



European  
Commission

## AGRI RESEARCH FACTSHEET SOILS

### Why do research and innovation on soils matter?

Research is crucial to better understand, monitor and measure the specific effects of agricultural and forestry activities on soils and their various productive and ecosystems functions. Additional knowledge is needed on long-term processes of soil formation, on soil fertility and other above-mentioned functions and how to improve their delivery by optimising soil biological, chemical and physical properties. Designing ways to increase soil carbon content, enhance soil biodiversity and reduce soil erosion is highly crucial for food security. New avenues for soil and crop management are emerging from an increased understanding of the

‘soil-food web’, the complex interactions between plants and soils which support water and nutrient uptake by plants or increase resistance against pests and diseases. Knowledge and tools developed through research and innovation can serve to further develop soil enhancing production systems and enhance the role of livestock in soil management. Research efforts serve to enhance the function of soils as carbon and nitrogen sinks, thereby supporting the role of agriculture and forestry in mitigation of greenhouse gas emissions, combating desertification and land degradation.

### Soil research and innovation under Horizon 2020 Societal challenge 2



**26**

Projects or expected grants



**197 M€**

EU contribution  
2014-2020



**247**

Participations in  
selected projects

### Key themes

Soil functions – soil water resources  
–assessment tools – soil-improving  
cropping systems – cooperation.

## Soil innovation under EIP-AGRI activities

<b>Focus group:</b> Carbon storage in arable farming	<a href="https://bit.ly/2liN3f5">bit.ly/2liN3f5</a>
<b>Focus group:</b> Soil organic matter content in Mediterranean regions	<a href="https://bit.ly/2GkClZ7">bit.ly/2GkClZ7</a>
<b>Focus group:</b> nutrient recycling	<a href="https://bit.ly/2FRWz8W">bit.ly/2FRWz8W</a>
<b>Focus group:</b> Integrated pest management for Soil-borne diseases	<a href="https://bit.ly/2IfNoiK">bit.ly/2IfNoiK</a>
<b>Operational groups (OG) on soils:</b>	<a href="https://bit.ly/2uyOl3U">bit.ly/2uyOl3U</a>
OG example: GASCOGN'INNOV will provide winegrowers with a soil diagnosis tool to improve their cropping systems through better soil management (2016-2021)	<a href="https://bit.ly/2uuYjTW">bit.ly/2uuYjTW</a>

## SC2 collaborative projects – Soils

<p><b>iSQAPER</b>  <a href="http://www.isqaper-project.eu">www.isqaper-project.eu</a>          Total cost: 6.9 M€          EC contribution: 5.4 M€          Coordinator: Wageningen University          May 2015 – Apr. 2020</p>	<p>iSQAPER deals with the interplay between agricultural land management and soil quality and functions. It will develop an interactive 'soil quality assessment tool' for agricultural land users that integrates newly derived process understanding and accounts for the impact of agricultural land use and management on soil properties and functions, and related ecosystem services. For this purpose, over 30 long-term experimental field trials in the EU and China will be analysed to derive regulating principles for integration in the tool.</p>
<p><b>LANDMARK</b>          Web: <a href="http://landmark2020.eu">landmark2020.eu</a>          Total cost: 5.3 M€          EC contribution: 5 M€          Coordinator: Wageningen University          May 2015 – Oct. 2019</p>	<p>LANDMARK deals with the sustainable management of land and soil in Europe. It builds on the concept that soils are a finite resource that provides a range of ecosystem services known as "soil functions". Functions relating to agriculture include: primary productivity, water regulation &amp; purification, carbon-sequestration and regulation, habitat for biodiversity and nutrient provision &amp; cycling.</p>
<p><b>SOILCARE</b>  <a href="http://www.soilcare-project.eu">www.soilcare-project.eu</a>          Total cost: 7.6 M€          EC contribution: 7 M€          Coordinator: Wageningen University          Mar. 2016 – Feb. 2021</p>	<p>SOILCARE aims to identify and evaluate promising soil-improving cropping systems and agronomic techniques increasing profitability and sustainability across scales in Europe. It will develop an interactive tool for end-users to identify and prioritize suitable soil-improving cropping systems anywhere in Europe.</p>
<p><b>DIVERFARMING</b>  <a href="http://www.diverfarming.eu">www.diverfarming.eu</a>          Total cost: 10.5 M€          EC contribution: 10 M€          Coordinator: U. Politecnica de Cartagena          May 2017 – Apr. 2022</p>	<p>With the long-term objective to increase diversification and biodiversity in Europe and to foster sustainable development of the bioeconomy, Diverfarming will develop and deploy innovative farming and agribusiness strategies. Diverfarming will increase the long-term resilience, sustainability and economic revenues of agriculture across the EU by assessing the real benefits and minimising the limitations, barriers and drawbacks of diversified cropping systems under low-input agronomic practices, and by adapting and optimising the organisation of downstream value chains.</p>

**DiverIMPACTS**[www.diverimpacts.net](http://www.diverimpacts.net)

Total cost: 11.2 M€

EC contribution: 10 M€

Coordinator: INRA

Jun. 2017 – May 2022

DiverIMPACTS seeks to achieve the full potential of diversification of cropping systems for improved productivity, delivery of ecosystem services and resource-efficient and sustainable value chains. It will assess the performance of crop diversification through rotation, intercropping and multiple cropping. It will also provide rural actors with key enablers and innovations that will help removing existing barriers and ensure the uptake of crop diversification benefits at farm, value chain and territorial levels.

**FAIRWAY**[www.fairway-project.eu](http://www.fairway-project.eu)

Total cost: 5 M€

EC contribution: 5 M€

Coordinator: Wageningen Research

Jun. 2017 – May 2021

The objective of FAIRWAY is to review policy, governance and farm water management approaches to protect drinking water resources in the EU and to identify and further develop innovative measures and governance approaches which will simultaneously increase the sustainability of agriculture.

**WATERPROTECT**[water-protect.eu](http://water-protect.eu)

Total cost: 5 M€

EC contribution: 5 M€

Coordinator: Vlaamse Instelling voor Technologisch Onderzoek

Jun 2017 – May 2020

WATERPROTECT aims to contribute to effective uptake and realisation of management practices and mitigation measures to protect drinking water resources. It will create an integrative multi-actor participatory framework including innovative instruments that enable actors to monitor, finance and effectively implement these practices and measures.

**CIRCASA**[www.circasa-project.eu](http://www.circasa-project.eu)

Total cost: 3,9 M€

EC contribution: 2,5 M€

Coordinator: INRA

Nov. 2017 – Oct. 2020

CIRCASA aims to strengthen the coordination and synergies in European and global research on Soil Organic Carbon (SOC) sequestration in agricultural soils. Its activities will lead to an improved understanding and scientific basis on agricultural soil carbon sequestration and its potential for climate change mitigation and adaptation, helping to target ambitious practices required to preserve and enhance SOC. CIRCASA will favour a more structured approach by preparing an International Research Consortium (IRC). It will deliver significant outcomes for the implementation of the UN Sustainable Development Goals (SDGs) and of the Paris agreement (COP21, 4 per 1000 voluntary initiative) of the UN Framework Convention on Climate Change (UNFCCC).

Many projects on **integrated ecological approaches** or **public goods** also address soil functionalities.

## Interesting activities under other Horizon 2020 sections

Many other parts of Horizon 2020 include interesting activities on soil.

**Marie- Skłodowska Curie Actions** support individual fellowships, innovative training networks and Research and innovation staff exchange. Examples include:

- **PROTINUS**, which works on new standard in imaging, analysing, modelling and predicting the interactions between soil structure and soil functions ([bit.ly/2pPM8Ly](http://bit.ly/2pPM8Ly) - EC contribution: 1.45 M€ - May 2015 to Dec. 2018)

- **GLOMODAT**, which works on new integrated modelling approaches for nutrient and phosphorus runoff ([bit.ly/2GoQYGT](http://bit.ly/2GoQYGT) - EC contribution: 0.15 M€ - Jan. 2019 to Aug. 2021)

Interesting projects are also supported under the **European research council** ([bit.ly/2pSCPuC](http://bit.ly/2pSCPuC)), under the **SME instrument** ([bit.ly/2uyJY8H](http://bit.ly/2uyJY8H)) and under Horizon 2020's Societal challenge 5 on **climate action and environment** ([bit.ly/2ldfSd1](http://bit.ly/2ldfSd1)).

## In the pipeline – 5 projects to start under 2017 and 2018 SC2 calls (24 M€)

Management of soil water resources in the EU and China and its impact on agro-ecosystem functions	(1 project, 5 M€)
Biodiversity in action: across farmland and the value chain	(2 projects, 14 M€)
Management of soil and land resources	(1 project, 5 M€)

## Funding opportunities – Open SC2 calls for 2019 (75 M€) – 2020

<b>LC-SFS-20-2019: European Joint Programme on agricultural soil management</b>	(1 project, 40M€)
<b>SFS-35-2019-2020: Sustainable Intensification in Africa:</b>	
A. (2019) African Farming Systems, sustainable intensification pathways)	(3 projects, 30M€)
B. (2019) Soil system for Africa	(1 project, 5 M€)
<b>SFS-21-2020 – Soils going global</b>	
<b>LC-SFS-22-2020 – Forest soils Research and Innovation Action</b>	
<b>SFS-40-2020 – Healthy soils for healthy food production</b>	

## Soils: a major international issue

Soils are object of increased political attention at European Union and global levels. The United Nations declared 2015 the International Year of Soils. By the end of the year, the scientific community proclaimed that 2015-2024 would be the International Decade of Soils. This decade will serve to continue the efforts made during the International Year of Soils.

A number of important initiatives on soils are linking science with policy at global level. The **Global Soil Partnership**<sup>1</sup> led by FAO and its regional nodes is one of them. Soils are also important within the Agenda 2030 and the **Sustainable Development Goals**. During the Paris COP 21 meeting on climate change, France launched the international “4‰ Initiative: soils for food security and climate”.

The European Commission provides funding for research that should contribute to these international initiatives. At the

same time, the European Commission is trying to increase the evidence base for soil management with dedicated research initiatives like the European Joint Programme on agricultural soil management or the CIRCASA project which should help move towards the creation of an International Research Consortium.

The European Commission also supports developments of the LUCAS survey and its soil sampling part<sup>2</sup>. For the first time, the LUCAS survey 2018 will include soil biodiversity analysis, bulk density, visual assessment of erosion and measurement of thickness of organic horizon in organic-rich soil.



<sup>1</sup> <http://www.fao.org/global-soil-partnership/en/>

<sup>2</sup> <https://esdac.jrc.ec.europa.eu/projects/lucas>