



EJP Soil Annual Science Days 2021: call for active participations

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FIRST TIMESLOT SESSIONS

1. Plant below-ground inputs to enhance soil carbon sequestration in agricultural soils (CM1)

Conveners

- Rebecca Hood (Boku)
- Daniel Rasse (NIBIO)

Programme outline

Introduction	5'
Keynote: Pr. Thomas Kätterer, SLU	20'
Four selected talks (10' each)	40'
Discussion	25'

Description

Roots are generally the primary source of organic carbon in soil both because the input is often larger than that of shoots, such as in many grassland, and because root-derived C is more persistent in soil than shoot-derived C. This raises the tantalizing possibility to increase SOC stocks through enhancing root contributions to soil organic matter. However, there are key knowledge gaps for reaching such an objective. For example, what management options increase most the contribution of root C? Which pedo-climatic environments and agroecosystems are more conducive to increasing below-ground inputs for C sequestration? What are the root traits that best favour C sequestration? Can we increase below-ground carbon input without negatively affecting above-ground biomass and yields?

In this session, we will explore sound scientific evaluation of the C sequestration potential, co-benefits and trade-offs of selected management options, technologies (e.g. amendments, varieties) and agricultural systems (e.g., perennial systems) aimed at increasing below-ground C inputs. Contributions are also welcome on improved knowledge on root traits associated with increased below-ground C inputs.

Instructions for participants

Short talks (10mins) on relevant research associated with the topic. Please send one-paragraph abstracts. Suggestion for research projects are also welcomed.

2. Contribution of soils to climate mitigation and adaptation, sustainable agricultural production and environment in agroecological systems (CA4/SP3)

Conveners

- Annelie Holzkämper (Agroscope)
- Taru Sandén (BIOS)

Programme outline

Introduction of topic and speakers by chair	5'
6 short presentations <i>(10' each, including time for questions)</i>	60'
Discussion and conclusion	25'

Description

Broad range and diversity of agricultural systems exist in Europe, of which many are facing increasing drought extremes that challenge agricultural production. Considering possible reductions in irrigation water availability and intensifying water use conflicts with climate change, irrigation cannot be the only option to minimize impacts of drought extremes on agricultural productivity. Agro-ecological systems and the underlying climate-smart sustainable soil management practices (e.g., agroforestry, conservation agriculture, organic farming, integrated crop-livestock-forestry systems) have potential positive effects on climate change adaptation and mitigation. These alternative and new systems and practices aim to meet multiple goals on soil health, agricultural production, climate change adaptation and mitigation and support and sustain ecosystem services. In order for them to succeed in meeting these goals, these systems need to be taken up by local farmers to fit their specific soil and environmental conditions and socio-economic needs and perceptions. The focus of this session is to showcase possible synergies between climate mitigation and adaptation that are achieved through diverse agro-ecological system.

With this session, we aim

1. to gain an overview of the diverse agroecosystems and current understanding of the synergies and trade-offs between adaptation and mitigation targets
2. to identify key research gaps, and
3. to outline possible approaches to overcome these research gaps

Instructions for participants

We welcome short contributions from partners interested to work on the session topic. Participants are invited to report on past, ongoing and planned experimental and modelling studies addressing the session topic. All contributions should address the three points stated in the session description: (1) current state of knowledge, (2) known/identified research gaps, (3) outlook to further work.

Please provide short abstracts that outline your contributions with respect to these three main points (200 words max).

3. Alleviating soil compaction in a climate change context (SP1)

Conveners

- Thomas Keller (SLU & Agroscope)
- Tommy D'Hose (ILVO)
- Mathieu Lamandé (AU)

Programme outline

Opening and welcome, aims of the session	5'
4 solicited talks + short questions: speakers to be decided <i>(12' each)</i> Topics: <ul style="list-style-type: none"> ○ Alleviating soil compaction: knowledge gaps and research needs ○ Compaction problems across Europe: overview of main results and conclusions for soil compaction topic from EJP Soil stocktaking activities ○ Climate change and consequences for soil compaction (risks) across Europe ○ Potentials and challenges of remote sensing to identify and quantify compaction severity and extent 	50'
Discussion: towards identifying work packages for an EJP Soil project for SP1 <i>(the conveners will present the structured suggestions sent in advance by the participants to start the discussion)</i>	25'
Conclusion and wrapping up + action plan	10'

Description

The overall aim is to identify research questions to be addressed in an SP1 project and to start outlining work packages. For this, we will start with four solicited talks (topics for talks will be described and sent to EJP partners, to find suitable speakers) that cover the different aspects of the SP1 project description. Based on this and on written suggestions sent by the participants before the session, we will identify research questions, potential work packages, and identify interest among EJP Soil partners to be involved in an SP1 application. We will wrap up with a plan for action towards preparation of a SP1 application.

Instructions for participants

- Participants are expected to actively participate in discussions. Participants are encouraged to submit research questions and suggestions to the conveners before the meeting; conveners will structure these and present
- Speakers (4 solicited talks) should send in a short abstract to the session conveners; conveners will encourage and actively approach candidates for these talks. During the session, the conveners would like to identify and to gather the expertise of interested partners who would like to contribute to a project proposal.

4. European soil biodiversity forecast toward resilient agroecosystems in response to climate change (INDICATORS2/SE4)

Conveners

To be decided

Programme outline (tentative)

Opening with convener(s)	5'
5 oral presentations (of previous results) or poster pitches <i>(12' each)</i>	60'
Questions and discussion	20'
Conclusion and wrapping up	5'

Description

To be decided

Instructions for participants

A convener has not been appointed for this session so far. If you are interested in convening this session, please contact Louise Pauwels (ILVO) at louise.pauwels@ilvo.vlaanderen.be.

If you are interested in presenting your past research or ideas in this session, please fill out the submission form, indicate whether you want to give an oral presentation, pitch a poster, or something else, and submit your abstract or poster description. Once a convener is appointed, they will get in touch and shape the session based on the submissions that were entered.

SECOND TIMESLOT SESSIONS

1. Effects of the soil biome on the persistence SOC storage and its drivers (CM5)

Convener

- Jens Leifeld (Agroscope)
- Alessandra Trincherà (CREA)
- Anke Hermann (SLU)

Programme outline

Introduction of topic and speakers by chair Jens Leifeld	5'
Conveners keynotes: Anke Hermann + Alessandra Trincherà (10' each + 10' Q&A)	30'
Brief presentations of participants on research questions and approaches (5' each, including time for questions)	20'
Discussion	30'
Wrap-up and next steps	5'

Description

During microbial decomposition, organic carbon is partitioned between respiratory production and substrate assimilated into soil. This partitioning is often referred to as microbial carbon use efficiency (CUE), and it is an important physiological feature in determining the fate of C during organic matter decomposition in soil. Recent research showed that CUE is regulated by various factors such as temperature, composition of microbial communities as well as nutrient availability and substrate quality, incl. stoichiometry. It is therefore very likely that agroecological farming practices, e.g. crop diversification, fertilization strategies, cover crop/intercropping, agroforestry, will have an impact on community composition, the physiology of microorganisms, and the stability of SOC.

The session aims to

1. present our current understanding of the impact of agroecological farming practices on controlling CUE of the soil microbiome
2. identify the impact of agroecological farming practices on plant diversity and soil microbial community composition, evaluating the effect of beneficial plant-microbe-interactions on enhancing carbon sequestration in soils.

Contributions using labeling methods, molecular markers, assessment of plant diversity, geno- and phenotypic profiling of soil microbial community, soil soluble C pools, GHG emission, making use of long-term experiments from crop- and grasslands as well as application of modeling approaches are welcome.

Instructions for participants

We expect inputs from colleagues of any member state who would like to work on this topic. We invite you to provide suggestions for method approaches and specific research questions, experimental sites, etc. on max. 2 slides per participant.

To participate, please submit an abstract not exceed 200 words, including the title, authors, affiliations, max 3 keywords. At the end of the abstract, insert one/two sentence/s as starting points of discussion.

2. The use, processing and application of external sources of organic matter to mitigate climate change and improve soil health (SP2)

Conveners

- Sabine Houot (INRAE)

Programme outline (tentative)

Opening with convener(s)	5'
5 oral presentations (of previous results) or poster pitches <i>(12' each)</i>	60'
Questions and discussion	20'
Conclusion and wrapping up	5'

Description

To be decided

Instructions for participants

The programme for this session is still being drafted.

If you are interested in presenting your past research or ideas in this session, please fill out the submission form, indicate whether you want to give an oral presentation, pitch a poster, or something else, and submit your abstract or poster description. The convener (Sabine Houot, INRAE) will get in touch soon and shape the session based on the submissions that were entered.

3. Innovative techniques to monitor SOC stocks and soil degradation/restoration changes in the EU, using spectral systems/ NIRS/ MIRS and other proximal sensing tools (DATA1)

Conveners

To be decided

Programme outline (tentative)

Opening with convener(s)	5'
5 oral presentations (of previous results) or poster pitches <i>(12' each)</i>	60'
Questions and discussion	20'
Conclusion and wrapping up	5'

Description

To be decided

Instructions for participants

A convener has not been appointed for this session so far. If you are interested in convening this session, please contact Louise Pauwels (ILVO) at louise.pauwels@ilvo.vlaanderen.be.

If you are interested in presenting your past research or ideas in this session, please fill out the submission form, indicate whether you want to give an oral presentation, pitch a poster, or something else, and submit your abstract or poster description. Once a convener is appointed, they will get in touch and shape the session based on the submissions that were entered.

4. Enabling conditions for climate smart and sustainable soil policy: fair and functional payment systems for ecosystem services related to climate (POL2/ES7)

Convener

- Miro Jacob (ILVO)
- Martin Hvarregaard Thorsøe (Aarhus University)

Programme outline

2-3 keynote speakers <i>To be confirmed</i>	30'
Short pitches on the state of play of payment schemes (incl. carbon farming), or other incentives for ecosystem services at country level	40'
Interactive discussion on project proposal for POL2/ES7	20'

Description

The session will explore the incentives in relation to the protection of soil ecosystem services already in place in the different countries with its success factors and lessons learnt and opportunities and barriers in those countries where it still needs to be developed. At the same time, the session also looks for synergies with existing European initiatives and projects. In an interactive setting the aim is to get insights and needs for Monitoring, Reporting and Verification systems and for enabling conditions for fair and functional incentives for ecosystem services. The inputs and discussion can be used to shape a project proposal for POL2/ES7.

Instructions for participants

We invite participants to give a short presentation (max 5 minutes) on the status of incentives for preserving soil ecosystem services in their country. This overview will be used to exchange experiences and to establish the state of play within the EJP SOIL countries. In the overview we ask you to briefly reflect on the following three questions:

- What are the incentives for preserving ecosystem services in your country? If so, what are the lessons learned?
- What are the Are there ecosystem payments projects in place in your country? If so, what can we learn from these projects?
- What are the main barriers and what is needed to improve incentives for protecting ecosystem services in your country according to you?

For those who are soliciting to give a short presentation, we ask to provide us with a headline of the talk in advance.

5. Modelling soil functions and soil threats for mapping soil functions and ecosystem services (SE2/INDICATORS1)

Conveners

- Thomas Weninger (BIOS)
- Costanza Calzolari (CREA)

Programme outline

Opening with 2 keynote speakers (from SIREN project and WP6 T.3)	20'
10 presentations of ongoing activities and approaches in Europe (4' each)	40'
Questions and discussion	20'
Conclusion and wrapping up	10'

Description

The existing indicators for the assessment of soil functions, soil quality and soil-based ecosystem services in Europe need to be refined, calibrated for the different pedo-climatic conditions and main agricultural production systems and eventually checked in terms of reliability and robustness. Accordingly, also soil threats indicators should be consistently revised in order to assess the pressures on the capability of soils to perform their functions and to underpin ecosystem services.

Aim of this call is collecting the experiences and ideas from active groups on these items, with a special focus on: a) the chain from soil properties to soil functions and ecosystem services, their assessment, mapping and modelling; b) the modelling approaches to assess the effects of soil threats and of agricultural soil management options on soil functions and on the provision of ecosystem services; c) operative definition of soil quality/health capable to fully consider the multifunctionality of soil.

Keywords: soil function indicators, soil quality, ecosystem services, multifunctionality of soil

Instructions for participants

The main goal of the session is to collect as many as possible experiences/ideas as a basis for the subsequent discussion and later proposal development. For this reason, the presentations will be limited to 4 minutes. A maximum of three slides are expected, focusing on the topical messages to be shared with the participants. Introducing keynotes are planned to be given by a representative of the team of the preparatory stocktaking project on indicator systems for assessing soil quality and ecosystem services (SIREN) and of the team of WP6, tasks 3.

As for the presentation, submit a one page abstract on earlier research/experience about the topic of the session, considering the proposed themes. The abstract should not exceed 700 words, and must include the title, authors, affiliations, and 2- 5 key sentences as starting points of discussion.

If the number of submissions exceeds the capacity of presentation slots, a selection will be based on the maturity of the soil functions/threats assessment system including mapping and modelling approach. All submissions will get the opportunity to prepare their slides which will be distributed among the participants before the EJP soil science days to enable comprehensive discussions. Deadline for abstract submission is March 21st.