	hydrofluoric acid	own methode
Belgium	BE05 (ICP Forests-Nbelgium 1993)	<i>unknown</i>	m	<i>unknown</i>	digestion in aqua regia; AAS	ISO 11466
Belgium	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	digestion in aqua regia; AAS	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1202	m	<i>unknown</i>	digestion in aqua regia; AAS	ISO 11466
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO <sub>4</sub> )	NF X 31-147
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	g/100g	HF	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSZ-21470-50:1998
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	aqua-regia digest	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	AAS-Emission	PN ISO 14689-1
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	<i>unknown</i>

Table 73 : Extractable Na

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

Table 74 : Na available

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Hungary	HU1, HU2	<i>unknown</i>	topsoil	<i>unknown</i>	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	<i>unknown</i>	all	<i>unknown</i>	Determination of soluble Na <sup>+</sup> by atomic absorption spectrophotometry	<i>unknown</i>
Portugal	PT01	<i>unknown</i>	all	<i>unknown</i>	Determination of soluble Na <sup>+</sup> by atomic absorption spectrophotometry	<i>unknown</i>

**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 BaCl <sub>2</sub> 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 [HNO <sub>3</sub> +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	<i>unknown</i>	aqua regia	<i>unknown</i>
Austria	AT11	all BDB_OE	all	<i>unknown</i>	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)	<i>unknown</i>	all	<i>unknown</i>	AAS (Varian spectrAA-10)	Verloo, 1997
Belgium	BE04 (Heavy Metals Eflanders)	<i>unknown</i>	all	<i>unknown</i>	AAS (Varian spectrAA-10)	Verloo, 1997
Bulgaria	European monitoring grid for Diffuse contamination	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Flame spectrometer	<i>unknown</i>

## 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	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Flame spectrometer	<i>unknown</i>
Finland	FIN	number	all	<i>unknown</i>	aqua regia	ISO 11466?
France	RMQS	all	all	mg/kg	Total solubilizing by acid attack (HF - HClO <sub>4</sub> )	NF X 31-147
Germany	NR	45	<i>unknown</i>	<i>unknown</i>	pressure digestion	<i>unknown</i>
Germany	NR	11	<i>unknown</i>	<i>unknown</i>	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	5	<i>unknown</i>	<i>unknown</i>	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	369	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	6	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	14	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	53	<i>unknown</i>	<i>unknown</i>	digestion with perchloric and hydrofluoric acid	<i>unknown</i>
Germany	NR	30	<i>unknown</i>	<i>unknown</i>	digestion with (hydrofluoric acid and) aqua regia, analysis with ICP-OES	<i>unknown</i>
Germany	NR	45	<i>unknown</i>	<i>unknown</i>	pressure digestion	<i>unknown</i>
Germany	NR	6	<i>unknown</i>	<i>unknown</i>	HF	<i>unknown</i>
Germany	NR	26	<i>unknown</i>	<i>unknown</i>	digestion with nitric, perchloric and hydrofluoric acid	<i>unknown</i>
Germany	NR	20	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	133	<i>unknown</i>	<i>unknown</i>	HNO <sub>3</sub> + 3 HCl (aqua regia), AAS	<i>unknown</i>
Germany	NR	17	<i>unknown</i>	<i>unknown</i>	RFA	<i>unknown</i>
Germany	NR	32	<i>unknown</i>	<i>unknown</i>	XRF (X-ray fluorescence) [with pressed powder pellet]	<i>unknown</i>

**Total Ni content (continued from previous table)**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	HF	<i>unknown</i>
Greece	GRPRES24	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSZ-08-1933:1986
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
Lithuania	LT_ATC	<i>unknown</i>	all	<i>unknown</i>	unknown	<i>unknown</i>
Lithuania	LT_ATC	<i>unknown</i>	all	<i>unknown</i>	unknown	<i>unknown</i>
Malta	MT02	<i>unknown</i>	all	<i>unknown</i>	Determination of nickel by Flame Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Malta	MT03	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	aqua-regia digest	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	AAS-Flame	PN-ISO 11047:2001
Portugal	Project Piddac 906-99	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	Aqua regia, by flame-AAS	ISO Standard 11466
Romania	RO01-3	<i>unknown</i>	all	<i>unknown</i>	Acid digestion with mixture of HClO <sub>4</sub> , H <sub>2</sub> SO <sub>4</sub> , HNO <sub>3</sub> - Determination by flame atomic absorption spectrometry	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>

**Total Ni content (continued from previous table)**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extracted with HF-HNO <sub>3</sub> -HCl	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	<i>unknown</i>

**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)	<i>unknown</i>
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	EDTA	<i>unknown</i>
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	0.05M EDTA-extractable, followed by ICP-AES	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	EDTA	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	all	mobile forms	extracted with 0.05 mol.dm <sup>-3</sup> EDTA	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>



**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	<i>unknown</i>	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087 and L 1088
Austria	AT11	all BDB_T	all	<i>unknown</i>	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	<i>unknown</i>	aqua regia	<i>unknown</i>
Austria	AT11	all BDB_OE	all	<i>unknown</i>	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087
Austria	AT11	all BDB_OE	all	<i>unknown</i>	aqua regia	Austrian Standard L 1085
Austria	AT13	AGES 90/101	all	<i>unknown</i>	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087
Austria	AT13	AGES 17/601	all	<i>unknown</i>	CAL (calcium-acetate-lactate) or DL (double-lactate)	Austrian Standard L 1087
Austria	AT13	AGES 17/201	all	<i>unknown</i>	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)	<i>unknown</i>	o	<i>unknown</i>	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)	<i>unknown</i>	all	<i>unknown</i>	digestion in aqua regia; colorimetry	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1202	o	<i>unknown</i>	digestion in aqua regia; colorimetry	ISO 11466
Belgium	BE05 (ICP Forests-Nbelgium 1993)	1702	o	<i>unknown</i>	digestion in aqua regia; colorimetry	ISO 11466
Bulgaria	European monitoring grid for Diffuse contamination	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	spectrophptometer after extraction in aqua regia, reagent vanadat-molibdate, UV/VIS	<i>unknown</i>
Finland	FIN	number	all	<i>unknown</i>	aqua regia	ISO 11466?
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	0.5 M ammonium acetate + 0.5 M acetic acid (pH 4.65, AAAC) ; spectrometry	<i>unknown</i>
France	ICP	<i>unknown</i>	litter	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
France	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	colorimétrie	<i>unknown</i>
Germany	NR	257	<i>unknown</i>	<i>unknown</i>	extraction with Ca lactate/Ca acetate/ acetic acid solution at pH 4.1, 1:20	DIN 38 414 Koenigswasser
Germany	NR	17	<i>unknown</i>	<i>unknown</i>	extraction with Ca lactate/Ca acetate/ acetic acid solution at pH 4.1, 1:20	<i>unknown</i>
Germany	NR	26	<i>unknown</i>	<i>unknown</i>	extraction with Ca lactate/HCl solution at pH 3.7, 1:50	<i>unknown</i>
Germany	NR	8	<i>unknown</i>	<i>unknown</i>	extraction with Ca lactate/HCl solution at pH 3.7, 1:50	<i>unknown</i>
Germany	NR	21	<i>unknown</i>	<i>unknown</i>	extraction with Ca lactate/HCl solution at pH 3.7, 1:50	<i>unknown</i>
Germany	NR	133	<i>unknown</i>	<i>unknown</i>	VDLUF A Methode A6.2.1.1	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSZ-21470-50:1998
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>	all	<i>unknown</i>	Aqua regia, Colorimetry	<i>unknown</i>
Lithuania	unknown	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Egner-Rim-Domming method (used in Hungary and Sweden)	<i>unknown</i>
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	<i>unknown</i>	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	vanadomolybdate spectrophotometric method	PN-ISO 14869-1
Scotland	National Soils Inventory for Scotland (NSIS)	<i>unknown</i>	<i>unknown</i>	mg/100g	<i>unknown</i>	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>
The Netherlands	DSQN (NL)	<i>unknown</i>	0-10 cm	<i>unknown</i>	total phosphorus (SFA, colorimetric)	<i>unknown</i>
The Netherlands	DSQN (NL)	<i>unknown</i>	0-10 cm	<i>unknown</i>	between 1993 and 1998: destruction with Fleischmann acid and perchloric acid (1:1). Measurement mainly on AAS-flame technique. From 1999 on, aqua regia and ICP.	<i>Unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Total Phosphorus concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	<i>unknown</i>

Table 79 : Extractable P

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Greece	GRARG75	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	NaHCO <sub>3</sub> or Bray extraction	Olsen, Murphy-Rilley
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	Morgan's Extract	<i>unknown</i>
The Netherlands	DSQN (NL)	<i>unknown</i>	0-10 cm	<i>unknown</i>	extractable phosphorus	<i>unknown</i>

Table 80 : Soluble P

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

**Table 81 : P available**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_V	all	<i>unknown</i>	CAL (calcium-acetate-lactate) or DL (double-lactate)	<i>unknown</i>
Estonia	ES01	<i>unknown</i>	all	<i>unknown</i>	Mehlich-3	<i>unknown</i>
Estonia	ES02	<i>unknown</i>	all	<i>unknown</i>	Mehlich-3	<i>unknown</i>
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Olsen	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	topsoil	<i>unknown</i>	ammonium-lactate extraction, ICP	MSZ-20135:1999
Lithuania	LT_ATC	<i>unknown</i>	topsoil	<i>unknown</i>	A-L method	<i>unknown</i>
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg l-1	Olsen-P by bicarbonate reagent	<i>unknown</i>
Polska	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	calcium lactate-extractable P	BN-73/9180-01
Romania	RO01-2	<i>unknown</i>	all	<i>unknown</i>	Egnèr-Riehm-Domingo method = extraction in ammonium acetate – lactate solution at pH 3.75, followed by colorimetric (715 nm) dosage with ammonium molybdate and sulphuric acid solution and a mixture of SnCl <sub>2</sub> ·H <sub>2</sub> O and ascorbic acid as reducing agent.	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Egner's and Mehlich II methods	<i>unknown</i>
United kingdom	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>

**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 BaCl <sub>2</sub> 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 [HNO <sub>3</sub> +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	<i>unknown</i>	aqua regia	<i>unknown</i>
Austria	AT11	all BDB_OE	all	<i>unknown</i>	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)	<i>unknown</i>	all	<i>unknown</i>	AAS (Varian spectrAA-10)	Verloo, 1997
Belgium	BE04 (Heavy Metals Eflanders)	<i>unknown</i>	all	<i>unknown</i>	AAS (Varian spectrAA-10)	Verloo, 1997
Bulgaria	European monitoring grid for Diffuse contamination	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Flame spectrometer	<i>unknown</i>
Bulgaria	National grid for Local contamination	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Flame spectrometer	<i>unknown</i>

**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	<i>unknown</i>	aqua regia	ISO 11466?
France	ICP	<i>unknown</i>	litter	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
France	RMQS	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Total solubilizing by acid attack (HF - HClO <sub>4</sub> )	NF X 31-147
Germany	NR	45	<i>unknown</i>	<i>unknown</i>	pressure digestion	<i>unknown</i>
Germany	NR	11	<i>unknown</i>	<i>unknown</i>	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	5	<i>unknown</i>	<i>unknown</i>	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	369	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	6	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	14	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	53	<i>unknown</i>	<i>unknown</i>	digestion with perchloric and hydrofluoric acid	<i>unknown</i>
Germany	NR	30	<i>unknown</i>	<i>unknown</i>	digestion with (hydrofluoric acid and) aqua regia, analysis with ICP-OES	<i>unknown</i>
Germany	NR	45	<i>unknown</i>	<i>unknown</i>	pressure digestion	<i>unknown</i>
Germany	NR	6	<i>unknown</i>	<i>unknown</i>	HF	<i>unknown</i>
Germany	NR	26	<i>unknown</i>	<i>unknown</i>	digestion with nitric, perchloric and hydrofluoric acid	<i>unknown</i>
Germany	NR	20	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	133	<i>unknown</i>	<i>unknown</i>	HNO <sub>3</sub> + 3 HCl (aqua regia), AAS	<i>unknown</i>
Germany	NR	17	<i>unknown</i>	<i>unknown</i>	RFA	<i>unknown</i>
Germany	NR	32	<i>unknown</i>	<i>unknown</i>	XRF (X-ray fluorescence) [with pressed powder pellet]	<i>unknown</i>
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	HF	<i>unknown</i>

**Total Pb content (continued from previous table)**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSZ-08-1933:1986
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	HF - HCl - HNO <sub>3</sub>	<i>unknown</i>
Lithuania	LT_ATC	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Lithuania	LT_ATC	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Malta	MT02	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	aqua-regia digest	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	AAS-Flame	PN-ISO 11047:2001
France	Project Piddac 906-99	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	<i>unknown</i>	<i>unknown</i>
Romania	RO01-3	<i>unknown</i>	all	<i>unknown</i>	Acid digestion with mixture of HClO <sub>4</sub> , H <sub>2</sub> SO <sub>4</sub> , HNO <sub>3</sub> - Determination by flame atomic absorption spectrometry	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extracted with HF-HNO <sub>3</sub> -HCl	<i>unknown</i>



**Total Pb content (continued from previous table)**

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

**Table 83 : Extractable Pb**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_T	all	<i>unknown</i>	NH4NO3	<i>unknown</i>
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)	<i>unknown</i>
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	EDTA	<i>unknown</i>
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg kg-1	0.05M EDTA-extractable, followed by ICP-AES	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	EDTA	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	all	<i>unknown</i>	mobile forms extracted with 0.05 mol.dm-3 EDTA	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>

**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	<i>unknown</i>	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	%	oxidation	Austrian Standard EN ISO 11885 (modified)
Finland	FIN	number	all	<i>unknown</i>	aqua regia	ISO 11466?
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	0.5 M ammonium acetate + 0.5 M acetic acid (pH 4.65, AAAC) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	<i>unknown</i>
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	<i>unknown</i>	mg/kg	0.05M EDTA-extractable, followed by ICP-AES	<i>unknown</i>

**Table 87 : S available**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Hungary	HU1, HU2	<i>unknown</i>	topsoil	<i>unknown</i>	KCl extraction, ICP	MSZ-20135:1999
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	mg l-1	extracted using 1M ammonium acetate then flame photometry or AAS	<i>unknown</i>
Polska	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>	water soluble substances (water extract 1:10)	Austrian Standard L 1092
Romania	RO01-3	<i>unknown</i>	all	<i>unknown</i>	Water extraction (1:5), determination by gravimetric method	<i>unknown</i>

**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	<i>unknown</i>	aqua regia	Austrian Standard L 1085
Austria	AT14	BDB_UBA	all	mg/kg	nitric acid and perchloric acid	Austrian Standard L 1085
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	boiling water ; inductively coupled plasma mass spectrometry (ICP-MS)	<i>unknown</i>
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	HF - HCl - HNO <sub>3</sub>	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSZ-21470-50:1998
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extracted with HF-HNO <sub>3</sub> -HCl	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	mg/kg	determined by Hydride Atomic Absorption Spectrometry (AAS), extracted into hydrochloric acid after digestion with nitric acid and ashing with magnesium nitrate	<i>unknown</i>

**Table 91 : Total Sr content**

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

**Table 92 : Total St content**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>

**Table 93 : Total Ti content**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	HF - HCl - HNO <sub>3</sub>	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>

**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 - HClO <sub>4</sub> )	NF X 31-147
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	HF	<i>unknown</i>

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	<i>unknown</i>	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	<i>unknown</i>	aqua regia	ISO 11466?
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	ICP-Emission - Méthodes de dosage par spectrométrie d'absorption atomique dans la flamme et électrothermique	PN-ISO 11047:2001
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	mg/kg	determined by Atomic Adsorption Spectrometry (AAS) in an aqua regia digest	<i>unknown</i>

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 BaCl <sub>2</sub> 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 [HNO <sub>3</sub> +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	<i>unknown</i>	aqua regia	<i>unknown</i>
Austria	AT11	all BDB_OE	all	<i>unknown</i>	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)	<i>unknown</i>	all	<i>unknown</i>	AAS (Varian spectrAA-10)	Verloo, 1997
Belgium	BE04 (Heavy Metals Eflanders)	<i>unknown</i>	all	<i>unknown</i>	AAS (Varian spectrAA-10)	Verloo, 1997
Bulgaria	European monitoring grid for Diffuse contamination	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Flame spectrometer	<i>unknown</i>
Bulgaria	National grid for Local contamination	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Flame spectrometer	<i>unknown</i>

**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	<i>unknown</i>	aqua regia	ISO 11466?
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	0.5 M ammonium acetate + 0.5 M acetic acid + 0.02 M Na <sub>2</sub> EDTA (pH 4.65, AAAC-EDTA) ; inductively coupled plasma emission optic spectrometry (ICS-OES)	<i>unknown</i>
France	ICP	<i>unknown</i>	litter	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
France	RMQS	all	<i>unknown</i>	mg/kg	Total solubilizing by acid attack (HF - HClO <sub>4</sub> )	NF X 31-147
Germany	NR	45	<i>unknown</i>	<i>unknown</i>	pressure digestion	<i>unknown</i>
Germany	NR	11	<i>unknown</i>	<i>unknown</i>	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	5	<i>unknown</i>	<i>unknown</i>	extraction with aqua regia, determination with AAS	ISO 11047 (approx.)
Germany	NR	369	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	6	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	14	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>
Germany	NR	53	<i>unknown</i>	<i>unknown</i>	digestion with perchloric and hydrofluoric acid	<i>unknown</i>
Germany	NR	30	<i>unknown</i>	<i>unknown</i>	digestion with (hydrofluoric acid and) aqua regia, analysis with ICP-OES	<i>unknown</i>
Germany	NR	45	<i>unknown</i>	<i>unknown</i>	pressure digestion	<i>unknown</i>
Germany	NR	6	<i>unknown</i>	<i>unknown</i>	HF	<i>unknown</i>
Germany	NR	26	<i>unknown</i>	<i>unknown</i>	digestion with nitric, perchloric and hydrofluoric acid	<i>unknown</i>
Germany	NR	20	only for humus layers	<i>unknown</i>	pressure digestion with nitric acid [only for humus layers]	<i>unknown</i>



## Total Zn content (continued from previous table)

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Germany	NR	133	<i>unknown</i>	<i>unknown</i>	HNO <sub>3</sub> + 3 HCl (eau régale), AAS	<i>unknown</i>
Germany	NR	17	<i>unknown</i>	<i>unknown</i>	RFA	<i>unknown</i>
Germany	NR	32	<i>unknown</i>	<i>unknown</i>	XRF (X-ray fluorescence) [with pressed powder pellet]	<i>unknown</i>
Greece	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	mg/kg	HF	<i>unknown</i>
Greece	GRPRES24	<i>unknown</i>	all	<i>unknown</i>	Digestion with Nitric Acid and Perchloric Acid in a block Digester	Miller and Mcfee, 1986
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	cc. HNO <sub>3</sub> + H <sub>2</sub> O <sub>2</sub> digestion, ICP	MSZ-08-1933:1986
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	Lakenen-Erviö extraction, ICP	MSZ-20135:1999
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia	ISO 11466
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	HF - HCl - HNO <sub>3</sub>	<i>unknown</i>
Lithuania	LT_ATC	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Lithuania	LT_ATC	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Malta	MT02	<i>unknown</i>	all	<i>unknown</i>	aqua-regia - Determination of zinc by Flame Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Malta	MT03	<i>unknown</i>	all	<i>unknown</i>	aqua-regia - Determination of zinc by Flame Atomic Absorption Spectrophotometry	ISO 11466:1995 / ISO 11047:1998
Malta	MT04	<i>unknown</i>	all	<i>unknown</i>	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	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	aqua-regia digest	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	<i>unknown</i>	AAS-Flame	PN-ISO 11047:2001
Portugal	Project Piddac 906-99	<i>unknown</i>	<i>unknown</i>	mg kg <sup>-1</sup>	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	<i>unknown</i>	all	<i>unknown</i>	Acid digestion with mixture of HClO <sub>4</sub> , H <sub>2</sub> SO <sub>4</sub> , HNO <sub>3</sub> - Determination by flame atomic absorption spectrometry	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	aqua regia extract	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	extracted with HF-HNO <sub>3</sub> -HCl	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	all	<i>unknown</i>	ISO/DIS 14 870 (extracted with DTPA solution)	ISO 14870
The Netherlands	DSQN (NL)	<i>unknown</i>	0-10 cm	<i>unknown</i>	between 1993 and 1998: destruction with Fleischmann acid and perchloric acid (1:1). Measurement mainly on AAS-flame technique. From 1999 on, aqua regia and ICP.	Blgg
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	mg/kg	determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest	<i>unknown</i>

**Table 97 : Extractable Zn**

country	soil monitoring network identification	site identification	Samples concerned	unit	method	reference of method
Austria	AT11	all BDB_T	all	<i>unknown</i>	NH <sub>4</sub> NO <sub>3</sub>	<i>unknown</i>
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)	<i>unknown</i>
Greece	unknown	<i>unknown</i>	<i>unknown</i>	mg/kg	EDTA	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	topsoil	<i>unknown</i>	EDTA extraction, ICP	MSZ-20135:1999
Irlande du Nord	national	<i>unknown</i>	<i>unknown</i>	mg/kg	0.05M EDTA-extractable, followed by ICP-AES	<i>unknown</i>
Scotland	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	EDTA	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	all	<i>unknown</i>	mobile forms extracted with 0.05 mol.dm <sup>-3</sup> EDTA	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>

Table 98 : pH KCl

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

Table 99 : pH in water

country	soil monitoring network identification	site identification	Samples concerned	dilution	method	reference of method
Austria	AT2	all	all	<i>unknown</i>	pH in water	Austrian Standard L 1083
Austria	AT3	all	all	<i>unknown</i>	and water	Austrian Standard L 1084
Austria	AT7	all	all	<i>unknown</i>	pH in water	Austrian Standard L 1083
Austria	AT8	all	all	<i>unknown</i>	water saturation (fraction<10mm)	HUSZ, 1986
Austria	AT10	all	all	<i>unknown</i>	pH in water	Austrian Standard L 1083
Austria	AT11	BDB_V1/V2	all	<i>unknown</i>	water	<i>unknown</i>
Austria	AT14	BDB_UBA	all	<i>unknown</i>	water	Austrian Standard L 1083
Belgium	BE01 (Aardewerk-NBelgium)	<i>unknown</i>	all	1/2.5	glass electrode	<i>unknown</i>
Belgium	BE02 (Aardewerk-SBelgium)	<i>unknown</i>	all	1/2.5	glass electrode	<i>unknown</i>
Belgium	BE03 (Heavy Metals WFlanders & Antwerp)	<i>unknown</i>	all	1/2.5	glass electrode	ISRIC, 1987
Belgium	BE04 (Heavy Metals EFlanders)	<i>unknown</i>	all	1/5	glass electrode	Van Ranst et al., 1999
Finland	FI02	<i>unknown</i>	<i>unknown</i>	1/2.5	soil-water suspension	<i>unknown</i>
France	RMQS	all	all	1/5	Determination of pH water	NF ISO 10390
France	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
France	ICP	<i>unknown</i>	litter	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Germany	NR	12	<i>unknown</i>	1/5	<i>unknown</i>	ISO 10390
Germany	NR	93	<i>unknown</i>	1/5	CaCl <sub>2</sub> DIN 19 684 + H <sub>2</sub> O	ISO 10390
Germany	NR	3	<i>unknown</i>	1/5	CaCl <sub>2</sub> DIN 19 684 + H <sub>2</sub> O and KCl, H <sub>2</sub> O	ISO 10390
Germany	NR	21	<i>unknown</i>	1/5	CaCl <sub>2</sub> DIN 19 684 and H <sub>2</sub> O	ISO 10390
Germany	NR	23	<i>unknown</i>	1/5	CaCl <sub>2</sub> DIN 19 684 and KCl, H <sub>2</sub> O	ISO 10390
Germany	NR	63	<i>unknown</i>	1/5	<i>unknown</i>	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	<i>unknown</i>	<i>unknown</i>	1/1	<i>unknown</i>	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	all	1/2.5	digital pH meter	MSZ-08-0206/2:1978
ICP	ICP	<i>unknown</i>	<i>unknown</i>	1/5	pH-electrode	ISO 10390
Ireland	IE01	<i>unknown</i>	all	<i>unknown</i>	Soil in water	<i>unknown</i>
Latvia	unknown	<i>unknown</i>	<i>unknown</i>	1/5	<i>unknown</i>	<i>unknown</i>
Northern Ireland	national	<i>unknown</i>	<i>unknown</i>	1/2.5	in both deionised water	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	1/5	hydrometer method	PN-ISO 10390:1997
Portugal	Project Piddac 906-99	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Romania	RO01-2	<i>unknown</i>	all	1/2.5	Determination in water suspension (1:2,5) by potentiometric method	<i>unknown</i>
Scotland	National Soils Inventory for Scotland (NSIS)	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	pH in water	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	1/2.5	potentiometrically in water suspension (soil: water ratio 1:2.5)	<i>unknown</i>
Sweden	national	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
The Netherlands	DSQN (NL)	<i>unknown</i>	0 - 10 cm	<i>unknown</i>	water	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	1/2.5	pH of soil measure after shaking 10ml of soil for 15 minutes with 25ml of water	<i>unknown</i>

Table 100 : pH CaCl<sub>2</sub>

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

**pH CaCl<sub>2</sub> (continued from previous table)**

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



**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	<i>unknown</i>	n.a.	own methode
Austria	AT11	all BDB_S	all	<i>unknown</i>	hydraulic conductivity of saturated soil samples	Austrian Standard L 1065
Austria	AT11	all BDB_T	all	<i>unknown</i>	hydraulic conductivity of saturated soil samples	Austrian Standard L 1065
Austria	AT11	BDB_V1/V2	all	<i>unknown</i>	unknown	<i>unknown</i>
Austria	AT11	all BDB_OE	all	<i>unknown</i>	water soluble substances (water extract 1:10)	Austrian Standard L 1092
Finland	FI02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Germany	NR	133	<i>unknown</i>	<i>unknown</i>	Determination of the saturated hydraulic water conductivity in the cylindrical core-cutter	DIN 19 683
Germany	NR	40	<i>unknown</i>	<i>unknown</i>	Determination of the saturated hydraulic water conductivity in the cylindrical core-cutter	DIN 19 683, Bl. 9
Germany	NR	32	<i>unknown</i>	<i>unknown</i>	Determination of the saturated hydraulic water conductivity in the cylindrical core-cutter	DIN 19683-9
Germany	NR	79	<i>unknown</i>	<i>unknown</i>	HARTGE & HORN (1989)	<i>unknown</i>
Germany	NR	20	<i>unknown</i>	<i>unknown</i>	Laborpermeameter	Instrument permettant de mesurer la conductivité hydrolique du sol
Greece	GR01, GR02, GR03	<i>unknown</i>	all	<i>unknown</i>	trickle irrigation	Boffin and Monnier 1985
Greece	GRPRES23	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	saturated-paste method	<i>unknown</i>

**Conductivity (continued from previous table)**

country	soil monitoring network identification	site identification	Samples concerned	Unit	method	reference of method
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	electric conductivity of the water saturated soil (saturated to the sticky point)	MSZ-08-0206/2:1978
Malta	MT02	<i>unknown</i>	all	<i>unknown</i>	Determination of electrical conductivity using the conductivity meter	ISO 11265:1994
Malta	MT04	<i>unknown</i>	all	<i>unknown</i>	Determination of electrical conductivity using the conductivity meter	ISO 11265:1994
Malta	MT05	<i>unknown</i>	all	<i>unknown</i>	Determination of electrical conductivity using the conductivity meter	ISO 11265:1994
Malta	MT05	<i>unknown</i>	all	<i>unknown</i>	Determination of electrical conductivity using the conductivity meter	ISO 11265:1994
Polska	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	ISO 7888
Portugal	PT01	<i>unknown</i>	all	<i>unknown</i>	Determination of electrical conductivity	<i>unknown</i>
Portugal	PT01	<i>unknown</i>	all	<i>unknown</i>	Determination of specific electrical conductivity	ISSO 11265/1994
Romania	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Water mixture of 1:5 ratio and measurement of the electric conductivity	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	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/cm <sup>3</sup>	Soil density	Austrian Standard L 1068
Austria	AT4	288	<i>unknown</i>	dB g/cm <sup>3</sup>	Soil density	Austrian Standard L 1068
Austria	AT11	all BDB_S	all	<i>unknown</i>	Soil density	Austrian Standard L 1068
Austria	AT11	all BDB_T	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Austria	AT11	all BDB_T	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Austria	AT11	all BDB_OE	all	<i>unknown</i>	Soil density	Austrian Standard L 1068
Austria	AT11	all BDB_OE	all	<i>unknown</i>	Soil density	Austrian Standard L 1068
Austria	AT13	AGES 90/101	partly	<i>unknown</i>	<i>unknown</i>	Austrian Standard L 1068
Belgium	BE05 (ICP Forests-Nbelgium 1993)	<i>unknown</i>	m	<i>unknown</i>	Détermination de la masse volumique apparente sèche	ISO 11272
Belgium	BE05 (ICP Forests-Nbelgium 1993)	<i>unknown</i>	1202	<i>unknown</i>	<i>unknown</i>	ISO 11272
Bulgaria	European soil monitoring grid for diffuse contamination	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Estonia	ES01	<i>unknown</i>	all	<i>unknown</i>	cylinder	<i>unknown</i>
France	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
France	RMQS	all	all	<i>unknown</i>	Determination of dry bulk density	NF ISO 11272
Germany	NR	554	<i>unknown</i>	<i>unknown</i>	determination of bulk density	DIN 19 683
Germany	NR	165	<i>unknown</i>	<i>unknown</i>	determination of bulk density	DIN 19 683-12
Hungary	HU1, HU2	<i>unknown</i>	all	<i>unknown</i>	gravimetry	MSZ- 08-0205:1978
ICP	ICP	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	steel cylinder recommended (100, 400 cm <sup>3</sup> )	ISO 11272
Latvia	LV03	<i>unknown</i>	all	<i>unknown</i>	Undisturbed core sampling	<i>unknown</i>
Romania	RO01-1	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	using cylinders	<i>unknown</i>

**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	<i>unknown</i>	relation pressure potential versus water content of undisturbed soil samples	Austrian Standard L 1063
Austria	AT11	all BDB_OE	all	<i>unknown</i>	Soil density	Austrian Standard L 1068
Austria	AT13	AGES 90/101	partly	<i>unknown</i>	<i>unknown</i>	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	<i>unknown</i>	Soil density	Austrian Standard L 1068
Austria	AT13	AGES 90/101	partly	<i>unknown</i>	<i>unknown</i>	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)	<i>unknown</i>	<i>unknown</i>	runoff collection	<i>unknown</i>
Greece	GR02	2(SPA)	<i>unknown</i>	<i>unknown</i>	runoff collection	<i>unknown</i>
Greece	GR03	3(THI)	<i>unknown</i>	<i>unknown</i>	runoff collection	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	deluometrically by the 137Cs and remote sensing methods	<i>unknown</i>

Table 106 : Moisture Content

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

**Moisture content (continued from previous table)**

country	soil monitoring network identification	site identification	Samples concerned	precision	method	reference of method
Malta	MT03	<i>unknown</i>	all	Moisture	Determination of dry matter and water in Oven-dry soil	<i>unknown</i>
Malta	MT04	<i>unknown</i>	all	Moisture	Determination of dry matter and water in Oven-dry soil	<i>unknown</i>
Romania	RO01-2	<i>unknown</i>	all	Soil water content at Mitscherlich hygroscopicity	<i>unknown</i>	<i>unknown</i>
The Netherlands	DSQN (NL)	<i>unknown</i>	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	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
The Netherlands	DSQN + BISQ (NL)	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	hardness of topsoil	<i>unknown</i>

**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)	<i>unknown</i>	<i>unknown</i>
Hungary	HU1, HU2	<i>unknown</i>	all	soil moisture boud to soil particles with different forces (pF)	gravimetry	MSZ- 08-0205:1978
Romania	RO01-1	<i>unknown</i>	all	Soil water at pf=0	Ceramic plate boxes	<i>unknown</i>
Romania	RO01-1	<i>unknown</i>	all	Soil water at pf=1	<i>unknown</i>	<i>unknown</i>
Romania	RO01-1	<i>unknown</i>	all	Soil water at pf=1.4	<i>unknown</i>	<i>unknown</i>
Romania	RO01-1	<i>unknown</i>	all	Soil water at pf=1.6	<i>unknown</i>	<i>unknown</i>
Romania	RO01-1	<i>unknown</i>	all	Soil water at pf=2	<i>unknown</i>	<i>unknown</i>

**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	<i>unknown</i>	<i>unknown</i>	Siebtauchverfahren Murer E.J.et al. (1993)
Austria	AT11	all BDB_T	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Austria	AT11	all BDB_OE	all	<i>unknown</i>	<i>unknown</i>	DIN 19683-16
Austria	AT13	AGES 90/101	partly	<i>unknown</i>	<i>unknown</i>	Kemper und Rosenau, 1986
Greece	GR01, GR02	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	wet sieving	Yoder 1936
Romania	RO01-2	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Romania	RO01-2	<i>unknown</i>	all	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>



**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 H <sub>2</sub> O <sub>2</sub>	Austrian Standard L 1061-88
Austria	AT5	all	all	middle sand	200 - 630	%	particle size distribution in the mineral soil: with H <sub>2</sub> O <sub>2</sub>	Austrian Standard L 1061-88
Austria	AT5	all	all	fine sand	63 - 200	%	particle size distribution in the mineral soil: with H <sub>2</sub> O <sub>2</sub>	Austrian Standard L 1061-88
Austria	AT6	all	all	sand	63 - 2000	%	particle size distribution in the mineral soil (with and without H <sub>2</sub> O <sub>2</sub> )	Austrian Standard L 1061
Austria	AT6	all	all	silt	2 - 63	%	particle size distribution in the mineral soil (with and without H <sub>2</sub> O <sub>2</sub> )	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	<i>unknown</i>	<i>unknown</i>	particle size distribution in the mineral soil	Austrian Standard L 1061
Austria	AT11	BDB_V1/V2	all	soil texture	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
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)	<i>unknown</i>	all	clay	0-2	<i>unknown</i>	Köhn pipette method	De Leenheer en Maes, 1952; De Leenheer en Van Ruymbeke, 1954; De Leenheer en Van Hove, 1957
Belgium	BE01 (Aardewerk-NBelgium)	<i>unknown</i>	all	silt	2-50	<i>unknown</i>	Köhn pipette method	De Leenheer en Maes, 1952; De Leenheer en Van Ruymbeke, 1954; De Leenheer en Van Hove, 1967
Belgium	BE01 (Aardewerk-NBelgium)	<i>unknown</i>	all	sand	50-2000	<i>unknown</i>	wet sieving to separate sand	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE01 (Aardewerk-NBelgium)	<i>unknown</i>	all	fine silt	2-10	<i>unknown</i>	Köhn pipette method	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE01 (Aardewerk-NBelgium)	<i>unknown</i>	all	medium silt	10-20	<i>unknown</i>	Köhn pipette method	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE01 (Aardewerk-NBelgium)	<i>unknown</i>	all	coarse silt	20-50	<i>unknown</i>	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)	<i>unknown</i>	all	very fine sand	50-100	<i>unknown</i>	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE01 (Aardewerk-NBelgium)	<i>unknown</i>	all	fine sand	100-200	<i>unknown</i>	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE01 (Aardewerk-NBelgium)	<i>unknown</i>	all	medium sand	200-500	<i>unknown</i>	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE01 (Aardewerk-NBelgium)	<i>unknown</i>	all	coarse and very coarse sand	500-2000	<i>unknown</i>	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE01 (Aardewerk-NBelgium)	<i>unknown</i>	all	coarse fragments	>2000	<i>unknown</i>	dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	<i>unknown</i>	all	clay	0-2	<i>unknown</i>	Köhn pipette method	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	<i>unknown</i>	all	fine silt	2-10	<i>unknown</i>	Köhn pipette method	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	<i>unknown</i>	all	medium silt	10-20	<i>unknown</i>	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)	<i>unknown</i>	all	coarse silt	20-50	<i>unknown</i>	Köhn pipette method	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	<i>unknown</i>	all	very fine sand	50-100	<i>unknown</i>	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	<i>unknown</i>	all	fine sand	100-200	<i>unknown</i>	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	<i>unknown</i>	all	medium sand	200-500	<i>unknown</i>	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	<i>unknown</i>	all	coarse and very coarse sand	500-2000	<i>unknown</i>	wet and dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE02 (Aardewerk-SBelgium)	<i>unknown</i>	all	coarse fragments	>2000	<i>unknown</i>	dry sieving	De Leenheer & Maes, 1952; De Leenheer & Van Ruymbeke, 1954; De Leenheer & Van Hove, 1968
Belgium	BE03 (Heavy Metals WFlanders & Antwerp)	<i>unknown</i>	<i>unknown</i>	sand	50-2000	<i>unknown</i>	sieving - oven drying	ISRIC, 1987 modified by Lab Soil Science for presence of CaCO <sub>3</sub>
Belgium	BE03 (Heavy Metals WFlanders & Antwerp)	<i>unknown</i>	<i>unknown</i>	clay	0-2	<i>unknown</i>	Köhn pipette method	ISRIC, 1987 modified by Lab Soil Science for presence of CaCO <sub>3</sub>

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

## 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 grid for diffuse contamination	<i>unknown</i>	<i>unknown</i>	Sand	250-50	<i>unknown</i>	Method of Kachinsky, with follows particle size distribution	<i>unknown</i>
Bulgaria	European soil monitoring grid for diffuse contamination	<i>unknown</i>	<i>unknown</i>	Sand	1000-250	<i>unknown</i>	Method of Kachinsky, with follows particle size distribution	<i>unknown</i>
Denmark	DK01	<i>unknown</i>	<i>unknown</i>	Texture	<2	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK01	<i>unknown</i>	<i>unknown</i>	Texture	2-20	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK01	<i>unknown</i>	<i>unknown</i>	Texture	20-200	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK01	<i>unknown</i>	<i>unknown</i>	Texture	20-2000	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK02	<i>unknown</i>	<i>unknown</i>	Texture	<2	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK02	<i>unknown</i>	<i>unknown</i>	Texture	2-20	<i>unknown</i>	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	<i>unknown</i>	<i>unknown</i>	Texture	20-200	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK02	<i>unknown</i>	<i>unknown</i>	Texture	20-2000	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK03	<i>unknown</i>	<i>unknown</i>	Texture	<2	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK03	<i>unknown</i>	<i>unknown</i>	Texture	2-20	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK03	<i>unknown</i>	<i>unknown</i>	Texture	20-200	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK03	<i>unknown</i>	<i>unknown</i>	Texture	20-2000	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK04	<i>unknown</i>	<i>unknown</i>	Texture	<2	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK04	<i>unknown</i>	<i>unknown</i>	Texture	2-20	<i>unknown</i>	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	<i>unknown</i>	<i>unknown</i>	Texture	20-200	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK04	<i>unknown</i>	<i>unknown</i>	Texture	20-2000	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK05	<i>unknown</i>	<i>unknown</i>	Texture	<2	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK05	<i>unknown</i>	<i>unknown</i>	Texture	2-20	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK05	<i>unknown</i>	<i>unknown</i>	Texture	20-200	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Denmark	DK05	<i>unknown</i>	<i>unknown</i>	Texture	20-2000	<i>unknown</i>	Hydrometer method	Day, P.R. (1965): Particle fractionation and particle size analysis. In: Methods of Soil Analysis, Agronomy no. 9.
Estonia	ES01	<i>unknown</i>	all	particle size analysis	50-2000	<i>unknown</i>	pipette method and laser diffractometer analyser	<i>unknown</i>
Estonia	ES01	<i>unknown</i>	all	particle size analysis	2-50	<i>unknown</i>	pipette method and laser diffractometer analyser	<i>unknown</i>
Estonia	ES01	<i>unknown</i>	all	particle size analysis	< 2	<i>unknown</i>	pipette method and laser diffractometer analyser	<i>unknown</i>
Finland	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Silt	50 - 2	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Finland	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	Clay	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>

## Particle size (continued from previous table)

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

## 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	<i>unknown</i>	<i>unknown</i>	coarse silt	60 – 20	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Norway	unknown	<i>unknown</i>	<i>unknown</i>	medium silt	20 – 6	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Norway	unknown	<i>unknown</i>	<i>unknown</i>	fine silt	6 – 2	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Norway	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>	clay	< 2	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Polska	SMN PO 01	<i>unknown</i>	all	Particle size distribution	<i>unknown</i>	<i>unknown</i>	hydrometer method	unknown
Portugal	Project Piddac 906-99	<i>unknown</i>	<i>unknown</i>	texture	<i>unknown</i>	<i>unknown</i>	pipette and sieve method	unknown
Romania	RO01-2	<i>unknown</i>	all	Soil texture	2000-200	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Romania	RO01-2	<i>unknown</i>	all	Soil texture	200-20	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Romania	RO01-2	<i>unknown</i>	all	Soil texture	20 -2	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Romania	RO01-2	<i>unknown</i>	all	Soil texture	< 2	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Romania	RO01-2	<i>unknown</i>	all	Soil texture	50 - 2	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Romania	RO01-2	<i>unknown</i>	all	Soil texture	< 10	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Scotland	National Soils Inventory for Scotland (NSIS)	<i>unknown</i>	<i>unknown</i>	Clay	<2	%	Gravimetric measurement	<i>unknown</i>
Scotland	National Soils Inventory for Scotland (NSIS)	<i>unknown</i>	<i>unknown</i>	UBSand	50/60- 2000	%	USDA/FAO/BSTC. Gravimetric measurement	<i>unknown</i>
Scotland	National Soils Inventory for Scotland (NSIS)	<i>unknown</i>	<i>unknown</i>	Sand	20- 2000	%	International. Gravimetric measurement	<i>unknown</i>
Scotland	National Soils Inventory for Scotland (NSIS)	<i>unknown</i>	<i>unknown</i>	Silt	2- 20	%	International. Gravimetric measurement expressed as a percentage	<i>unknown</i>
Sweden	national	<i>unknown</i>	<i>unknown</i>	texture	unknown	unknown	unknown	<i>unknown</i>

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)	<i>unknown</i>	<i>0-10 cm</i>	Clay	<2	unknown	pipet method	<i>Sedimentation</i>
The Netherlands	DSQN (NL)	<i>unknown</i>	<i>0-10 cm</i>	unknown	63	unknown	pipet method	<i>unknown</i>
The Netherlands	DSQN (NL)	<i>unknown</i>	<i>0-10 cm</i>	unknown	unknown	unknown	pipet method	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	Clay	<2	%	including CaCO <sub>3</sub>	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	Silt	2 - 60	%	including CaCO <sub>3</sub>	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	Very fine sand	60 - 100	<i>unknown</i>	including CaCO <sub>3</sub>	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	Very fine sand	60-100	<i>unknown</i>	including CaCO <sub>3</sub>	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	Moderately fine sand	100-200	%	including CaCO <sub>3</sub>	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	Medium sand	200 - 600	%	including CaCO <sub>3</sub>	<i>unknown</i>
United Kingdom	national	<i>unknown</i>	<i>unknown</i>	Coarse sand	600 - 2000	%	including CaCO <sub>3</sub>	<i>unknown</i>

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	<i>unknown</i>	<i>unknown</i>	AOCI	<i>unknown</i>	<i>unknown</i>	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)perylene	µg/kg	ultrasound-extraction; Silicagel/Cyano	n.a.
Austria	AT4	101	partly	Benzo(g,h,i)perylene	µg/kg	Soxhlet/Petrolet/Silicagel-Cyano-extraction	n.a.
Austria	AT6	all	topsoil horizon	Benzo(g,h,i)perylene	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-Heptachlorepoxyd	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 - Kiesegel	n.a.
Česká Zbrojovka	national	<i>unknown</i>	<i>unknown</i>	EOCI	<i>unknown</i>	<i>unknown</i>	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 - Kiesegel	n.a.
Austria	AT4	162	partly	Gamma-HCH (Lindan)	µg/kg	Petrolether/Al-Oxid - Kiesegel	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	<i>unknown</i>	litter	Masse sèche	<i>unknown</i>	<i>unknown</i>	
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	<i>unknown</i>	all	Organochlorine insecticides residues (HCH, DDT)	<i>unknown</i>	Extraction with petroleum ether - acetone (2:1) and gas-chromatographic determination	<i>unknown</i>
Česká Zbrojovka	national	<i>unknown</i>	<i>unknown</i>	PAH	<i>unknown</i>	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)	<i>unknown</i>	soild phase extraction (SPE)	n.a.
Austria	AT11	all BDB_S	partly	PAH (EPA, Σ16)	<i>unknown</i>	HRGC, HRMS, isotop dilution	<i>unknown</i>
Austria	AT11	BDB_T1/T3	topsoil horizon	PAH (Σacc. EPA)	<i>unknown</i>	anaerobic incubation	<i>unknown</i>

**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	<i>unknown</i>	consequent measurement of the samples on 2 GC columns of different polarity, Electron Captur-Detection	<i>unknown</i>
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	PAHs	<i>unknown</i>	by chromatographic methods (ISO 18 287)	ISO 18287
Polska	SMN PO 01	<i>unknown</i>	all	PAHs content	<i>unknown</i>	HPLC method	ISO 13877:1998
Česká Zbrojovka	national	<i>unknown</i>	<i>unknown</i>	PCB	<i>unknown</i>	<i>unknown</i>	UKZUZ (2002): Analyza pud I-III (Soil Analysis I-III).ISBN 80-86548-15-5
Slovakia	SK 1	<i>unknown</i>	<i>unknown</i>	PCB	<i>unknown</i>	by chromatographic methods (ISO 18 287)	ISO/DIS 10383
Austria	AT11	all BDB_S	partly	PCB (Ballschmitter)	<i>unknown</i>	HRGC, HRMS, isotop dilution	<i>unknown</i>
Austria	AT11	BDB_T1/T3	topsoil horizon	PCB ( $\Sigma 6$ ) ,	<i>unknown</i>	anaerobic incubation	<i>unknown</i>
Austria	AT2	40	partly	PCB 101	$\mu\text{g}/\text{kg}$	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT2	40	partly	PCB 138	$\mu\text{g}/\text{kg}$	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT4	162	partly	PCB 138	$\mu\text{g}/\text{kg}$	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT2	40	partly	PCB 153	$\mu\text{g}/\text{kg}$	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT4	162	partly	PCB 153	$\mu\text{g}/\text{kg}$	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT2	40	partly	PCB 180	$\mu\text{g}/\text{kg}$	Hexan/Silicagel-Cyano-extraction	n.a.
Austria	AT4	162	partly	PCB 180	$\mu\text{g}/\text{kg}$	Petrolether/Al-Oxid - Kieselgel	n.a.
Austria	AT2	40	partly	PCB 28	$\mu\text{g}/\text{kg}$	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	<i>unknown</i>	extraction, HPLC, isotop dilution	<i>unknown</i>
Česká Zbrojovka	national	unknown	<i>unknown</i>	PCDD	<i>unknown</i>	<i>unknown</i>	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)	<i>unknown</i>	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)	<i>unknown</i>	HRGC, HRMS, isotop dilution	<i>unknown</i>
Česká Zbrojovka	national	<i>unknown</i>	<i>unknown</i>	PCDF	<i>unknown</i>	<i>unknown</i>	UKZUZ (2002): Analyza pud I-III (Soil Analysis I-III).ISBN 80-86548-15-5
Austria	AT11	all BDB_OE	partly	PDCC and PCDF	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
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	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
Austria	AT11	all BDB_S	partly	radionulides	<i>unknown</i>	<i>unknown</i>	<i>unknown</i>
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.



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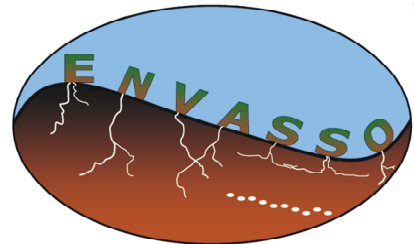
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**Abstract**

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.

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