

[Home](#) → [Members details](#) → Montepaldi Long Term Experiment

MEMBER

Montepaldi Long Term Experiment

Living Lab MoLTE | Italy

The Montepaldi Long-Term Experiment (MoLTE) is a field-based research initiative launched in 1991 at the experimental farm of the University of Florence (Montepaldi, San Casciano Val di Pesa, Italy). It compares organic and conventional farming systems under realistic Mediterranean cropping conditions. MoLTE monitors agronomic, ecological, and environmental indicators over time, making it one of the most enduring and data-rich experiments in the Mediterranean region. It serves as a Living Lab for researchers, students, and stakeholders interested in agroecology and sustainable agriculture.

Aim

To evaluate and compare the long-term effects of organic and conventional farming systems on crop performance, soil fertility, biodiversity, and resource use efficiency in Mediterranean conditions, and to support the transition towards more sustainable agriculture through participatory research and knowledge exchange.

Background information

MoLTE was established in 1991 by the University of Florence to address the lack of long-term data on the impacts of organic and conventional farming in Mediterranean environments. The experiment is still ongoing and represents the longest running organic vs. conventional comparison in the region. Over the

longest-running organic vs. conventional comparison in the region. Over the years, it has expanded its focus to include climate change adaptation, energy efficiency, and ecological intensification.

Funding structure

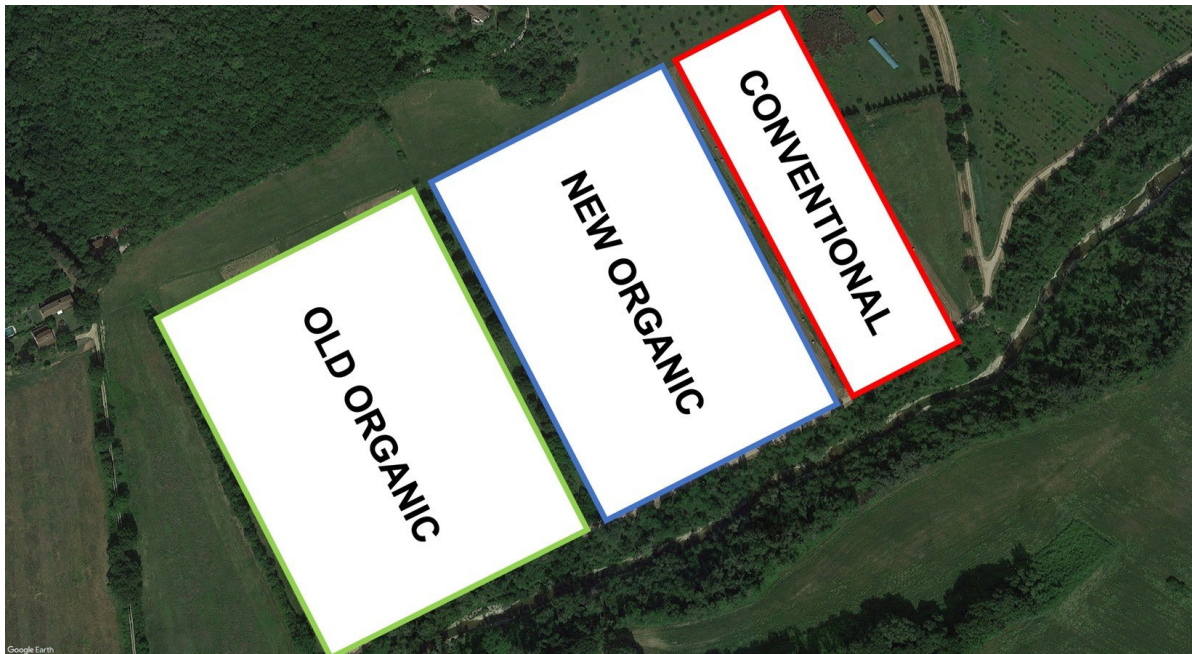
MoLTE is primarily funded through national and European research projects, as well as institutional support from the University of Florence. Additional funding has come from collaborations with public agencies, scientific networks, and private stakeholders interested in sustainable agriculture and agroecology.

Activities

- Long-term field comparison of organic and conventional farming systems;
- Monitoring of soil fertility, biodiversity, crop yields, and environmental indicators;
- Data collection on greenhouse gas emissions and energy use;
- Development and testing of agroecological practices;
- Student training, academic research, and thesis work;
- Collaboration with farmers, policymakers, and other stakeholders.



Overview of the Montepaldi Long-Term Experiment (MoLTE) at the Montepaldi farm (San Casciano Val di Pesa, Italy). Source: MoLTE research team (DAGRI)



Aerial view of the Montepaldi Long-Term Experiment (MoLTE) plots. Three farming systems –two organic and one conventional–are highlighted in different colours. Source: Image created by Dr. Margherita Santoni using Google Earth.

Methods, stakeholder engagements and tools

MoLTE uses replicated field plots with real-world crop management practices. The organic system applies green manure, compost, and livestock manure; the conventional system uses NPK chemical fertilizers and herbicides. Crop rotations differ: six years for organic and three years for conventional.

Stakeholder engagement occurs through open days, participatory research, and collaborative projects.

Achievements

- Over 30 years of continuous data on Mediterranean organic and conventional farming systems;
- Numerous scientific publications on yields, biodiversity, soil health, and energy use;
- Contribution to EU and national policies on sustainable agriculture;
- Creation of a rich dataset for modelling and climate change research;
- Ongoing collaborations with agroecologists, farmers, and institutions;
- Extensive training and education activities for students, PhD candidates, and young researchers in the fields of agronomy, agroecology, and sustainability.

Duplications

PUBLICATIONS



Scientific articles available on the website: <https://www.dagri.unifi.it/vp-475-molte.html?newlang=eng>

Scientific publications:

- Pacini, G.C. et al. (2023). FunBies, a model for integrated assessment of functional biodiversity of weed communities in agroecosystems. *Ecological Modelling*, 486, 110529. <https://doi.org/10.1016/j.ecolmodel.2023.110529>
- Pantani, O.L. et al. (2022). Assessment of the impact of conventional and organic agroecosystems management options and conservation tillage on soil fertility at the Montepaldi Long Term Experiment, Tuscany. *European Journal of Agronomy*, 140, 126575. <https://doi.org/10.1016/j.eja.2022.126575>
- Santoni, M. et al. (2022). Soil microbiome biomass, activity, composition and CO₂ emissions in a long-term organic and conventional farming systems. *Soil Use and Management*. <https://doi.org/10.1111/sum.12836>



Contact

Website: <https://www.dagri.unifi.it/vp-475-molte.html?newlang=eng>

X: https://twitter.com/DAGRI_UNIFI



Facebook: <https://www.facebook.com/dagri.unifi>



Instagram: https://www.instagram.com/dagri_unifi

Tag us!

@DAGRI_UNIFI

#MoLTE #Agroecology #LongTermExperiment #OrganicFarming #SoilHealth
#MediterraneanAgriculture

E-mail: cesare.pacini@unifi.it and margherita.santoni@unifi.it



agroecology.ps@ilvo.vlaanderen.be

Useful links

[Disclaimer and Privacy Policy](#)

[Credits](#)

[Contact](#)

[Subscribe to our newsletter](#)

Follow us [in](#)     

[Manage cookies](#)

Coordinator: Projektträger Jülich (Germany) | Co-coordinator: Agence nationale de la recherche, ANR (France)
