

Delisoil

Delivering soil improvers from circular food production processes to boost soil health



Soil improvers application in the Living Lab of Catalonia

Summary

Catalonia is a highly productive agricultural region, but many of its soils suffer from degradation caused by water erosion, loss of organic matter, and nutrient imbalances due to inadequate slurry management. The continuous use of conventional mineral fertilizers has worsened soil compaction, salinization, and biodiversity loss, threatening long-term sustainability. Within Delisoil, field trials on wheat (*Triticum aestivum*) were established to evaluate locally produced soil improvers derived from agricultural by-products. Tested treatments included individual applications of digestate and compost, as well as binary combinations (biostimulant + compost and digestate + compost). All treatments were applied in compliance with regional fertilizer regulations, with a maximum application rate equivalent to 170 kg N ha⁻¹.

To further enhance soil health and plant performance, a pot trial was conducted combining the same treatments with a multifunctional microbial consortium (MC) inoculum, well-established for its efficacy and reproducibility in field applications.

Expected impacts on soil health include improvements in soil structure, fertility, and biological activity through increased organic matter and carbon sequestration, enhanced microbial diversity, better nutrient balance, and improved water retention.

Author:

Yasmina Chourak
Pedro Federico Rizzo
Enric Garcia
Beta technological center
Uvic-UCC

Annamaria Bevivino
Luciana Di Gregorio
Silvia Tabacchioni
ENEA

Country:

Catalonia, Spain

Keywords:

Soil Improvers
Digestate
Compost
Biostimulant

Stakeholders:

Farmers
Agronomists
Agricultural advisors

DeliSoil

Delivering soil improvers from circular food production processes to boost soil health

Practical Recommendations

- Select soil improvers and combinations field-targeted based on the existing soil fertility, organic matter content, and crop nutrient requirements.
- Apply multifunctional microbial consortia composed of synergistic Plant Growth-Promoting (PGP) strains to enhance target crop performance and soil health.
- Apply amendments precisely to comply with nitrogen limits and ensure uniform field distribution.
- Use appropriate machinery for both granular and liquid formulations.
- Incorporate amendments when needed to maximize nutrient efficiency.

Coordinator:

Ansa Palojarvi
Luke
ansa.palojarvi@luke.fi

Contact:

Yasmina Chourak
Beta technological center
yasmina.chourak@uvic.cat

Needs addressed by the practice

The practice supports sustainable soil management by providing alternative nutrient sources, improving soil structure and fertility, and reducing environmental impacts in degraded agricultural soils.

About DeliSoil

The EU-funded DeliSoil project is a four-year initiative that aims to transform food industry byproducts into safe, sustainable, and tailored soil improvers. This project addresses two pressing challenges: the poor recycling of industrial food processing byproducts and the degradation of soil health.

By harnessing a circular approach, DeliSoil will contribute to improving soil health and productivity, supporting the EU Mission "A Soil Deal for Europe" and the Farm to Fork Strategy, as well as other Circular and Bioeconomy Strategies and Plans.



Funded by
the European Union

Funded by the European Union under the Horizon Europe Programme, Grant Agreement No. 101112855 (DeliSoil). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them. Swiss partners (FiBL) have received funding from the Swiss State Secretariat for Education, Research and Innovation (SERI).

Designed by ERINN Innovation