SOILCRATES

## About the project

Coordinator: Jildou de Raad, Provinsje Fryslân

SOILCRATES (SOIL-kruh-teez) is a four-year collaborative project funded by HORIZON Research and Innovation to support the implementation of *A Soil Deal for Europe* (HORIZON-MISS-2023-SOIL-01-08). Running from October 2024 to September 2028, the project focus on restoring and preserving soil quality across Europe by developing soil literacy and monitoring soil structure, biodiversity, and crop-growing conditions of mineral soils.
Bringing together 21 partners from academia, agriculture, and local authorities, SOILCRATES co-creates, tests, and implements sustainable soil management practices. This initiative responds to the urgent need to treat soil as a living resource, vital for food security, biodiversity, and climate resilience.
Operating through four **Living Labs (LLs), in Ireland, France, Spain and the Netherlands,** SOILCRATES advances soil health monitoring and biodiversity assessment beyond the state-of-the-art. These Living Labs bring together landowners, farmers, scientists, policymakers, citizens, businesses, and local authorities to co-design, test, and evaluate innovative solutions in real-world settings. The Living Labs works closely with all parties to co-create, develop and monitor experiments. Starting spring 2025, stakeholders can apply for vouchers to initiate on-farm trials. Initial outcomes will include list of indicators for monitoring and a catalogue of factsheets soil management practices.

## SOILCRATES Living Labs

### Irish Living Lab – SOILCRATES Ireland

In the counties of Clare, Limerick, and Tipperary, the Ireland Mid-West LL tackles key issues related to the overuse of nitrogen fertilizers and the management of **heavy clay soils**. These soils, with their structure leading to poor drainage, present significant challenges for local farmers. The LL focuses on innovative solutions such as intercropping with nitrogen-fixing plants, using biochar to enrich the soil, and improving drainage systems. This LL is committed to restoring biodiversity while addressing soil acidity caused by nitrogen imbalance.

### Dutch Living Lab - North Netherlands

Situated in a region with diverse soils (**clay, sand and peat soils**) and a strong dairy and arable farming presence, this area has over 9,000 farms but faces environmental challenges such as soil compaction, and climate change impacts. The LL collaborates with farmers, researchers, and stakeholders to enhance irrigation efficiency and restore soil biodiversity. We address key challenges such as plant-parasitic nematodes and restrictions on inputs like nutrients and pesticides while developing solutions like crop diversity and improved SOC fractions and quality—all while supporting farmers' economic sustainability.

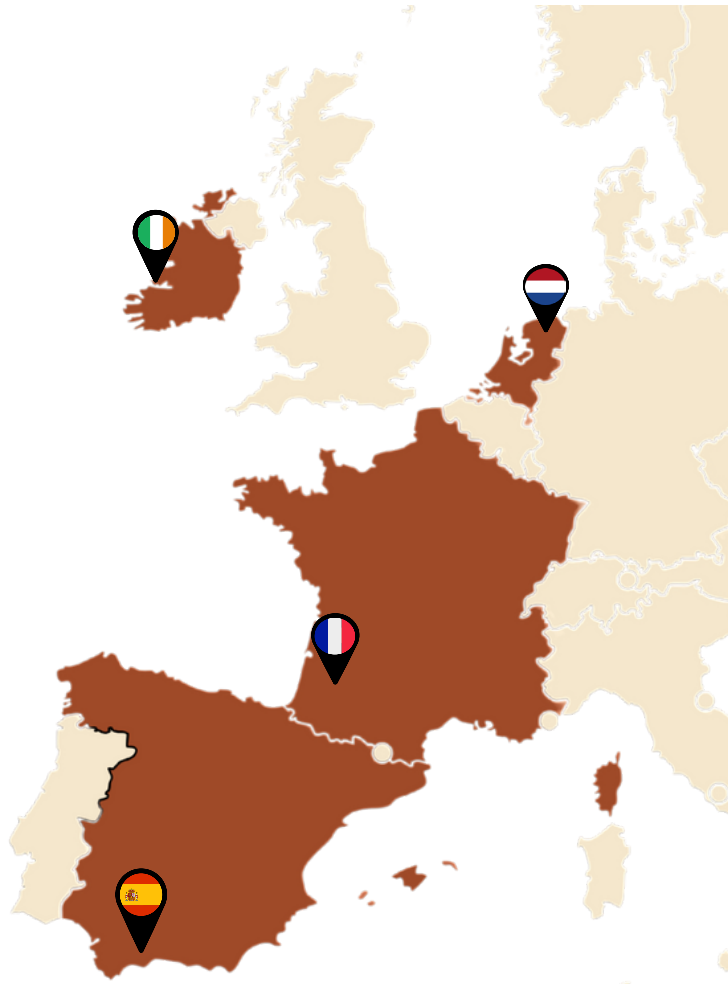
### Focus areas

Ireland
Sustainable soil management, biodiversity conservation, carbon sequestration, circular agriculture, and co-creation process

The Netherlands
Soil health, sustainable land management, Crop biodiversity, climate adaptation, SOC fractions & quality and co-creation process

France
Agroecology, soil regeneration, organic farming, water management, biodiversity and co-creation process

Spain
Soil health restoration, water conservation, climate-resilient agriculture, carbon sequestration and co-creation process



### French Living Lab - Laboratoire Vivant des Landes

Located in the innovative farming region of the French Landes, where sustainability meets cutting-edge research. Focused on improving soil health, water retention, and biodiversity, this LL brings together farmers, researchers, and experts to tackle the challenges of climate change. From agroforestry to regenerative hydrology, the lab pioneers solutions that reduce soil drought, optimize irrigation, and increase biodiversity across the landscape. The region comprise a range of soils types including **sandy soil, sandy clay and siliceous clay soils**.

### Spanish Living Lab - Granada Tierra Viva

Granada Tierra Viva is located in a region that combines dramatic landscapes with diverse agricultural practices. From sea level to over 2,000 meters in altitude, this area boasts a wide variety of climates—Mediterranean, temperate, and subtropical—making it a unique testing ground for innovative farming solutions. With five key soil types, (**regosol, cambisol, leptosol, luvisol, and flivisol**) the LL focuses on tackling soil erosion, improving water retention, and restoring organic matter, all while addressing the challenges posed by an arid, semi-arid environment.

### SOILCRATES Soil practices

- (Soil) cultivation (system) related
- Choice of crops/ cropping system /crop diversification related
- Organic amendments
- Inorganic amendments
- Soil stimulants
- Counteract physical conditions
- Soil repair
- Preventative measures

### SOILCRATES Health indicators

| Organic matter | Chemical indicators | Physical indicators | Biological indicators |
|---|---|---|---|
| • Soil organic carbon stock<br>• Carbon mineralization<br>• Labile organic fraction | • Soil nutrients - (Total N, P, K,S, Ca)<br>• pH<br>• C/N ratio<br>• CEC<br>• Heavy metals trace elements | • Bulk density<br>• Soil temperature<br>• Soil sealing<br>• Soil moisture<br>• Soil texture<br>• Water holding capacity | • Enzymatic activity<br>• Microbial biomass<br>• Microbial respiration |

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