And European soft analyses

methods

West-Hungarian University Faculty of Forestry Department of Soil Science 9400 SOPRON, Bajcsy-Zs. u. 4. b responsible: András Bidló (abidlo@emk.nyme.hu Presentation: Bálint Heil (bheil@emk.nyme.hu)

Coining to the FSCC Soil Interlaboratory Test Programs

- Participation in sampling and description of BioSoil plots in Hungary (2005);
- Laboratory measurements of all Hungarian BIOSOIL humus and soil samples (2005-2006);
- FSCC ringtest-participations:
 - 2005. (4th)
 - 2007. (5th);
- 2009. (6th);
- Problem:
 - Field work done by different institutions
 no direct connection with FutMon



Samples and analyses methods applied in our lab

Soil parameter	Mineral soil	Organic Layer, Peat
pH (CaCl ₂)	М	М
Particle size distribution: Clay (<2 µm),	M	-
Silt (2-63 μm) and Sand (63-2000 μm)		
Organic carbon	M	М
Total nitrogen	M	M
Carbonates	M (9)	M (8)
Aqua regia extracted: P, Ca, K, Mg, Mn	0	M
Aqua regia extracted: Cu, Pb, Cd, Zn	Market Stranger	And Mark Strame St Strame Strame Stra
Aqua regia extracted: Al, Fe, Cr, Ni, S, Hg, Na	0	0
Exchangeable acidity	M	M (10)
Exchangeable cations: Ca, Mg, K, Na, A, Fe, Mn, H	M	мини и и и и и и и и и и и и и и и и и и
pH (H ₂ O)	0	0
Total elements: Ca, Mg, Na, K, Al, Fe, Mn	0	
• M= mandatory; O = optional. Oxalate extractable Feedback of pH(CaCl2) > 5.5 (9) Only mandatory if	pH(CaCl2) > 6.0
• (10) In calcacerous soil, the measurement of this parameter is optional.		

pH(CaCl₂)

No problems

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in Hungary we measure pH(H₂O) and pH(KCl)

Particle size distribution



Particle size distribution

- Dispersion only with 6% H₂O₂;
- No further dispersion with HCl;
- By calcareous samples sedimentation of clay particles much faster than withouth the use of HCl;
- No problems with results in last ringtest.



- Hungarian standard equal to ring-test method:
 both direct and indirect determinations allowed;
 Direct determination consisting of previous removal of any carbonates present results in high variability;
- Indirect determination:
 - dry combustion at 950°C, CO₂-detection by gas chromatography; ntar
 - Correction of the total C content for carbonates.

Total Nitrogen

dry combustion at 950°C, N₂-detection by gas
 chromatography;

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No differences;

• No problems;

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AAS/flame spectrophotometer (

GBC SDS-27

Aqua regia extracted elements

- Exchangeable acidity
- Exchangeable cations
- Oxalate extractable Fe, A

AAS/graphite oven spectrophotometer

• Measurement of heavy metals

Avanta

Flame photometer

• Potassium (K) and Sodium (Na) measurements

FLAME

Carbonate content measurement





Automated titration system

Thanks for Your Attention!

