# SOILRES

## Multi-Faceted Biodiversity Integration for Healthy Soils and Resilient Crop Management

SOILRES enhances soil health and strengthens crop resilience by harnessing biodiversity—linking soil, plants, and microbiota. Through sustainable practices and advanced digital tools, the project will work towards ensuring lasting agricultural success across diverse soils and climates.

## Mission

SOILRES aims to enhance soil health and boostcrop resilience by

Encouraging agroecological farming practices

Deploying microbial-based soil improvers

Promoting biodiversity restoration

Using digital tools for real-time soil monitoring

By advancing sustainable alternatives to agrochemicals, SOILRES works to reduce soil degradation, improve nutrient cycling, and strengthen climate resilience across European agriculture.

Beyond microorganisms and soil health, SOILRES focuses on the dynamic interactions among soil, plants, the microbiome, weather, and agronomic practices—developing interventions that embrace this complexity to deliver lasting impact.

## Why It Matters

Soil degradation is accelerating worldwide, driven by overuse of synthetic inputs and unsustainable farming. This poses serious risks to food security and undermines natural climate defenses.

SOILRES addresses these challenges by:

- Restoring soil biodiversity and ecosystem health.
- Minimizing pollution and reliance on chemicals.
- Enhancing crops' resistance to diseases and environmental stresses.

## Project Outcomes

**Sustainable Farming Practices:**

- Crop management strategies tailored to local conditions.
- Reduced dependency on agrochemicals and synthetic inputs.
- Increased resilience of cropping systems to climate change and pests.

**Soil and Ecosystem Health:**

- Enhanced soil biodiversity and ecosystem functioning.
- Strengthened ecosystem services through agroecological approaches.

**Digital and Participatory Innovation:**

- User-friendly tools for farmers and advisors.
- Integration of biodiversity, digitalization, and participatory approaches.

**Scalability and Policy Impact:**

- Development of scalable and replicable solutions across diverse pedo-climatic zones.
- Direct contribution to the EU Green Deal and Farm to Fork strategy goals.

## Key Innovations

- Microbial Biostimulants to enrich soil life and improve crop resilience to abiotic stresses".
- Green Manure & Biochar for improved soil structure and fertility.
- On-Farm Compost Derivatives to recycle organic matter.
- Cover Cropping & Crop Diversification to protect and enrich soils.
- Advanced Monitoring Tools, including:
  - Soil biodiversity and function assessments.
  - Carbon cycling and climate modeling.
  - Remote sensing and digital analytics for precision management.

## Use Cases Across Europe

SOILRES will test and validate its strategies in 6 diverse Use Cases spanning 5 pedo-climatic zones:

### CROPS

- Barley
- Biodiversity-rich cover crop
- Forage
- Maize
- Oats
- Peas
- Perennial crop
- Rapeseed
- Sorghum
- Soybean
- Sunflower
- Trifolium
- Wheat

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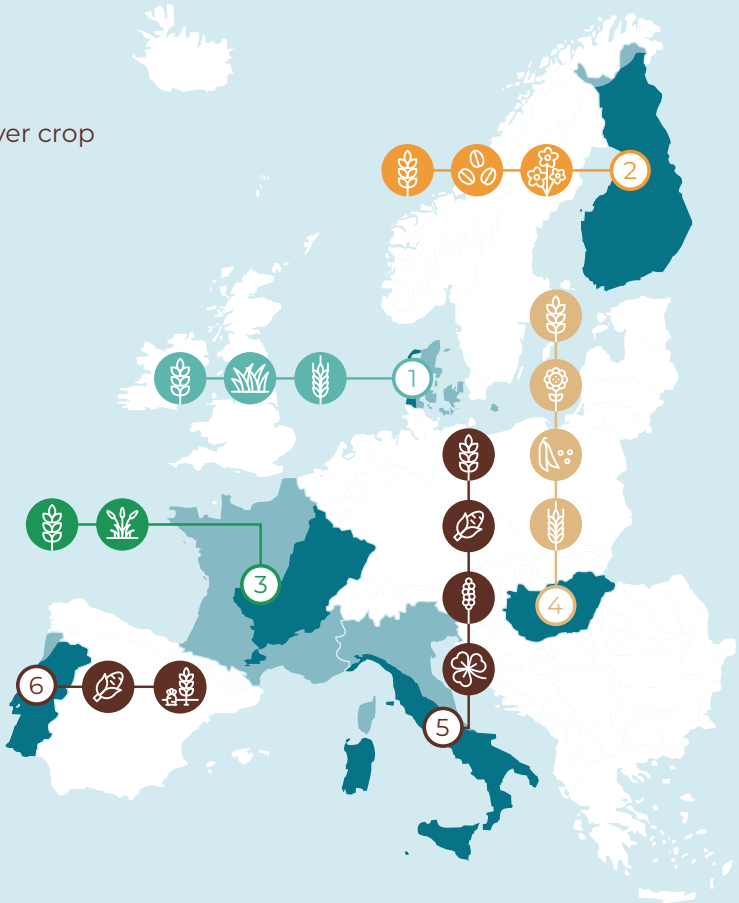
- Practice
- Soil improvements



| UC 1 Denmark (Atlantic) | |
|---|---|
| Perennial cropping systems | Microbial Biostimulants |

| UC 2 Finland (Boreal) | |
|---|---|
| Minimum tillage, Intercropping, Cover cropping | Green manure, Inoculants |

| UC 3 France (Continental) | |
|---|---|
| Strip cropping, Agro-prairies | Biostimulants |

| UC 4 Hungary (Pannonian) | |
|---|---|
| Intercropping, Soil cover | Cover cropping, Reduced tillage |

| UC 5 Italy (Mediterranean) | |
|---|---|
| Strip tillage on living mulch, Compost-based inputs | Amendments, Biostimulants, Biochar |

| UC 6 Portugal (Mediterranean) | |
|---|---|
| Cover cropping, Minimum tillage | Inoculants |

## Consortium

The SOILRES consortium brings together 21 partners from 10 European countries and Jordan, representing key stakeholders across the agri-food value chain with the expertise and resources to achieve the project's goals.

The project will be engaging diverse stakeholders through co-creation, local task forces, and continuous collaboration to drive adoption and impact.

www.soilres.eu

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