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Title: Roadmap for the European Joint Program SOIL: Towards Climate-Smart Sustainable Management of Agricultural Soils

Year: 2020

Version: Published version

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Please cite the original version:

Saskia, V.; Saskia, K.; Órlaith, N.C.; Titia, M.; Edoardo, C.; Francois, S.J.; Claire, C.; Peter, K.; Jennie, B.; Niels, H.; Borchard, N. Roadmap for the European Joint Program SOIL: Towards Climate-Smart Sustainable Management of Agricultural Soils. *Proceedings* 2019, 30, 89.

<https://doi.org/10.3390/proceedings2019030089>

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Abstract

Roadmap for the European Joint Program SOIL: Towards Climate-Smart Sustainable Management of Agricultural Soils [†]

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[†] Presented at TERRAenVISION 2019, Barcelona, Spain, 2–7 September 2019.

Published: 23 June 2020

Abstract: Our planet suffers from humankind's impact on natural resources, biogeochemical cycles and ecosystems. Intensive modern agriculture with inappropriate inputs of fertilisers, pesticides and fossil fuel –based energy has increasingly added to human pressure on the environment. As a key element of our natural capital, soils are also under threat, despite being essential to provide food, feed, fibre and fuel for an increasing global population. Moreover, soils play a key role in carbon, water and energy cycles, highlighting their importance for biomass provision and the circular bioeconomy. Evidently, these new and complex challenges cannot be resolved effectively with existing knowledge and experience alone. These challenges require scientific research, interdisciplinary collaboration and networking to find context-specific and tailored solutions addressing societal issues of our time and facilitating the adoption of these solutions. The most effective approaches are based on the involvement of multiple actors from science, policy, economy, civil society and farming that have the same goal, work on the same societal issue, but have complementing backgrounds, expertise and perceptions. The European Joint Programme (EJP) SOIL is a European network of research institutes in the field of soil science and agricultural soil management that will provide science-based advice to practitioners and policymakers, at local, national and European level. The EJP SOIL aims to align and boost research, training and capacity building through joint programming activities co-funded by the European Commission and national research programs. This will reduce current fragmentation and help to find synergies in order to make a leapfrog in research on good agricultural soil management in three main areas: climate change mitigation and adaptation, production capacity in healthy food systems, and environmental sustainability. By joint programming, training and capacity building, EJP SOIL will also take into account the need for effective policy solutions, as well as the socio-economic conditions of all stakeholders in the agricultural value chain. Thus, a key focus of the EJP SOIL is to build and strengthen a framework for an integrated community of research groups working on related aspects of agricultural soil management. As part of this effort, EJP SOIL will co-construct with stakeholders a roadmap for agricultural soil research. To develop a structured roadmap, EJP SOIL works with a version of the knowledge management framework of Dalkir (2005). The EJP

version uses four compartments: (i) Knowledge development, (ii) knowledge harmonisation, organisation and storage (iii) knowledge sharing and transfer, and (iv) knowledge application. The four segments are part of a cyclic process to enhance the development and use of knowledge on agricultural soils. Knowledge development comprises assessing new knowledge needs to achieve the expected impacts of EJP SOIL. Therefore, by involving multiple stakeholders, knowledge gaps across Europe will be identified to work towards the adoption of Climate-Smart Sustainable Agricultural Soil Management (CSSASM). Within the knowledge sharing and transfer compartment, the capacity of scientists, advisors, policy makers, farmers and other stakeholders will be strengthened. EJP SOIL will work to support networks and co-creation of new knowledge with stakeholder groups, stimulating innovation in CSSASM. The knowledge harmonization, organization and storage compartment of the knowledge framework ensures linkages with all stakeholders to guarantee data harmonization and standardization. The last compartment, application of knowledge, will be facilitated by creating better guidelines, awareness and capacity for Climate-Smart Sustainable Agricultural Soil Management adoption and by strengthening science-to-policy processes at EU and Member State level.

Keywords: knowledge framework; climate-smart agricultural soil management; Europe-wide network development



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