



TERRASAFE

Cultivating resilience, restoring the earth.

**Innovations for empowering
communities in Europe and
North Africa to combat
desertification**



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Co-funded by
the European Union



UK Research
and Innovation

NEWSLETTER

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Newsletter #3

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Editorial

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TERRASAFE Innovations Lead



Selecting Innovative Solutions for Healthier Soils

This has been an important time for TERRASAFE. Over the past few months, we have been through a process of selecting innovations and traditional approaches to tackle desertification and land degradation challenges across our four pilot areas: Cyprus, Romania, Spain, and Tunisia.

Italy, facing unique issues of depopulation and land abandonment, is taking a special social-innovation route instead of testing technological soil solutions. Through this pilot area, we aim to show that counteracting socio-economic drivers of land abandonment is equally important for long-term soil resilience.

The innovation providers developed a total of 57 proposals for implementation at the pilot areas; each of these were tailored to local needs and conditions and with three cost levels per innovation. These proposals included cutting-edge solutions like biochar-compost mixtures, hydrogel soil amendments, and digital irrigation tools.

Local stakeholders—farmers, land managers, and experts—participated in workshops to review, discuss, and rank the proposals. Tom Timberlake will talk more about the selection process on p.9. For each pilot area, three innovations and one traditional and/or organic practice were selected for real-world field trials.

In parallel, Italian stakeholders engaged in a separate participatory pathway to identify social-innovation models capable of strengthening community resilience, rebuilding local governance, and counteracting the abandonment-degradation cycle.

This resulted in the choices presented on pages 6-8 of this newsletter.

The inclusion of one traditional and/or organic practice per pilot area will ensure that local knowledge and practices remain a standard for assessing the added value of innovative solutions.

With the selection process completed, TERRASAFE is moving forward to implement and monitor these nature-based, social and technological innovations. The project's participatory approach ensures that local voices are heard and that the innovations tested are relevant and practical.

Our goal is to help guide future policies and actions for sustainable land management in vulnerable regions.



Photo credit: [Mohamed Fsili](#)

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About TERRASAFE



TERRASAFE is a major five-year project (running 2024-2029) investigating innovations for preventing and reversing desertification.

Our goal is to empower communities to tackle the growing threat of desertification, particularly accelerated by climate change.

We work closely with community members, including farmers, foresters, community groups and local authorities, in five vulnerable regions of Europe and north Africa. Each of these pilot areas faces its own unique challenges, and we have selected innovations to test that are best suited to these unique challenges.

We will promote the wider adoption of TERRASAFE-certified nature-based, technological, and social innovations, and provide policy recommendations that support their uptake to transform the resilience of land and communities to desertification.

TERRASAFE is funded by the EU under Horizon Europe and UKRI (UK Research & Innovation).



Italy:
Land abandonment and depopulation



Spain:
Water scarcity



Romania:
Vegetation decline



Tunisia:
Soil salinisation



Cyprus:
Soil organic carbon decline

Pilot areas

We are working with communities in five countries to test innovations for combatting desertification.





TERRASAFE represented at #MissionSoilWeek

Sofia Corticeiro, Researcher at University of Aveiro in Portugal, represented TERRASAFE during **#MissionSoilWeek**, 5-6th November 2025 at Aarhus University, Denmark. This year, the event was dedicated to investments and business models for soil health, supporting the Horizon Europe Mission 'A Soil Deal for Europe'. Sofia said that it was *"a great opportunity for networking, exchanging ideas, and strengthening collaborations towards sustainable soil management."*



Carob trees better at coping with drought, say farmers

Francisco Pedrero, Segura Centre for Soil Science and Applied Biology and lead for the Terrasafe Spanish pilot area, talks about why farmers in Murcia are switching from Almond to Carob Trees in this YouTube short.

[Watch the short here](#)



Isotech/Terrasafe featured in Cyprus Mail



Eleni Panayiotou from Isotech, one of our project partners whose proposals we are testing in Tunisia and Cyprus, wrote an article in Cyprus Mail about drought in Cyprus. The article, entitled "Cyprus can't afford to forget what water scarcity feels like," made the case for tackling the climate crisis head on by focussing attention and finding solutions.

Cypriot soils are of very poor quality, she explains. The Soil Organic Carbon (SOC) content of productive agricultural land is as low as 1%, when 2% is the threshold of SOC required to sustain soil quality. The lack of water absorbing organic matter exacerbates the problem of drought.

[Read the article here](#)



In Cyprus, we are working with AKTI Project and Research Centre, the Cyprus Institute, and Isotech Ltd. to test innovations aimed at improving soil health.

Photo credit: [Krisztina Papp](#)

TERRASAFE goes to HortiFruit 2025

TERRASAFE representatives from the Water and Plant Production Department at the Centro de Edafología y Biología Aplicada del Segura (CEBAS - CSIC), including Francisco Pedrero Salcedo and Beatriz Lorente Pagán, attended HortiFruit 2025 to share insights and the latest progress of our Spanish pilot area.

The three-day event was a key meeting point for professionals in horticulture, agricultural innovation and farm technology to explore new products, practical tools, and discussions centred on sustainability and resilient farming.



Research visit to Romanian site

From 1 to 11 November, Terrasafe's Martins Martinho, Researcher at Universidade de Aveiro, visited the Romanian site to support the preparation of field trials of the selected innovations.

Says Martinho, *"These first steps are always demanding, but also incredibly rewarding. Over the coming months, this site will help TERRASAFE understand soil processes, test innovative solutions, and strengthen our collective ability to tackle land desertification."*

"It was a very productive visit full of technical discussions, alignment of methods, and great collaboration with our Romanian colleagues. From field sketches to future datasets, the work starts here."



Survey seeks expert opinion on combating desertification

Our sister project, MONALISA, has launched a survey to collect expert insights into the practices, success stories, and challenges related to combating desertification and land degradation in drylands. There is a Euro 500 prize as an incentive! Survey closes 7 December 2025. [Read more here.](#)





TERRASAFE community and technical innovations revealed

In October we announced which desertification-combatting innovations we were going to test, all chosen in close collaboration with farmers, land managers and other community members.

Together, the pilot area partnerships chose seven nature-based, social and technological innovations for combatting desertification.

This selection marks a major landmark in our project. We can now proceed with implementing, monitoring and, ultimately, evaluating the innovations with community members across our pilot sites in Cyprus, Italy, Romania, Spain, and Tunisia.

We will share our progress and the evidence we gather on the environmental effectiveness, economic feasibility and societal impacts of these innovations. We are counting on providing valuable information for land managers on what works to combat desertification, where and why.

Terrasafe innovations



Technical innovations

Agrobiogel



Where it will be tested: Cyprus, Romania, Spain, Tunisia

A gel made from 100% wood that mimics humus. It absorbs and stores water from rain or irrigation in the soil and then slowly releases it back to the plants during dry periods.

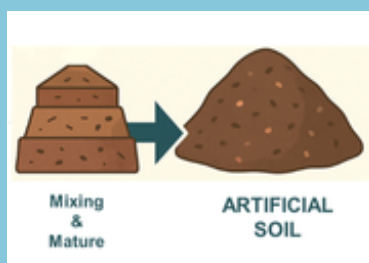
Agrodit



Where it will be tested: Romania, Spain

Soil sensors that provide real-time data on moisture, salinity and temperature. They allow users to respond immediately to sub-optimal environmental and soil conditions before visual symptoms appear.

CETIM



Where it will be tested: Tunisia

CETIM designs artificial soils made from a blend of organic and inorganic waste, to replicate the functions of healthy soils under local conditions. They increase organic matter, improve water retention, and improve soil fertility.

ISOTECH



Where it will be tested: Cyprus, Tunisia

Compost made from green waste that has been gathered through a Circular Green Waste Management Scheme. The compost mitigates soil degradation by mimicking litter/humus, and aims to be much more affordable than standard composts.

Imflorestal



Where it will be tested: Cyprus, Romania, Spain

Imflorestal produces Ecochar – a biochar-compost mixture that restructures soil, adds carbon and reduces the need for water and fertilisers. It is inspired by “terra preta do indio”, or Indian black earth – a very fertile dark soil found in the Amazon basin.

ISOTECH goes to Tunisia

In October, Isotech visited our Tunisian site for the first time after one of its social-innovation proposals to produce high-quality compost at low cost was selected by the Tunisian Pilot Area Partnership.

The visit focused on stakeholder, substrate, and infrastructure mapping activities that will inform the initial design of the composting scheme. Isotech met with the Tunisian Pilot Area Partner at the Arid Regions Institute headquarters to discuss next steps.

[Read more about the trip here.](#)



Social innovations

Community Cooperative



Where it will be tested: Sele Tanagro Alburni, Salerno

The cooperative will manage essential services that would otherwise risk being abandoned. These include support for the elderly, maintenance of public spaces, and the organisation of cultural and tourism activities, as well as new entrepreneurial initiatives based on local resources.

Zero kilometre school canteen



Where it will be tested: Montagna Materana, Basilicata

A zero kilometre school canteen sources all its food from nearby farmers and producers. The initiative turns school canteens into a platform for change, capable of enhancing wellbeing, renewing community identity, and boosting the value of local resources and traditions.

Innovation selection process – all about the stakeholders



Tom Timberlake, TERRASAFE Stakeholder Engagement Lead

Stakeholders, including land managers, agronomists, industry, policymakers and supply chain representatives, were at the centre of selecting our innovations.

Without close co-creation of solutions, it would be unlikely that any of our research and activity would have practical consequences for those working at the front-line of agriculture and land management.

Stakeholders were asked to provide feedback on how they wanted innovations to be presented to them.

They were also asked which metrics and pieces of information – for example, costs, labour needs, expected benefits to name a few - they were most interested in. This feedback led directly into the format and content of the information they were then presented with, which were:

- A five-minute pre-recorded video of each innovation, with subtitles in their local language.
- A printed information sheet for each innovation with detailed, comparable metrics, costs and information - all translated into their local language.

Stakeholders were given opportunities to ask questions, clarify understandings, and discuss the expected effectiveness, feasibility, sustainability, costs, and benefits of each innovation.

A structured discussion session then allowed all participants to express their views on which innovations were most relevant for the local context.

The ranking of each innovation involved three steps:

Step 1: Initial individual vote by all participants, ranking innovations from 12 (most preferred) to 1, including notes on the reasons for their decision and the factors informing it.

Step 2: Group discussion, where aggregated results were presented and any differences or uncertainties were explored.

Step 3: Final ranking by the managers/owners of the sites where the experiment will be conducted - this group sat together and collectively decided upon a ranking of the top six innovations for their pilot area. Other stakeholders were not present for this final ranking to avoid external pressures.

These final rankings were sent to the project coordinator for a budget and feasibility check before final confirmation at project level, where three top-ranked innovations were selected to be tested in each pilot area.

Stakeholders also selected one traditional or organic practice to test alongside the chosen innovations. Watch this space for more information about these traditional practices.



Desertification blogs

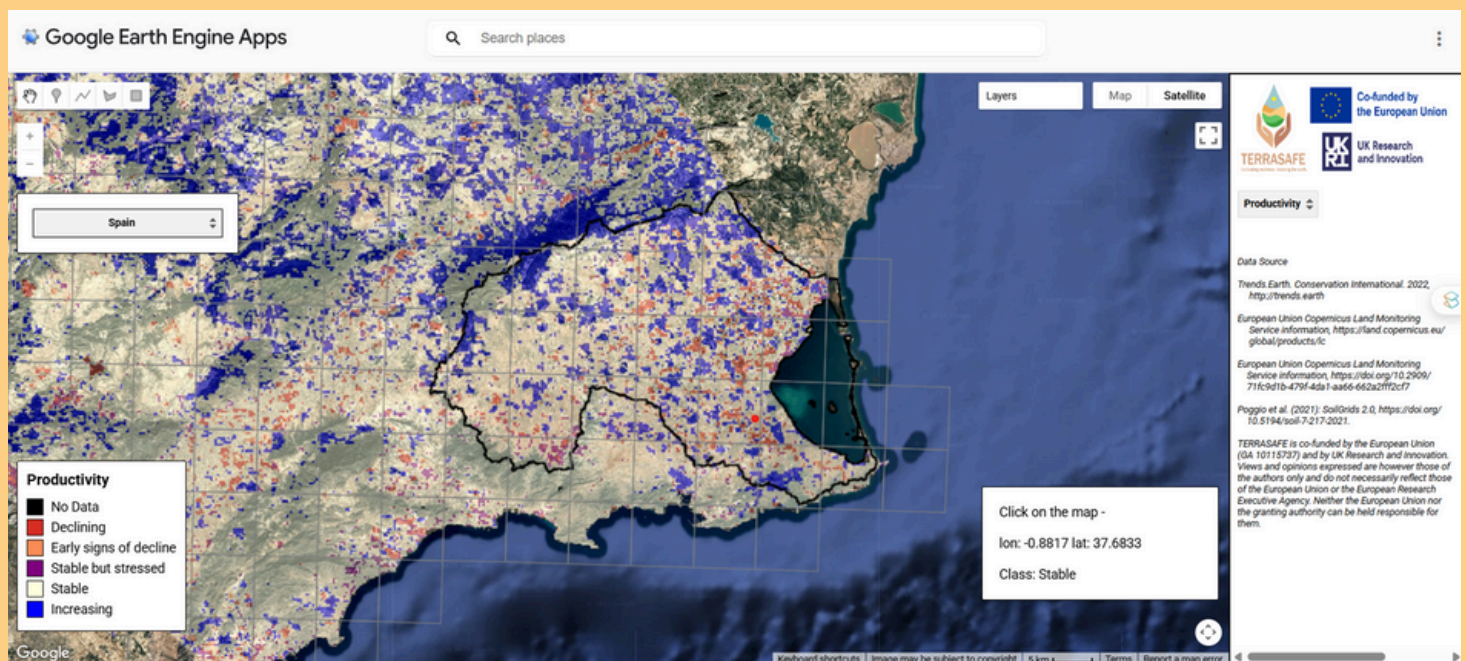


Land productivity as a window into desertification

What is land productivity and what does it have to do with desertification?

Put simply, productivity is the land's ability to grow plants. When land becomes less productive (producing fewer or weaker plants) in drylands, this is often an early sign that desertification may be under way.

Andreas Savvides and Adriana Bruggeman explain how watching productivity changes over time gives us a window into the health of ecosystems and farmland – and helps guide action before it's too late.



A map of a section of Spain highlights where productivity is improving (blue) and where it is declining (orange and red). Image source: TERRASAFE Google Earth Engine App for assessing and combatting land degradation and desertification..

[Read the blog](#)



Transforming food systems to reverse desertification



A new *Nature* paper, co-authored by Professor Lindsay Stringer of TERRASAFE, shows that transforming global food systems could play a pivotal role in bending the curve of land degradation – a major driver of desertification in dryland regions.

The study outlines a series of science-based interventions that can deliver significant climate, biodiversity, and food security benefits if implemented at scale. TERRASAFE'S Charlotte Chivers and Professor Stringer break down the research in this blog.

[Read the blog](#)



Read the full paper:

<https://www.nature.com/articles/s41586-025-09365-5>

Events



World Soil Day is on the 5th December 2025. You can find FAO videos and resources [here](#).



Resilient Soils for a Sustainable Future – British Society of Soil Science 2025 Annual Conference, December 3 - December 5

The British Society of Soil Science 2025 Annual Conference will take place from Wednesday 3 – Friday 5 December in Manchester. The overall conference theme is Resilient Soils for a Sustainable Future. The packed multi-disciplinary event spanning the built, natural environment and agricultural sectors, set at the King's House Conference Centre in Manchester, will provide delegates with a fantastic opportunity to see the latest research and developments within soil science.

TERRASAFE's Charlotte Chivers is attending and will raise awareness about the project throughout. The programme will feature keynote speakers and experts across the two days. This will include a policy session, discussion panel sessions, an invited keynote, oral presentations and posters across the five themes, quickfire presentations, parallel CPD sessions, an art and culture exhibition, and scientific tours on the final day.

More information and registration here: <https://soils.org.uk/annualconference2025/>



Events cont....

Global Soil Biodiversity Conference , April 12, 2026 - April 15, 2026

The 4th edition of the Global Soil Biodiversity Conference (GSB 2026) will bring together researchers, policy analysts, students, and practicing farmers to discuss soil biodiversity with the goals of informing the public, promoting this information into environmental policy, and overall creating a platform for the current and future sustainability of soils.

More information and registration here: <https://globalsoilbiodiversity2026.org/>

European Geosciences Union Summit 2026, 3–8 May 2026.

The EGU General Assembly 2026 will bring together geoscientists from all over the world to one meeting covering all disciplines of the Earth, planetary, and space sciences. The EGU aims to provide a forum where scientists, especially early career researchers, can present their work and discuss their ideas with experts in all fields of geoscience. More information and registration here: <https://www.egu.eu/meetings/calendar/egu/>

TERRASAFE's Adriana Bruggeman, Jan Jacob Keizer, Aman Kumar Meena, Vlad Crisan and Houda Oueriemmi will be convening a session: 'Innovations to assess, combat and prevent land degradation and desertification.' This session aims to contribute to the reversal of desertification through the exchange of knowledge and experiences on the assessment and mitigation of desertification. Click on the link to submit your abstract before 15 January 2026! <https://meetingorganizer.copernicus.org/EGU26/sessionprogramme/58735#>

Soil & Water Resources Management for Combating Desertification in Drylands under Climate Change, 15-18 May 2026.

Aligned with the proclamation of 2026 as the International Year of Rangelands and Pastoralists, which emphasises the crucial role that sustainable management of rangelands and the pastoralist communities play in maintaining ecosystem health, food security, and climate resilience, the International Conference on Soil & Water Resources Management for Combating Desertification in Drylands under Climate Change (SWDCC 2026) aims to serve as a premier global platform for researchers, practitioners, policymakers, and development partners to exchange knowledge, present scientific findings, and foster collaboration on sustainable land and water management in drylands.

Organised by TERRASAFE partner the Laboratory of Eremology and Combating Desertification (LR16IRA01) of the Institut des Regions Arides (IRA) and scheduled to take place from 15 to 18 May 2026 on the culturally rich and ecologically significant island of Djerba, Tunisia, the SWDCC 2026 conference will celebrate the IRA's 50th anniversary.

More information and registration here: <https://www.swdcc-conferences.com/>
For other upcoming events, see our events page: <https://terrasafe.eu/events/>

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Who we are

TERRASAFE is a consortium of research and innovation organisations, coordinated by the University of Aveiro.

Framework and Pilot Area Partners

Innovation partners



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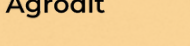
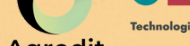
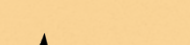
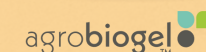
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