MAAELUMINISTEERIUM

Euroopa Maaelu Arengu Põllumajandusfond: Euroopa investeeringud maapiirkondadesse

The Mission coordination/contributing actions at the national level ESTONIA

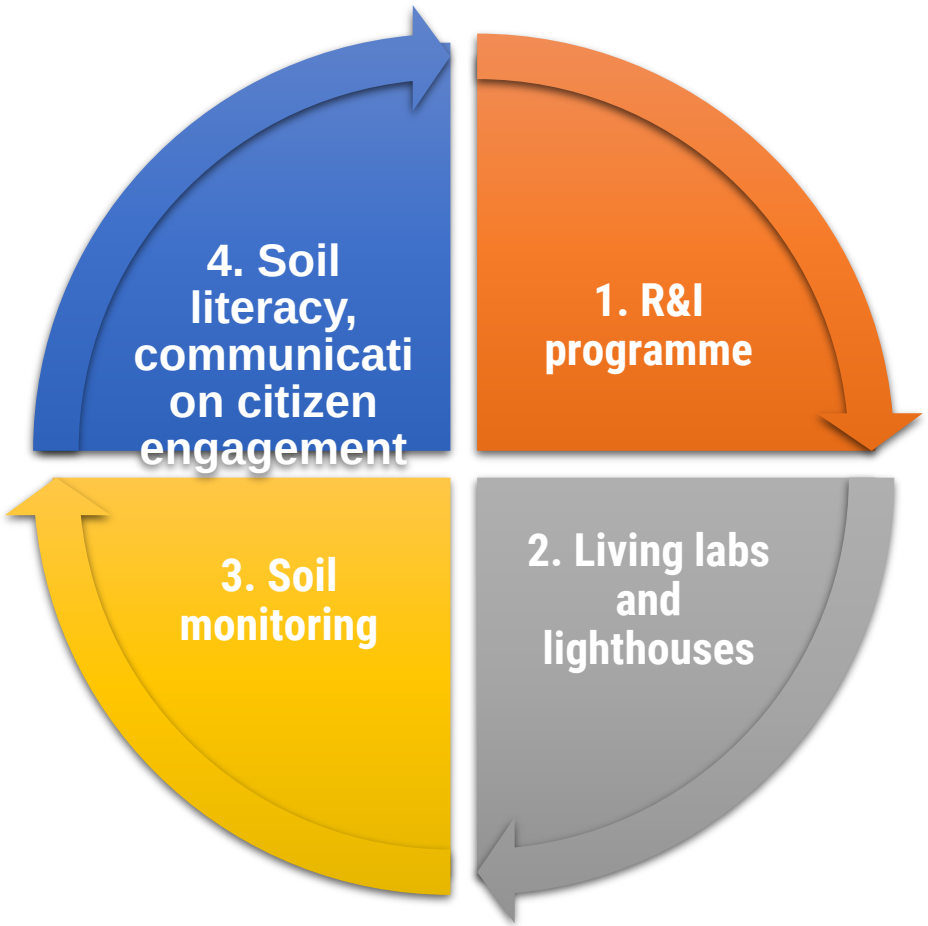
Eike Lepmets
Ministry of Rural Affairs
Land Use Policy Department
June 2022

Estonian official views about the Mission

We support the ambitious and comprehensive implementation of the Mission, as soil health is key to achieving the objectives of the European Green Deal.

We believe that, in addition to the European Union level, it is equally important to focus on the local level in implementing the mission, as soils are very different due to diverse soil formation processes and factors affecting soil health.

Activities under the four building blocks

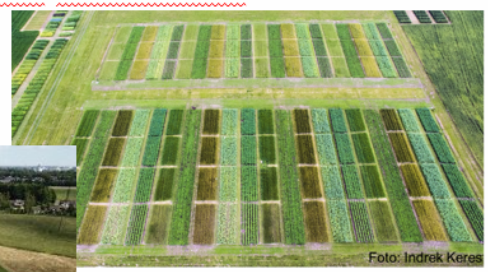


1. Building block
Research&Innovation programme

- Tartu University
- University of Life Sciences
- Agricultural Research Centre
- Supporting different partnerships and collaborations: EJP Soil, GSP, partnership on agroecology living labs and research infrastructures, Biodiversa+ etc

Main current research focuses

- Soil quality and functions
- Soil organic matter and carbon in agroecosystems – stocks, fluxes and quality
- Soil organic carbon sequestration potential
- Soil structure and its stability
- (Greenhouse) Gas fluxes from soils and in agriculture general
- Fertilisation and nutrient cycles in soils, alternative fertilizer resources
- Soil biota
- Field level carbon and NPK calculation tools



- Experiments in lab and field
- Several long-term field experiments
- Experiments in farms (Crop Cluster)

International Decade of Soils 2015-2024

www.emu.ee
Eesti Maaülikool
Estonian University of Life Sciences

Ongiong international projects (1)

EJP SOIL
European Joint Programme

EJP SOIL has received funding from the European Union's Horizon 2020 research and innovation programme: Grant agreement No 862695

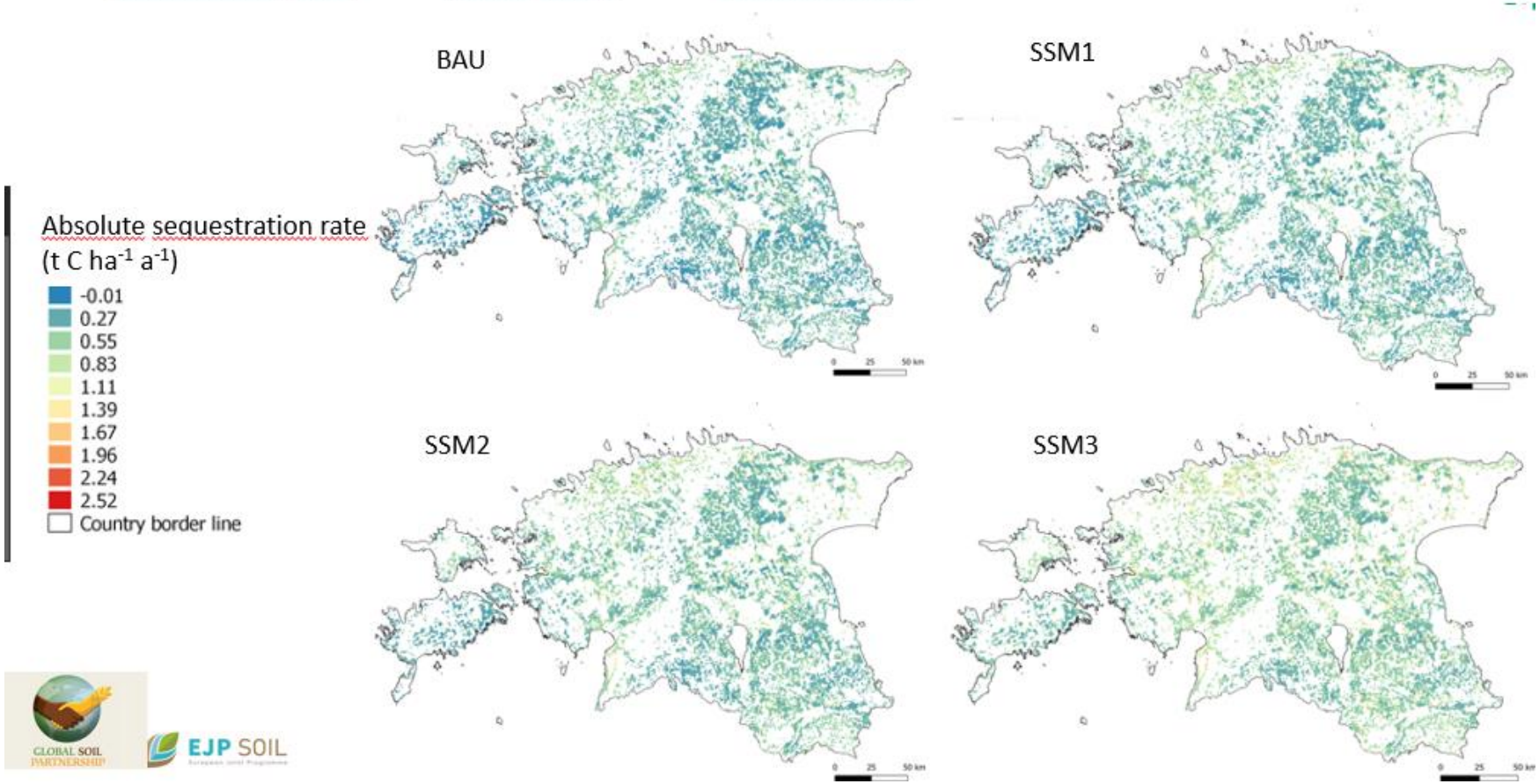
EJP Soil: Towards climate-smart sustainable management of agricultural soils (2020-2025)

Estonian contribution jointly with Agricultural Research Centre. Estonian coordinator: Alar Astover, alar.astover@emu.ee

EJP Soil internal projects:

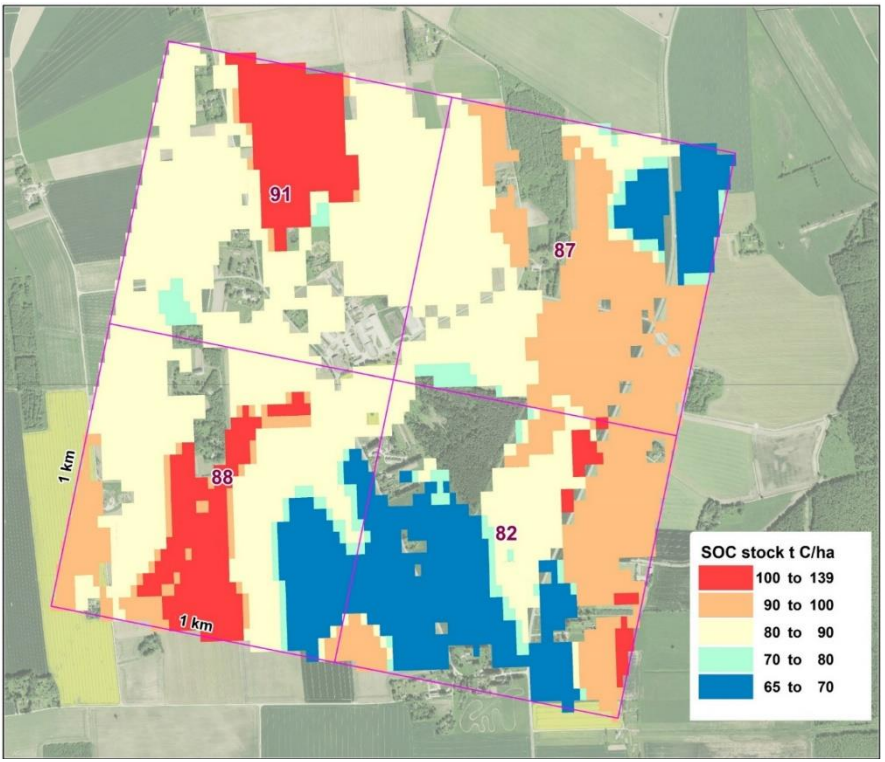
- Soil organic carbon sequestration potential of agricultural soils in Europe (CarboSeq)
- Stocktaking for Agricultural Soil Quality and Ecosystem Services Indicators and their Reference Values (SIREN)
- Innovative Soil Management Practices across Europe (i-SoMPE)
- Soil Ecosystem seRvices and soil threats modElling aNd mApping (SERENA)
- Mapping and alleviating soil compaction in a climate change context (SoilCompaC)

Absolute sequestration rate, 1 km resolution

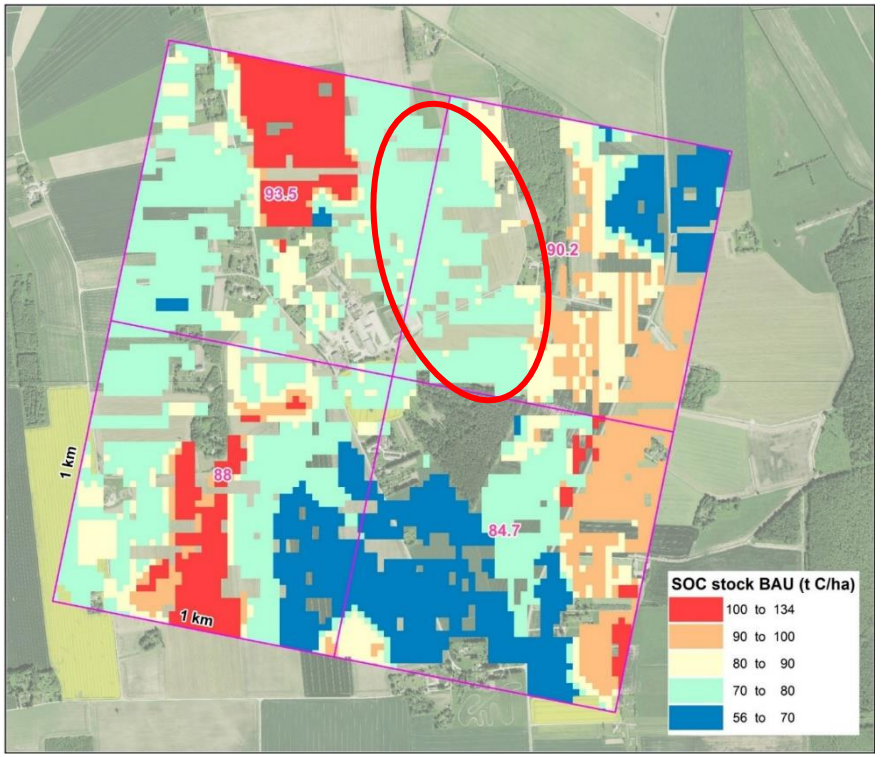


GSOCseq map, version2, pilot area

To capture the heterogenity of Estonian soils we modified the input layers based on local data availability and modelled SOCseq potential in 40 m resolution



SOC stock initial layer, 2020; 1x1 km raster compared to 40X40m raster.



SOC stock in 2040 in BAU scenario.

Ongiong international projects (2)

MINAGRIS

https://www.minagris.eu/

Micro- and Nano-Plastics in Agricultural Soils: Sources, environmental fate and impacts on ecosystem services and overall sustainability
Estonian case study coordinator: Endla Reintam, endla.reintam@emu.ee

SoilDiverAgro

Soil biodiversity enhancement in European agroecosystems to promote their stability and resilience by external inputs reduction and crop performance increase
Estonian coordinator: Merrit Shankskiy, merrit.shanskiy@emu.ee

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 817819

SoilMan

Ecosystem services of soil biota in agriculture

UNIVERSITY OF TARTU
Institute of Ecology and Earth Sciences

Cross-European study in Long-term experimental farm sites

Focus on **tillage**:
- conventional tillage
- reduced tillage

Soil biota:
- fungi
- AM fungi
- bacteria
- earthworms

biodiversa

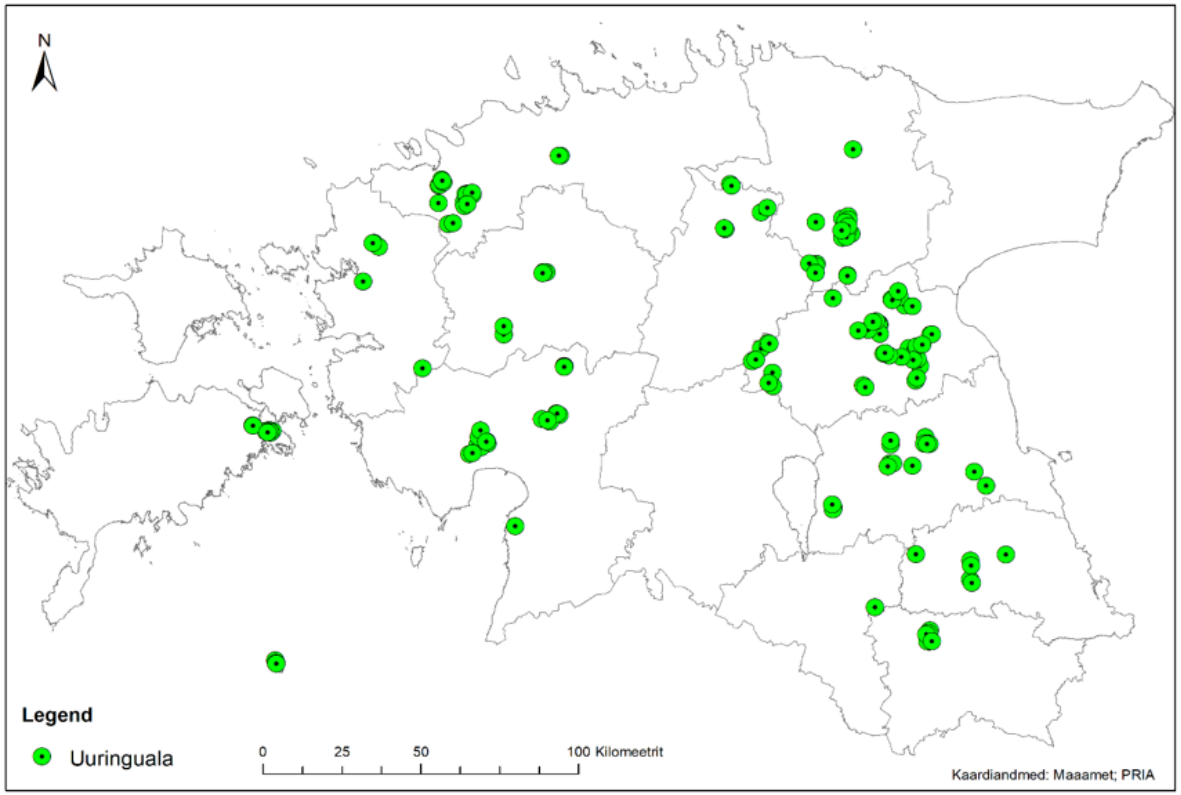
SLTOM19092 (15499) „Effects of agricultural land use on soil biodiversity" (2019-2020) - (Inga Hiiesalu, Tanel Vahter)

UNIVERSITY OF TARTU
Institute of Ecology and Earth Sciences

- 220 fields (cultivated fields, permanent pastures)
- Soil fungal biodiversity (DNA-based)
- Management data from farmers

First results:

- Plant protection products decrease soil fungal diversity
- natural habitats around fields increase fungal diversity



Vahter et al. 2022 Soil Biol Biochem

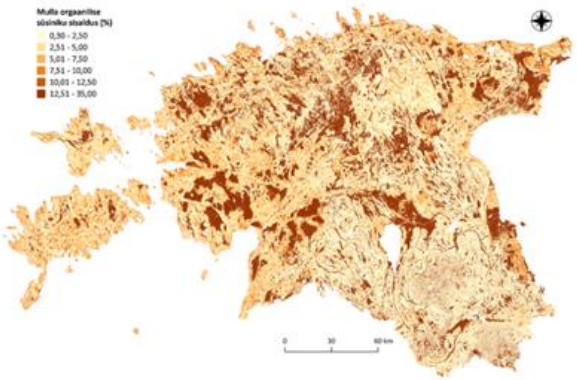
TOOLS FOR ECOLOGISTS

UNIVERSITY OF TARTU
Institute of Ecology and Earth Sciences

- **DATABASES: MaarjAM** DB for arbuscular mycorrhizal fungi

https://maarjam.botany.ut.ee/

Öpik et al. 2010 New Phytol



- **Bioinformatics: gDAT**

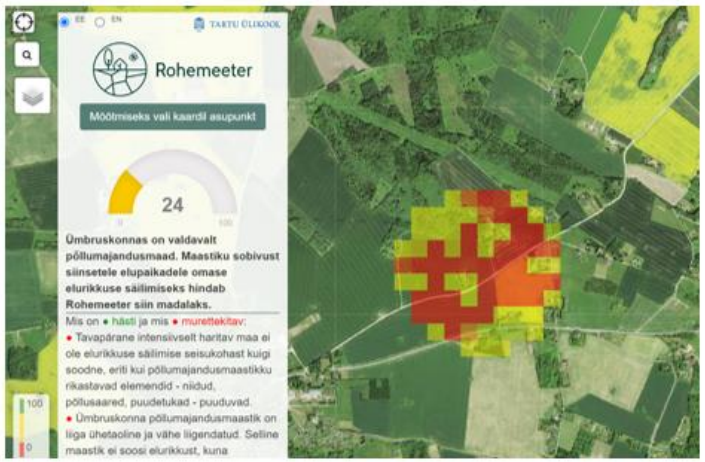
https://github.com/ut-planteco/gDAT

Vasar et al. 2021 Mol Ecol Res

- **R packages:** TPD (trait probability density)

Carmona et al. 2019 Ecology

- **MAPS: Greenmeter** (Rohemeeter: rohemeeter.ee)



Contact: prof. Maarja Öpik, Dr. Carlos Carmona, Prof. Meelis Pärtel, Prof. Aveliina Helm

2. Building block

Living labs and Lighthouses

RESEARCH CENTRE OF ORGANIC FARMING

Estonian University of Life Sciences

Research Centre of Organic *Farming is an interdisciplinary centre* in order to bring together different organic farming and food studies in Estonian University of Life Sciences and to initiate further activities.

AGRICULTURAL PARK IN KUUSIKU

Agricultural Research Centre

The main objective of the park is to promote and popularise the history of rural life and agriculture, the environmental measures of modern agriculture and agricultural science and education. The park conducts also sample field trials and there are examples of Estonian soils to see there.

SoilProtection.earth

Euroopa Maaelu Arengu Põllumajandusfond: Euroopa investeeringud maapiirkondadesse

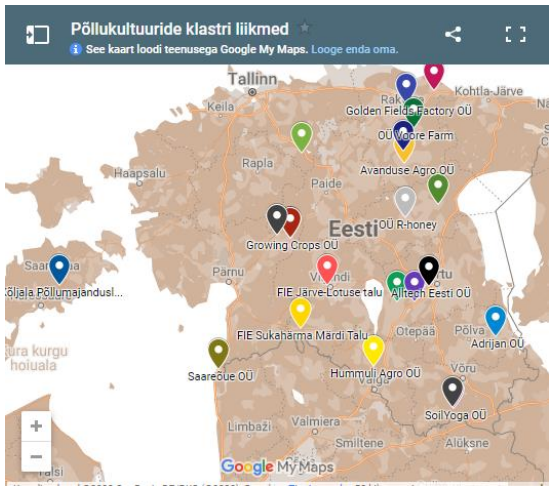
Roosi Soosaar

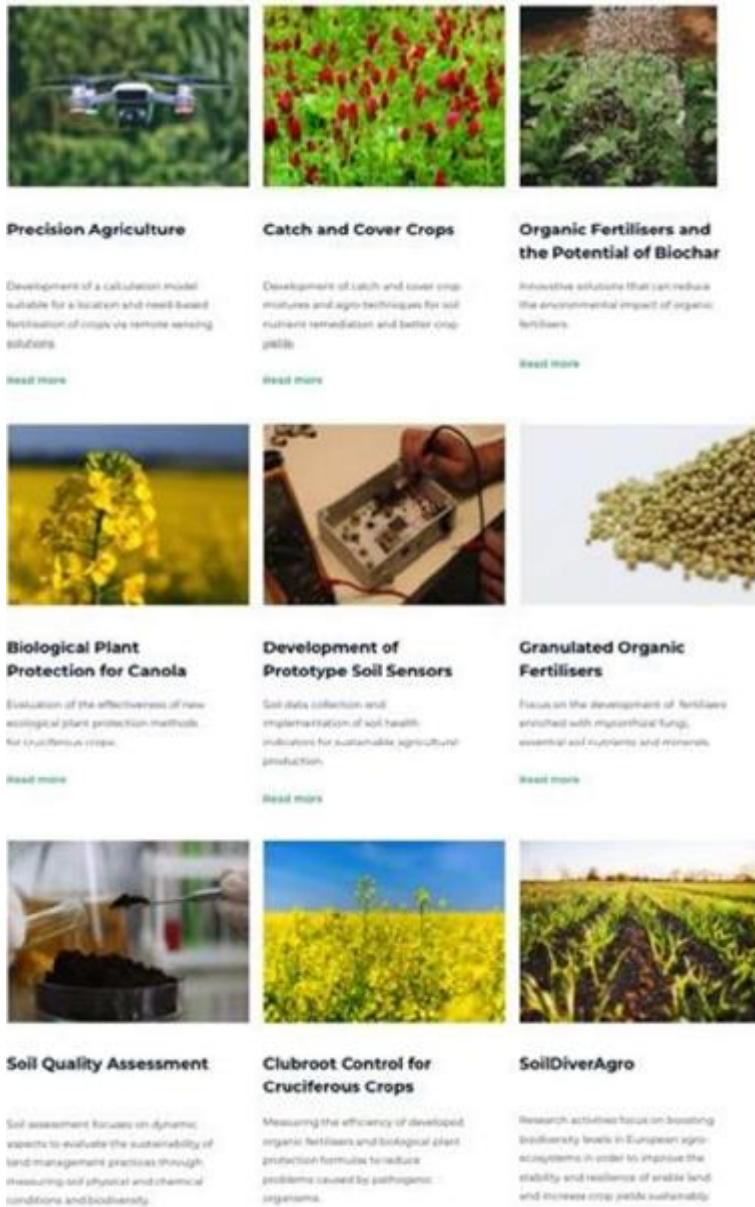
NGO Soil Innovation Cluster

CLUSTER DEVOTED TO SOIL PROTECTION

RDP measure 16.2 (cooperation, innovation clusters) + H2020: SoilDiverAgro

Members *represent crop and livestock* farmers and sturdy agricultural producers all over Estonia.

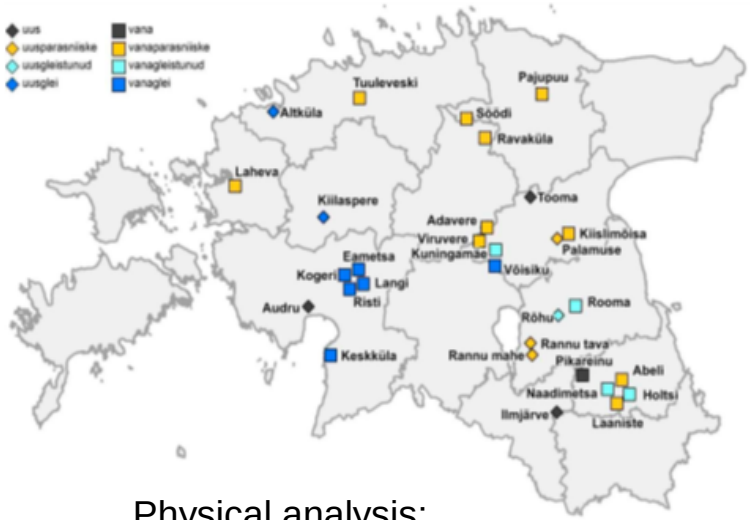




3. Building block
Soil monitoring

National Soil Monitoring

- Starting years 1983-1993, restart in 2001
- Belongs to the programme of national environmental monitoring
- Long-term monitooring sites, agricultural soils with different water regime and soil type
- Since 2020 we include natural sites as a control (forest soils)
- Rotation in a monitoring period- 5 years
- Observing changes in soil physicochemical properties



Physical analysis:

Bulk density, porosity, aeration

Texture

Chemical analysis:

pH, SOC , P, K, Ca, Mg, Cu, Mn,B

Heavy metals Cd, Cr, Ni, Pb, Zn, Cu

Pesticide residues

Development of the methods for soil biodiversity evaluation

UNIVERSITY OF TARTU
Institute of Ecology and Earth Sciences

PÕLLUMAJANDUSUURINGUTE KESKUS
AGRICULTURAL RESEARCH CENTRE

Projects 2019 - 2022

4. Building block-

Soil literacy, communication citizen engagement

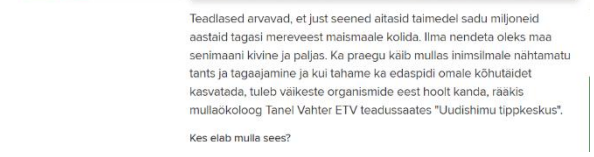
- Specialised trainings
- Press: TV, radio broadcasts, podcasts, articles


ROHEPORTAAL 07.06.2022, 17:57

Eesti muldasid ähvardab muu Euroopa saatus. Tulevik sõltub põllumeestest (52)

Eri organisatsioonide hinnangul ohustab maailma toidujulgeolekut muldade ikaldumine ja ka Eestit varitseb tulevikus sama probleem.

Kristin Kontro
kristin.kontro@ekspressmeedia.ee


novaator UUDISED KESKKONNAKUU AASTA KOOL ERIPROJEKTID

Seened on mullale nii kiirabi kui ka terapeudi eest

KESKKOND
17.12.2021 11:24

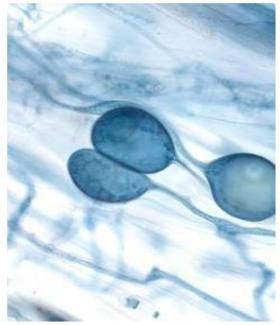
Teadlased arvavad, et just seened aitasid taimedel sadu miljoneid aastaid tagasi mereveest maismaale kolida. Ilma nendeta oleks maa senimaani kivine ja paljas. Ka praegu käib mullas inimsilmale nähtamatu tants ja tagaajamine ja kui tahame ka edaspidi omale kõhutäidet kasvatada, tuleb väikeste organismide eest hoolt kanda, rääkis mullaökoloog Tanel Vahter ETV teadussaates "Uudishimu tippkeskus".

Kes elab mulla sees?

Pm Seotud lood


KESKKOND
KESKKOND ⟩ Rein Kuresoo: maailma põllumajanduses seisavad ees suured muutused


ARVAMUS
ARVAMUS ⟩ Ülo Niinemets: mõõtmatult laiuvad viljaväljad muutuvad kõrbeks

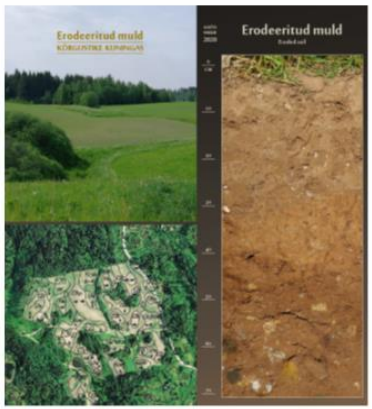

KESKKOND
TANEL VAHTER ⟩ Seente abita jääks põlluvili kängu


KESKKOND
KESKKOND ⟩ Tõnu Kurissoo: mulla ökoloogia eiramine halvendab kliimat


JÄLG
May 26
Like

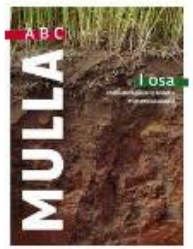
- Soil Day – annual event in 5th December also at national level

- Soil of the Year – Technosol in 2022



International Decade of Soils 2015-2024

www.emu.ee
Eesti Maaülikool
Estonian University of Life Sciences



Mulla_ABC_I

Laadi alla

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Laadi alla

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Laadi alla

Mulla_ABC_IV_osa

Laadi alla

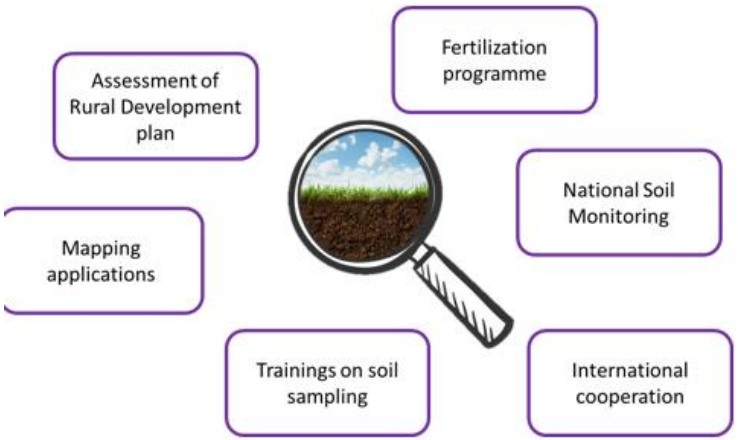
PÕLLUMAJANDUSUURINGUTE KESKUS
AGRICULTURAL RESEARCH CENTRE

„We want to be soil map interpreters for the farmer“

- Estonia has set up a system where almost all soil data can be analysed on the basis of a GIS system. This gives us the opportunity to perform a wide variety of analyses and make smarter decisions at both the national and the local level.
- We have a high-resolution digital soil map (1:10 000).
- We have made our data more user-friendly and easier to understand for farmers through the innovative web map applications that link different databases.

Develop novel solutions for making soil data applicable:

- Crop suitability mapping
- Mapping application for soil texture and soil erosion
- Map based application for soil sampling



City/community gardens, school gardens

Tartu maheaed

Kes me oleme? Põhikiri Liitumine Uudised Müük Toetajad Kasulik Kontakt

Kes me oleme?

MTÜ Tartu Maheaed koondab enda alla inimesi, kes soovivad tegeleda **mahepõllumajandusliku linnaaiandusega**. Meie eesmärgiks on viljeleda mahedat linnaaiandust, arendada selleks vajalikke tingimusi Tartus ning propageerida linnaiandust laiemalt. Siit lehelt leiad infot meie tegemiste ja toimetuste kohta.

MTÜ Tartu Maheaed haldab kaht linnaaeda: **Lehe aeda** Lehe tänava lõpus, Jaamamõisa linnaosa ja Raadi niitude piirialal (aiaplaan) ning 2019. aastal Annelinna külje alla, Ihaste põigu ning Lammi tee ristumiskoha lähedale rajatud **Linnupargi aeda** (endise nimega **Lammi aeda)**, mille asukohta saab vaadata nii Maa-ameti kaardilt (Linnupargi aed.) kui ka uurida liikumisteed **Linnupargi aeda** ning selle struktuuri SIIT.


Thank you!