

# AGRICULTURAL RESEARCH CENTRE (ARC)



5 Laboratories (Lab. of Agrochemistry, Lab. for Residues and Contaminants, Lab. of Plant Health and Microbiology, Lab. of Plant Production, Seed Testing Lab.)

5 Departments (Dep. of Certification and Conformity Assessment, Dep. of Agricultural Monitoring and Research, Dep. of Information, Dep. of Accounting and General Department)

3 Testing Centres in different counties (Viljandi, Võru and Kuusiku)



**Teaduse 4/6, 75501, Saku,  
ESTONIA <http://pmk.agri.ee>**

**EIONET Workshop on soil**  
Ispra, 4-5 March 2009

# Soil monitoring bureau

head of the bureau is Mr. Priit Penu [priit.penu@pmk.agri.ee](mailto:priit.penu@pmk.agri.ee)

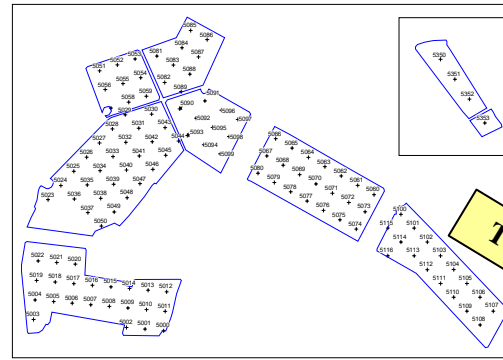
- “Soil fertility program”- soil survey, agrochemical mapping and fertilizing recommendations
- Soil monitoring of arable soils as a part of national environmental monitoring program (NEMP)
- Soil monitoring in the agri-environmental program
- Some case studies including erosion control, nutrients dynamics and etc.

# Soil Survey in Estonia

Satellites are used to determine the geographic coordinates of the location that are saved in PC Pocket computer using Farm Site software

**GEOGR. COORDINATES**

**POINTS ON MAP**



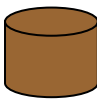
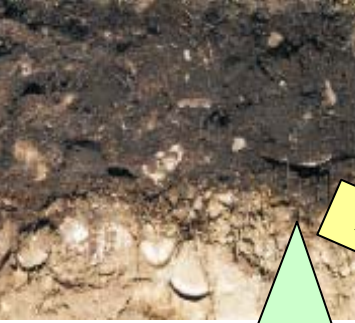
**TO SERVER BY E-MAIL**

Mapinfo and Vertical Mapper Software is used to synthesize data and prepare a fertilisation requirement map for each producer

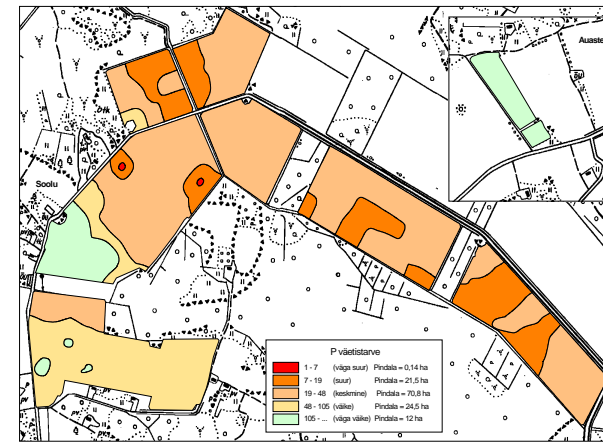
**MAP IS SENT TO FARMER BY (E-) MAIL**

**RESULTS TO SERVER BY E-MAIL**

Laboratory analyses:  
- pH  
- P, K, Ca, Mg, Cu, B, Mn, S  
- C%

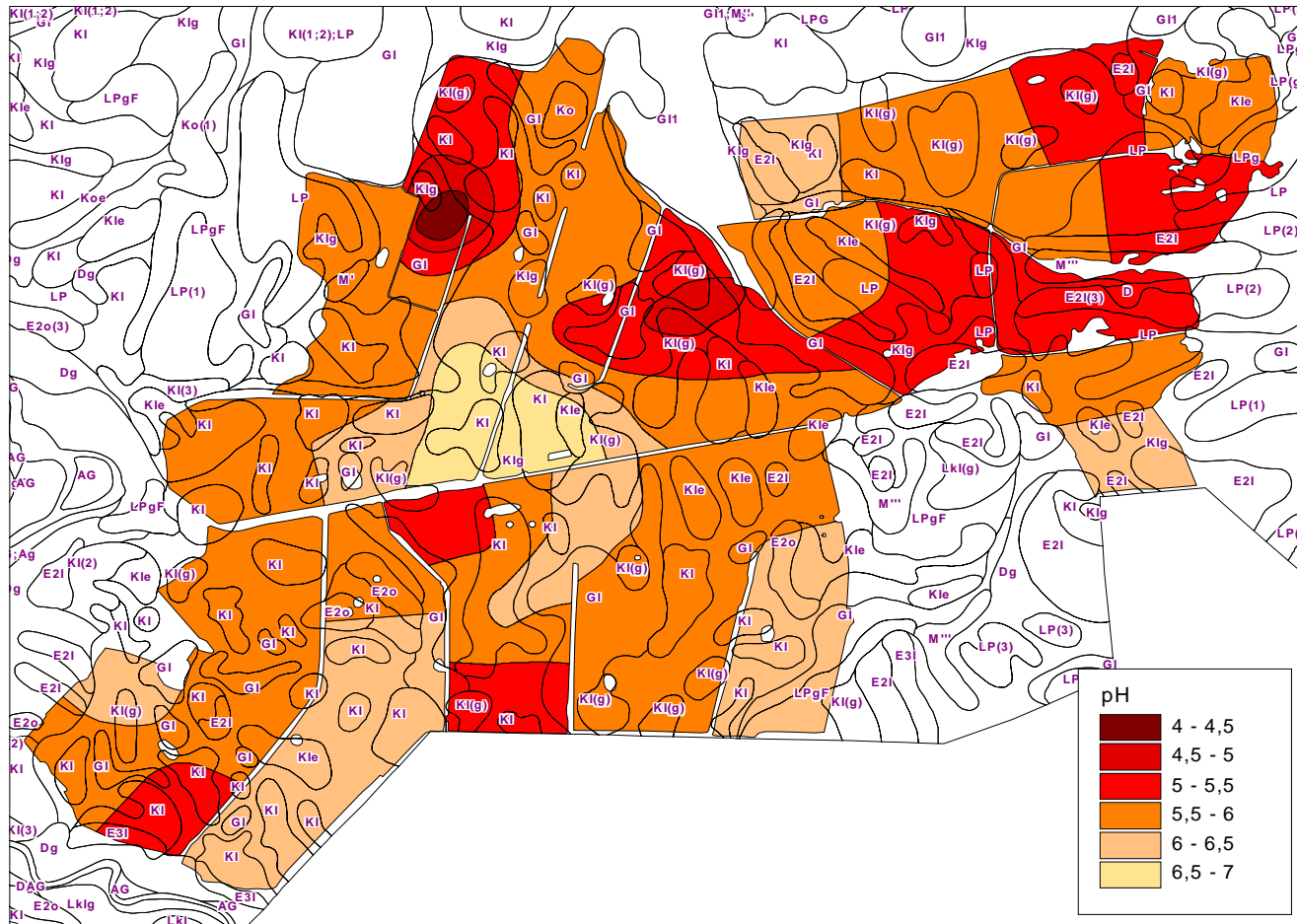


**TRANSPORT OF SAMPLES TO THE LAB**



Average soil sample (20-25 strokes; ca 300 g) is taken per each 3-5 ha

# Soil map with the map of pH (M1:10000)



## Contribution

- We could participate on development of a new European Soil Database
- Contribute on development of risk maps for Europe for different soil threats (orgC loss, soil water and wind erosion, sealing, compaction, acidification)
- It is possible to use soil maps in different scale (the most detailed is 1:10000 and it is available on website of Estonian Land Board – the problem is that soil types are not in WRB) also the maps of need for fertilization are available (in ARC, Soil Bureau); the soil databases of monitoring programmes are also available in ARC.
- Agricultural land use data (available in ARIB)
- Data concerning contaminated sites (available via Estonian Environment Information Centre)
- Data (soil info of agricultural trials, land use, soil compaction, specific investigations on soil organic matter etc) available at Estonian University of Life Sciences, Department of Soil Science and Agrochemistry



## Practical Arrangements

- Several problems have come up with regard to the dataflow (based on the contaminated dataflow experience – brought up by Estonian Environment Information Centre)
  - Database Soil overview was too large and not accessible to all possible participants
  - Definitions were not well clarified
  - An extra work with changing demands for data every year
  - Not clear who is responsible for data collecting and delivering (there are not enough specialists who could work with that)
  - The information required is very complex and demanding - from soil types to the remediation of contaminated sites. Different institutions like Universities and Research centres are doing smaller projects in different sectors of this area – so it is not possible to gather data because always is something missing and so on. The institutions are not interested of fulfilling such questionnaires because it is time consuming and they don't want make their database available for public.

- It should be regulated by state who is responsible for data collection and metadata flow
- In the beginning special projects are needed to harmonise the data collection according to the demands of EEA and so on (ENVASSO project was as a good example of that)

- Implementing the INSPIRE directive to our legislation will be the priority right now
- Estonian Land Board is nominated as contact institution with EC
- Soil data and information are in appendix III and there are no prescriptions from EC so far, so there is no specific actions taken yet