







# b LIVINGAGRO

# *LIVINGAGRO Cross Border Living Laboratories for Agroforestry*

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LIVINGAGRO: Innovation, transfer of knowledge and technology for Mediterranean agroforestry

# In this edition:

- **Field trials in Sardinia**: LIVINGAGRO in action for practical experimentation with innovations in the agroforestry sector
- MAICh at the forefront for innovations in Mediterranean agroforestry with the second Greek brokerage event organized in Crete
- LIVINGAGRO investigates ecological and agroforestry practices used to attract tourists looking for sustainable holidays: a case study from Sardinia
- FROM THE PROJECT PARTNERS Lebanese Agricultural Research Institute (LARI): insight into preparation of the project's e-learning modules
- Upcoming initiatives and events for the next several months

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SardegnaForeste









Field trials in Sardinia: LIVINGAGRO in action for practical experimentation with innovations in the agroforestry sector

In the framework of LIVINGAGRO's identification of innovations for the Mediterranean agroforestry sector, one of the proposed innovations concerns the validation and registration of specific forage seed mixtures for two agroforestry systems: multifunctional olive systems and silvopastoral systems.

Last month, the Italian partner CNR ISPAAM identified the areas in which two experimental and three demonstration field trials will be carried out: Sassari in north-west Sardinia and Monti in north-east Sardinia. Specifically, one experimental and one demonstration field trial will be carried out for an olive grove system, while one experimental and two demonstration field trials will be carried out for a silvopastoral system.

The objective of these field trials is to **identify and register innovative forage seed mixtures for both agroforestry systems**. The innovation of the proposed mixtures consists in the **presence of** 

seeds selected in Sardinia by CNR ISPAAM, such as local accessions of annual selfreseeding medic, clover and ryegrass, which can guarantee a better adaptation to different marginal conditions, as well as to prolonged drought periods. The current situation in the seed market forces the use of allochthonous seeds selected abroad, often with limited adaptability. This represents a major problem, especially when operating in protected natural environments such as Natura 2000 sites.

The innovativeness of the mixtures also lies in the careful combination of perennials and



Figure 1- Multifunctional olive grove system located in Sassari, north-west Sardinia

**self-reseeding annual species**, in order to maximise the adaptive synergies of the mixture by balancing different functional groups, such as legumes with grasses, and fast and slow establishing species. In the **multifunctional olive grove system**, **four different soil management systems will be compared**: i) natural covering (undisturbed); ii) traditional management with surface soil tillage; iii) sowing of commercial forage seed mixtures and iv) sowing of innovative forage seed mixtures. In the field trial, the experimental design is a randomised block design with three replications, while the demonstration field has no replications.

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In the **silvopastoral system**, **three different grazing area management systems are compared**: i) natural pasture; ii) improved pasture with sowing of commercial forage seed mixtures and iii) improved pasture with sowing of innovative forage seed mixtures. Like in the olive grove system,



the design of the experimental field trial in the silvopastoral system consists of three replicates, while the two demonstration trials have no replicates.

Would you like to find out more about these experiments? For more information, please contact LIVINGAGRO partner no. 1 <u>CNR ISPAAM</u> at the following email address: pasquale.arca@ibe.cnr.it.

Figure 2 - Silvopastoral system located in Monti, north-east Sardinia

MAICh at the forefront for innovations in Mediterranean agroforestry with the second Greek brokerage event organized in Crete

On **December 16-17, 2021**, inventors and scientists introduced **19 innovations designed to help solve common problems in the Greek olive, olive oil, and livestock sectors**. Dozens of participants joined presenters online or at the <u>Mediterranean Agronomic Institute in Chania</u> (MAICh) for this free LIVINGAGRO event, with several learning more in one-on-one meetings. Coordinated by Dr. Panagiotis Kalaitzis, Director of the Department of Horticultural Genetics and

Biotechnology at MAICh, this **hybrid event attracted more than 130 individuals**, with the majority tuning in online.

At this second Greek LIVINGAGRO B2B event, presenters introduced **19 innovations related to five main topics**:

## **Re-Using Traditional Practices in Agroforestry**

- Clearing shrubs and sowing a mixture of grass and legumes in agrosilvopastoral systems
- Thinning and pruning trees in silvopastoral systems



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- Adaptive grazing management
- Livestock grazing in olive agroforestry systems
- > Olive tree, wild asparagus and free-range chicken polyculture

## Intercropping and Preparing for Climate Change in Olive Groves

- Chickpea intercropping in olive groves
- Intercropping of olive trees and vetch
- Olive tree-avocado intercropping
- Grafted olive trees resistant to the effects of climate change

## Precision Agriculture

Zen Irriware precision irrigation system



- FruitFlyNet-ii automated monitoring and control system against the olive fly and Mediterranean fruit fly
- MyOliveGroveCoach multi-spectral sensing for the predictive management of Verticillium wilt in olive groves
- > NEUROPUBLIC's gaiasense smart farming system and the LIFE GAIA Sense project
- Gaiasense1 mobile app for smart farming



# Olive Mill Machinery and Health Benefits

New washing and drying system for olives in the mill

Olive depitter/crusher adapted to remove most of the olive peel, contain no plastic or rubber parts, keep temperature stable, and more

➢ The Olive Predictor to predict the health benefits in olive oil before harvesting

## Olive Tree and Olive Oil Authentication

- > DNA-based diagnostic test to authenticate the varietal origin of olive oil
- oliveID, an image-based tool to identify olive cultivars based on a numeric analysis of size, shape, and structure

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Descriptions of all 19 innovations are available in a **Catalogue of Innovations** in both a <u>Greek</u> <u>version</u> and an <u>English edition</u>. Contact information for the innovators follows each description, so those who missed the event can still get in touch with the innovators individually to find out more about innovations that interest them.

After the presentations, both online and in-person participants were invited to schedule one-on-one meetings to learn more from the innovators, allowing stakeholders to ask specific questions relevant to their own situations, and to learn more about the innovations that may be most useful to them. For example, Marianna Devetzoglou, an olive oil sommelier who works in the Exports Department at Oleosophia olive oil company, was pleased by her meetings "with scientific teams with both an



academic and applied outlook, to discuss innovative applications for and beyond our olive trees, helping us deal with resource management, grove management, climate change, and more!"

The majority of the innovators at the event have already met with stakeholders for discussions about the possibility of using their innovations. Part of LIVINGAGRO's Living Laboratories, such connections between audience members and presenters enable the establishment of new



contacts and the sharing of information about innovative ideas, machinery, techniques, and services.

Rather than simply doing research in isolated labs, LIVINGAGRO partners in Italy, Lebanon, Jordan, and Greece have asked farmers, company representatives, policy makers and other stakeholders who work with olive oil and grazed woodlands for **input about the types of problems they need to solve, as well as the most workable solutions**. Many survey respondents indicated a **desire to** 

increase their product's quality, improve plant health and/or soil fertility, reduce their production costs, increase the quantity produced, and reduce their use of chemical products. Innovations were identified to meet those needs as well as others.

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Want to learn more? For more information concerning LIVINGAGRO innovations presented during the second Greek B2B event, please contact Dr. Panagiotis Kalaitzis, email panagiot@maich.gr.

LIVINGAGRO investigates ecological and agroforestry practices used to attract tourists looking for sustainable holidays: a case study from Sardinia

How do Mediterranean agroforestry entrepreneurs attract tourists who are seeking sustainable holidays?



An interesting interview on this topic was carried out by LIVINGAGRO partner no. 5, ATM Consulting, as part of their investigation of the context for the transnational project that aims to identify innovations for multifunctional olive systems and grazed woodlands in the Mediterranean region.

This **case study focused on Ogliastra**, where a tandem between a farm (<u>Tenute il</u> <u>Maggese</u>) and a French tour operator (Sardaigne en Liberté) was achieved. In the

heart of Sardinia, Tenute il Maggese is at the helm of a blossoming consortium of farms where ecological and agroforestry practices are used to attract tourists looking for sustainable holidays.

"We intend to compensate for the fact that Sardinia is an island, and to reach its shores tourists

have to travel on very polluting means of transport, such as the airplane, by offering them an unforgettable experience in accordance with the rhythm and laws of nature," says Stefania Demurtas, who runs the farm along with her husband, Salvatore Marongiu.

**Tenute il Maggese** is based in Tortolì, a municipality in Ogliastra, east-central Sardinia, where saffron, ancient grains and legumes are grown without pesticides or chemical fertilizers.



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Everything started after Stefania took over the farm from her parents. "Since we intended to achieve food self-sufficiency, we started producing cultivars that need fewer growing treatments, so we would not be spending all our time in the fields".



the way trees grow in forests," Stefania explained.

"Through this system, which imitates the stratified development of trees in the wild, it is possible to more than double the number of planted trees, so that the plants needing less light grow below those which need more, ensuring that all of them are able to carry out photosynthesis. In this way, trees grow more together, enriching tightly overall biodiversity". Other key points of the tree plantation technique include water management: in fact, trees are planted on level curves in order to favour the absorption of rain and the management of pruning.

The farm and the tour operator are thus providing tourists with a holiday offer that

Since July 2021, Tenute il Maggese and other farms in the network have been hosting northern European tourists whose visits to Sardinia are arranged by the French tour operator Sardinia Fair Travel (Sardaigne en Liberté).

The tourists help support their work to help the planet. "We planted around 50 fruit trees plus a number of support trees thanks to donations from responsible tourists, to produce biomass mimicking



**reduces their carbon footprint**, even if they are not yet fully capable of quantifying the extent of such a reduction. In addition, Tenute il Maggese also regularly hosts courses on permaculture that are open to all who are interested in the subject.

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FROM THE PROJECT PARTNERS – The Lebanese Agricultural Research Institute (LARI): insight into preparation of the project's e-learning modules

In their capacity as leader of the project's educational activities, project partners at the Lebanese Agricultural Research Institute (LARI) drafted a preliminary plan for LIVINGAGRO's online training activity. The training materials were divided into two modules: one dedicated to Agroforestry for oliviculture and the other focused on Agroforestry for grazed woodlands. Each module includes several sub-modules which



were elaborated with the help of experts from various LARI stations with different areas of specialization.

The LIVINGAGRO team at LARI shared their proposal with the Greek and Italian project partners, who then contributed to the elaboration of the e-learning material.



The final output of this activity will consist of high-quality multimedia resources made available by the LIVINGAGRO project for its stakeholders. Target groups include universities, SMEs, policy makers, engineers agricultural and technicians, and other citizens. The goal is to provide technical support by proposing and explaining effective solutions to problems faced in the agroforestry sector.

Implementation of this activity is ongoing. The e-learning modules will start to be published and delivered once the project's ICT platform is ready.

Want to learn more? For more information about LIVINGAGRO's e-learning modules, please contact Dr. Peter Moubarak, <u>pmoubarak@lari.gov.lb</u>.

## Upcoming initiatives and events

- ✓ Field visit in Tuscany on April 21-22, 2022 in collaboration with the "<u>Boscolamento</u>" project
- ✓ Organization of a LIVINGAGRO parallel session within <u>EURAF Nuoro</u> on May 16-20, 2022

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- ✓ Organization of a LIVINGAGRO parallel session within <u>SISEF Congress</u> taking place in Orvieto from May 30 to June 2, 2022
- ✓ Participation at the <u>Joint Seminar of the FAO CIHEAM networks on Pastures and Forage</u> <u>Crops and on Sheep and Goat Nutrition</u> taking place in Catania on September 27-29, 2022 with LIVINGAGRO presentation and annexed project Steering Committee meeting
- ✓ More about dates of other project-related initiatives (B2B events, field visits, etc.) will be available soon via our project website and social media.

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The **2014-2020 ENI CBC Mediterranean Sea Basin Programme** is a multilateral Cross-Border Cooperation (CBC) initiative funded by the European Neighborhood Instrument (ENI). The Programme objective is to foster fair, equitable and sustainable economic, social and territorial development, which may advance cross-border integration and valorize participating countries' territories and values. The following 13 countries participate in the Programme: Cyprus, Egypt, France, Greece, Israel, Italy, Jordan, Lebanon, Malta, Palestine, Portugal, Spain, Tunisia. The Managing Authority (JMA) is the Autonomous Region of Sardinia (Italy). Official Programme languages are Arabic, English and French. For more information, please visit <u>www.enicbcmed.eu</u>.

The **European Union** is made up of 27 Member States who have decided to gradually link together their know-how, resources and destinies. Together, during a period of enlargement of 50 years, they have built a zone of stability, democracy and sustainable development whilst maintaining cultural diversity, tolerance and individual freedoms. The European Union is committed to sharing its achievements and its values with countries and peoples beyond its borders.

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