

Issue N 6

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World Soil Day

This year marks the 10th anniversary of [World Soil Day](#), established by the [Food and Agriculture Organization of the United Nations \(UN FAO\)](#) to raise awareness of soil's role in ecosystem services, advocate for its preservation, and promote its sustainable use and management. The 2024 theme, 'Caring for soils: measure, monitor, manage', highlights the importance of accurate soil data and monitoring. Gathering information on soil is essential to better understand its characteristics and functioning and to adopt specific sustainable management measures.

A total of 13 Mission Soil projects are currently monitoring specific soil processes (e.g. soil organic carbon, pollutants, biodiversity) at regional, local, landscape and EU levels, and are developing indicators and cost-effective monitoring methodologies (such as proxies, transfer functions, remote and proximal sensing, Earth observation and artificial intelligence). The Mission project [SoilWise](#) will act as the Mission's soil data and knowledge hub to support stakeholders in making informed decisions towards healthy soil. Soil is also monitored in the Mission Living Labs, where indicators and methodologies to assess changes in soil will be tested.

The Mission is also supporting the design of the [Soil Monitoring Law](#), the first-ever EU legislation on soils, which provides a harmonised definition of soil health and establishes a comprehensive monitoring framework to foster sustainable soil management and the remediation of contaminated sites. Trilogue negotiations, bringing together representatives of the European Parliament, the Council of the European Union and the European Commission, toward a common text for a first-reading agreement began in October 2024.

The Mission cooperates with the Joint Research Centre to define a harmonised soil health monitoring framework at EU level. One output is the [EUSO Soil Degradation Dashboard](#). This dashboard provides a spatial visualisation and sets thresholds for the least healthy soils through 19 indicators.

Project Spotlight

This project spotlight features an interview with **Prof. David Robinson**, Principal Research Scientist at the [UK Centre for Ecology and Hydrology](#) (UKCEH),

organisation partner in the Mission Soil project [AI4SoilHealth](#). With soil monitoring as the central theme of this newsletter, Prof. Robinson's insights provide a unique perspective on the project's critical work in tracking soil health. In this interview, he shares insights on some of his team's achievements in soil monitoring, and the broader importance of the Mission Soil's efforts for Europe's agricultural and environmental future.



David Robinson, AI4SoilHealth project

Can you tell us about AI4SoilHealth's work on soil monitoring?

We work collaboratively with partners like the Joint Research Centre on tasks ranging from developing [novel soil indicators](#) and in-field [sensing](#) tools to biological assessments using DNA. UKCEH brings unique expertise in long-term soil monitoring, thanks to our [Countryside Survey](#), which has tracked UK soil health for nearly 50 years. Using a statistically robust, stratified random approach, we monitor key indicators such as soil carbon, pH, bulk density and nutrients. Our data and expertise significantly contribute to the Mission Soil [data cube for Europe](#), supporting a broader understanding of soil health.

What are some of the major accomplishments your team has achieved in soil monitoring so far?

Our Countryside Survey highlights the importance of long-term monitoring to track soil conditions and changes over time. For example, we've observed a pH increase of over half a unit in some UK areas, demonstrating [recovery of UK soils](#)

[from European acid rain](#). We also develop innovative indicators for assessing soil organic carbon (SOC) across Europe, such as exploring the [SOC-to-clay ratio](#) and its connection to soil structure. These efforts enhance our understanding of soil health on a continental scale.

What do you enjoy most about working on this project?

Long-term monitoring is perhaps the most critical work we do as soil scientists. Our team includes a new generation of scientists dedicated to understanding how soils respond to pressures like land management, climate change and pollution. Long-term monitoring provides the only reliable evidence for assessing soil responses to these pressures, helping us address potential impacts that could threaten food and environmental security.

Why is Mission Soil's work important for Europe?

Soil is a complex but essential resource, underpinning food production, water quality and climate regulation. The Mission Soil acknowledges this and aims to stabilise and reverse the degradation currently affecting about 62% of EU soils. If we ignore this challenge, we risk facing severe consequences, as the United States did during the 1930s Dust Bowl. The Mission Soil is acting to prevent similar outcomes in Europe, working towards sustainably managed, healthy soils by 2050.

Mission Update

Official launch and celebration of the first 25 Mission Soil Living Labs

The Mission Soil is off to an exciting start with the launch of its first 25 Living Labs, the pioneers of the targeted network of 100 Mission Soil Living Labs and Lighthouses to be set up across Europe, all working toward healthier, more resilient soils.

Funded under the dedicated 2023 Mission Soil topics through five pioneering projects - [GOV4ALL](#), [iCOSHELLs](#), [LILAS4SOILS](#), [LivingSoiLL](#), and [SOILCRATES](#) - these 25 Mission Soil Living Labs are already starting their co-creation activities with local stakeholders to tackle pressing soil health issues such as soil structure and biodiversity loss, erosion and pollution across different European

landscapes. All five Living Labs projects will also contribute to improve soil literacy in society.

During the European Mission Soil Week 2024 in Brussels, these Living Labs were celebrated in a special ceremony recognising their vital role in preserving soil health as well as soil restoration.



Dive deeper into each Living Lab's goals, focus, and planned work and start planning potential collaborations: explore the comprehensive [catalogue](#) developed by [SOILL-Startup](#) project.

The Mission Soil Manifesto: a growing community

The Manifesto has now gathered over 3,100 signatures worldwide, including 600 from legal entities, [all publicly accessible here](#). Among the newest signatories are [AGROBIO](#), the Portuguese Association for Organic Agriculture; [CinSOIL](#), focused on carbon insetting at the farm level (DE); [Svensk Kolinlagring](#), connecting stakeholders in soil carbon (SE); [Norges Vel](#), a Norwegian non-profit organisation working on sustainable food production; [ekolive](#), dedicated to soil regeneration; and the [Latvian Organic Agriculture Association](#).

This network includes a wide range of local and regional authorities, as well as other public bodies, all working toward healthier and more resilient soils.

Click the "more" button below to sign the Manifesto and join the Mission Soil community!

[more](#)

Meet the Mission Soil Board - Video



Get to know the Mission Soil Board, a group of 15 independent experts providing strategic advice and support for the Mission's implementation and activities. Learn more about the Mission Board's work and their thoughts on why protecting soil health is essential for our planet and future.

[more](#)

The Mission Soil announces its first Ambassadors: champions of soil health across Europe



Discover the Mission Soil Ambassadors, a diverse group of soil health advocates committed to raising awareness of the Mission and its objectives. These passionate individuals are leading efforts to bridge the gap between civil society, policymakers and sustainable soil practices. Click 'more' to meet our first Ambassadors and learn how they are driving action for a sustainable future.

[more](#)

Mission Soil funds 21 new projects to help preserve and restore soil health by 2030



21 new projects are being funded under the Mission Soil (3 projects jointly with Missions Oceans&Waters and Climate Adaptation), with over EUR 170 million invested to address soil health challenges across Europe. These projects, involving over 500 participants from 37 countries, aim to deliver innovative solutions, from Living Labs to combating desertification and improving soil-friendly practices. Learn more about the projects and their role in achieving the Mission's goal of restoring soil health by 2030.

[more](#)

Introducing the Mission Soil project hub



Discover the new Mission Soil project hub – a comprehensive resource for exploring projects funded under the Mission and other related initiatives. The hub offers an accessible overview of the growing Mission project portfolio, allowing you to track project goals, activities and outcomes, as well as their alignment with Mission objectives. You can easily search by Mission objectives,

funding programme, status and country, with the option to download data for free.

[more](#)

Thank you for joining the European Mission Soil Week!



The Mission Soil annual event was a resounding success, bringing together key stakeholders to tackle soil health challenges and showcase innovative solutions. Over the two days, the event hosted around 250 in-person participants, with online attendance peaking at 268. The third day was dedicated exclusively to Mission Soil projects, which worked together to maximise synergies. The European Mission Soil Week fostered collaboration through discussions, field visits and engaging sessions, reinforcing our commitment to healthier soils across Europe. If you missed it, don't worry - you can read about the event in [this article](#) and find the recordings of the plenary sessions by clicking the "more" button below. Stay tuned for the event report and the post event video that will be available soon!

[more](#)

Project News

Innovating with biowaste for healthier soils



The Mission Soil project 'Enabling underused biowaste feedstocks into safe and effective market-ready soil improvers' (bioSOILUTIONS) has [released a new animated video](#) showcasing its innovative approach to tackling soil degradation. By transforming biowaste into sustainable soil improvers, bioSOILUTIONS is helping to restore soil health across Europe. From insect to water waste, the project is developing new biofertilisers in collaboration with key stakeholders.

BIOservicES completes major milestone in soil research



The Mission Soil project 'Linking soil biodiversity and ecosystem functions and services in different land uses: from the identification of drivers, pressures and climate change resilience to their economic valuation' (BIOservicES) has completed its [ambitious soil sampling campaign](#). The project has successfully collected around 7,500 samples across 25 experimental sites in just over two months. This extensive effort, involving diverse biogeographic regions, not only highlights the project's scale but also the challenges faced – ranging from flooding and drought to difficult terrain. The insights gained from these samples will enhance our understanding of soil ecosystems and their resilience to climate change.

Explore the innovative case studies of the HuMUS pilot projects!



The Mission Soil project Healthy Municipal Soils (HuMUS) is [advancing with its pilot projects](#) featuring soil sommeliers, urban agroecology and even vegetable cultivation by prison inmates! These innovative projects aim to foster dialogue and collaboration among over 300 stakeholders to tackle soil quality challenges in their communities. By implementing participatory governance methods, HuMUS is paving the way for sustainable soil management at local and regional levels.

iCOSHELLs project launched to bolster soil health restoration in Europe



[Kicking off in Gothenburg, Sweden](#), the Mission Soil project 'Innovative co-creation soil health Living Labs' (iCOSHELLs) will collaborate with Living Labs in countries including Spain, Greece and Italy to develop and test strategies aimed at restoring soil health. iCOSHELLs will focus on reducing pollution, enhancing soil structure, and improving soil literacy. The project's goal is to create scalable, science-based solutions for healthier soils by 2030.

PHISHES project kicks off to safeguard European soils with advanced simulation tools



[The Horizon Europe project PHISHES started on September 2024](#), is a four-year initiative aimed at safeguarding European soils through advanced simulation tools. [PHISHES](#) stands for Physically-Based Integrated Soil Health Simulation Platform, which is also the main planned output. Coordinated by DHI, the project brings together nine expert partners from across Europe, encompassing soil science, hydrology, and policymaking.

Soil News

New report on soil health in Europe

The new [State of Soils in Europe 2024](#) report, presented at the [EU Soil Observatory Stakeholder Forum](#), provides an in-depth analysis of soil degradation across the EU and neighbouring countries, including Ukraine,

Türkiye, and the Western Balkans. The findings paint a concerning picture, revealing that soil degradation has worsened in recent years. The report highlights urgent calls for action, with soil erosion alone estimated at 1 billion tonnes per year, affecting 24% of EU soils, primarily in cropland. Projections suggest a further 13-25% increase in erosion by 2050.

New study on link between soil health and primary productivity across Europe

Conducted by EU Soil Observatory scientists in collaboration with the Universities of Zurich and Tartu, [the study covers 588 sites from 27 countries](#). It reveals that soil health is significantly higher in woodlands compared to grasslands and croplands, with woodlands showing 31.4% and 76.1% higher soil health scores, respectively. The research highlights that while soil health positively impacts productivity in croplands and grasslands, climate is the primary driver of woodland productivity.

FAO and WFP join forces to clear mines and restore agricultural land and soils in Ukraine

In Ukraine, war-related mines and explosive remnants have turned once-productive farmland into hazardous minefields. To address this pressing issue, the UN Food and Agriculture Organization (FAO) and the World Food Programme (WFP) [have launched a joint initiative](#) focused on clearing mines and assessing soil health to help farmers return to their fields and restore food production. To support the soil health assessment component of this initiative, FAO has partnered with the Belgian Soil Laboratory Network (BESOLAN) to develop tailored training programmes for Ukrainian scientists from institutions responsible for assessing and managing soil chemical contamination. FAO aims to train 25 Ukrainian participants on soil and groundwater contamination by March 2025. This crucial work to combat war-related contaminants is key to restoring agricultural productivity and ensuring food safety and security in the region.

Discover the Mission Soil winners of the EU TalentOn competition!

The [EU TalentOn competition has announced its winners](#) at the Silesian Museum in Katowice, bringing together 108 young researchers from 38 countries to address societal challenges aligned with the EU Missions. Participants were divided into 27 groups of four, each pitching their innovative projects to an international jury. The first prize in the Mission Soil category was awarded to the ReviSoil team, who presented cutting-edge solutions for enhancing soil health.

The second prize went to the SOILution team. Together, all winning projects shared a total prize pool of EUR 75,000.

OTHER NEWS

SmartField: pioneering solutions to nitrogen challenges in agriculture

The [Novo Nordisk Foundation, a signatory of the Mission Soil Manifesto, has awarded up to DKK 134 million](#) (around EUR 18 million) to the Danish Technological Institute for the development of SmartField, an innovative platform aimed at tackling the urgent environmental challenges posed by nitrogen in agriculture. Designed to significantly reduce nitrous oxide emissions and nitrate leaching, SmartField will offer advanced measurement infrastructure and data models to help farmers implement effective solutions. With the potential to lower N₂O emissions by 20-30% by 2030, this multi-stakeholder initiative positions Denmark at the forefront of sustainable agricultural practices, showcasing how innovative research can drive meaningful climate action.

Introducing Green Assist: empowering sustainable investments

The Green Advisory Service for Sustainable Investments Support, known as [Green Assist](#), is an initiative under InvestEU, funded by the LIFE programme. With a budget of up to EUR 30 million, Green Assist aims to create a robust pipeline of impactful green investment projects across various sectors, including natural capital and the circular economy. Project promoters and financial institutions can access tailored advisory services from a pool of distinguished experts at no cost, empowering them to develop and implement sustainable projects that align with the goals of the European Green Deal Investment Plan.

Young scientists take action to tackle societal challenges

At the recent EU Contest for Young Scientists, [aspiring innovators showcased their groundbreaking projects](#) addressing pressing societal issues, from nitrogen pollution to battery recycling. Four scientists received top honours for their work, each winning EUR 7,000. Among them, Piotr Olbryś from Poland explored environmentally friendly lithium-ion batteries, while Nikhil Vemuri developed a tool to optimise fertiliser use, reducing nitrogen runoff in farming.

Upcoming events

[From Soil to Food: Dialogues for an Integrated Approach to Sustainability](#) (Florence, Italy, 5 December 2024)

On the occasion of World Soil Day, the HuMUS project, coordinated by the Association of Municipalities of Tuscany (ANCI Toscana), is organising an initiative to explore the interconnection between soil and food through the prism of European, national and regional policies. At a crucial moment for the future of the planet, Italian regional and local authorities, and experts will discuss innovative strategies and sustainable practices aimed at protecting the soil, ensuring food security and promoting development models in harmony with the environment.

[EU Agri-Food Days](#) (Brussels, Belgium, 10–12 December 2024)

Organised by the European Commission's Directorate-General for Agriculture and Rural Development, this three-day event will bring together stakeholders from across the EU's agri-food system to explore the latest developments in agriculture, policy options, and market trends. Kicking off with a vision for European agriculture, each day will address essential topics: Day 1 will focus on the experiences and perspectives of European farmers, while Day 2 will dive into market trends and trade policies for sustainable competitiveness. The final day will spotlight practical insights on digitalisation in agriculture, with farmers sharing firsthand experiences of how digital tools are enhancing resilience and sustainability in the sector.

[Forum for the Future of Agriculture \(ForumforAg\) Annual Conference](#) (Brussels, Belgium, 1 April 2025)

The conference promises a dynamic programme featuring live broadcasts, moderated panel discussions, interactive sessions, and networking opportunities. Organised by the European Landowners' Organization (ELO) and Syngenta, this key event will take place both in Brussels and online. Stay tuned – registration opens later this year!

As part of the event, the prestigious Land and Soil Management Award will recognise outstanding sustainable practices that improve soil health and promote responsible land stewardship. Farmers, landowners and organisations are [invited to apply until 31 January 2025](#) for a chance to win a EUR 5,000 prize and gain recognition on a national and European scale.

[EUROSOIL 2025](#) (Seville, Spain, 8–12 September 2025)

Europe's largest soil science event, EUROSIL 2025, is expected to attract over 2,000 soil scientists, professionals, and businesses. Key features will include the first European Soil Judging Contest, where participants will test their skills in understanding and evaluating soil, and the EUROSIL Expo, a showcase of new technologies, products, and services in soil science. [Registration](#) and [abstract submission](#) are now open, with early bird discounts available until 31 March 2025. Reduced fees are offered for students, retired scientists, and participants from developing countries. Visit eurosoil2025.eu for more details.

Past events

[Soil Health: Current Status and Future Needs](#) (Chania, Greece, 7–9 October)

The conference brought together scientists, policymakers and stakeholders to address the pressing challenges facing soil health in today's changing world. Luis Sanchez Alvarez, (Head of Sector at the European Commission's Directorate-General for Agriculture and Rural Development) presented the Mission Soil, highlighting achievements, opportunities and challenges. Key sessions explored soil monitoring and mapping, restoration of degraded soils, and the role of microbiota in soil health, providing novel knowledge to support the European Green Deal and Sustainable Development Goals. The event also emphasised the need for enhanced frameworks and operational approaches to better implement soil health practices, driving sustainable agroecosystems and informing critical policy decisions.

[Moët Hennessy – World Living Soils Forum](#) (Arles, France, 9–10 October)

The second edition of the Forum, co-organised by Moët Hennessy and ChangeNOW, brought together more than 500 participants in Arles and 100 participants in the two satellite events in China and the United States. Scientists, institutions, start-ups, farmers, NGOs and executives from both the private and public sectors joined the 70 sessions of roundtables, keynotes, workshops and pitches. The event, involving 180 speakers, among which Kerstin Rosenow, Head of Unit Research and Innovation at the European Commission's Directorate General for Agriculture and Rural Development, who participate in a session on soil health indicators. The programme was structured around four tracks highlighting the major challenges faced to support the agricultural and viticultural transition. During this second edition, [a call for collective action](#) was launched, with the aim of mobilising even more widely around the need to preserve and regenerate soils.

[9th International Symposium of Interactions of Soil Minerals with Organic Components and Microorganisms](#) (ISMOM 2024) (Tsukuba, Japan, 15–18 October)

The symposium brought together experts to explore critical topics in soil science, including climate change mitigation, soil carbon sequestration, and modelling soil carbon and nitrogen dynamics. Hosted by the International Union of Soil Science, the symposium emphasised the intricate relationships between soil minerals, organic matter and microbes, which are key to understanding and improving soil health. Key sessions covered a range of topics, such as the feedback between soil structure and mineral-organic-microbe interactions, bio-weathering, and advanced techniques to study interfacial reactions. With a focus on applying this knowledge to land management and carbon policymaking, the symposium highlighted the role of soil processes in global environmental challenges.

[4th EUSO Stakeholders Forum](#) (online, 21–23 October)

The forum brought together a diverse range of participants – from soil scientists and policymakers to land managers, NGOs and citizens. Hosted by the EU Soil Observatory (EUSO) and organised by the Joint Research Centre, the event served as an inclusive platform to promote public engagement and drive meaningful societal change in how we manage our soils.

The event highlighted the critical importance of healthy soils for achieving climate goals, preventing biodiversity loss, and ensuring sustainable food systems. Key topics included the Soil Monitoring Law, the launch of the 'State of soils in Europe' report, and discussions on global soil health policies. The introduction of the EUSO Working Group on Nutrients and sessions on soil literacy and the intersection of soil sciences and arts added depth to the forum's agenda.

[States general for soil health – 3rd edition](#) (Rimini, Italy, 7 November)

The conference organised by ECOMONDO highlighted the critical role of carbon farming and nature-based solutions in soil regeneration and climate neutrality. Participants explored European policy updates and best practices for soil health across various land uses. A notable presentation by Kerstin Rosenow, Head of Unit Research and Innovation at the European Commission's Directorate-General for Agriculture and Rural Development, provided an update on the Mission Soil, offering insights into the status of Mission Soil projects across Europe. The event also featured discussions on Italy's approach to regenerative agriculture and the importance of soil literacy in local communities.

[Budapest Soil Health Forum](#) (Budapest, Hungary, 4 December)

The forum, whose conclusion coincided with the high-level closing event of the Agricultural Chapter of the Hungarian presidency of the Council of the European Union, brought together leading experts, researchers and practitioners to explore the latest advancements in artificial intelligence (AI) and its applications in enhancing soil health. Throughout the forum, attendees benefited from insightful presentations, networking opportunities and collaborative discussions that aimed to push the boundaries of soil health through innovative AI solutions, monitoring techniques and effective soil management practices.

The forum consisted of four key events, including an international [conference organised by the Mission Soil project AI4SoilHealth](#) ('Accelerating collection and use of soil health information using AI technology to support the Soil Deal for Europe and EU Soil Observatory'). The conference brought together leading experts, researchers and practitioners to explore the latest advancements in applying AI to enhance soil health. The event featured insightful presentations and collaborative discussions on key topics such as AI-driven soil analysis, predictive modelling for soil management, and innovative approaches to sustainable agriculture.

Click the 'more' button to discover other events on the Mission Soil Platform.

[more](#)

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