

AgrEcoMed

FOSTERING AGROECOLOGICAL TRANSITION

“New AGRoecological approach for soil fertility and biodiversity restoration to improve ECONomic and social resilience of MEDiterranean farming systems”

Deliverable 5.2
Educational digital lab (online)

Document information

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Acronym and abbreviations

AgrEcoMed	New AGROecological approach for soil fertility and biodiversity restoration to improve ECONomic and social resilience of MEDiterranean farming systems
PRIMA	Partnership for Research and Innovation in the Mediterranean Area
MEL	Monitoring, Evaluation and Learning platform
WP	Work package

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Executive summary

The AgrEcoMed project, funded under the European Union's Horizon 2020 research and innovation program PRIMA and Grant Agreement PRIMA21_00018 is a research project aimed to fill the research gaps for implementing a biodiversity-based strategy for primary crops as cereal farming systems through an Agroecological approach adapted to environments in Mediterranean countries, efficient use of natural resources, reduction of pollution, circular economy. Such a goal will be achieved through innovative approaches to support the sustainable production of staple foods in the scenario of the present and future climate changes. To support the strategic coordination and overall management structure of this project, a project execution plan is essential. This document is Deliverable 5.2, " Educational digital lab (online)," which aims to create an online educational digital lab that facilitates learning and knowledge sharing about new farming systems for wheat and medicinal plants. This deliverable supports the overall goal of promoting sustainable agricultural practices and enhancing the skills of farmers, particularly young people and women, in the Mediterranean region. The expected outcomes include increased accessibility to educational resources, improved knowledge among stakeholders, and enhanced collaboration within the agricultural community, ultimately leading to the adoption of innovative farming practices.

Keywords: PRIMA, AgrEcoMed, project handbook, Educational digital lab, dissemination, capacity building

1. AgrEcoMed project

AgrEcoMed is a 36-month Research and Innovation Action (RIA) project under Grant Agreement No PRIMA21_00018 aiming to fill the research gaps for implementing a biodiversity-based strategy for primary crops as cereal farming systems through an Agroecological approach adapted to environments in Mediterranean countries, efficient use of natural resources, reduction of pollution, circular economy. The effective start of the project is 23/05/2022 and the project ends 36 months later, on 31/05/2025. The AgrEcoMed consortium consists of 8 partners from 4 countries (including two EU and non-EU countries). The project is coordinated by the University of Basilicata (UNIBAS, Italy). The list of Project Participants is included in the Grant Agreement, in the Consortium Agreement, and presented in Table 1. The project has an overall budget of 1,308,051.15 €. The budget detailed per beneficiary and the corresponding EU contribution of each beneficiary is detailed in Annex 2 to the Grant Agreement – Estimated budget of the action.

Table 1. Partners of the AgrEcoMed project and representatives.

Participant No *	PI name	Organization	Short name	Country	Type
P1	Michele Perniola	University of Basilicata	UNIBAS	Italy	Higher Education Institution
P2	Luigi Roselli	University of Bari	UNIBA	Italy	Higher Education Institution
P3	Maria Assunta D'Oronzio	Council for Agricultural Research and Economics	CREA	Italy	Public Research organization
P4	Ines Yacoubi	Centre of Biotechnology of Sfax	CBS	Tunisia	Public organization
P5	Hanine Hafida	University Sultan Moulay Slimane Beni Mellal	USMS	Morocco	Higher Education Institution
P6	Said Ennahli	National School of Agriculture	ENAM	Morocco	Public Research Organisation
P7	Julio Berbel	Universidad de Córdoba	UCO	Spain	Higher Education Institution
P8	Neus Sanjuan Pellicer	Universitat Politècnica de València	UPV	Spain	Higher Education Institution

This document outlines the protocols of methodologies for training, which are integral to the AgrEcoMed proposal. Deliverable 5.4 aims to enhance the skills and knowledge of participants involved in the project, thereby promoting capacity building within the consortium. The established protocols facilitate the standardization of training methodologies across different partners and regions, ensuring consistency in the application of agroecological practices. Furthermore, these protocols serve as a resource for knowledge transfer, allowing for the sharing of best practices and innovative approaches among consortium members, which fosters collaboration and learning. Additionally, the training methodologies will be utilized in workshops and educational programs, supporting the broader dissemination strategy of the project and helping to spread knowledge about agroecological practices to a wider audience. Overall, Deliverable 5.4 is essential for achieving the objectives of the AgrEcoMed proposal by enhancing participant capabilities and promoting effective knowledge transfer within the network.

2.1 Relation of D5.2 with AgrEcoMed objectives

Deliverable 5.2, "Educational Digital Lab," is closely aligned with the overarching objectives of the AgrEcoMed project. It plays a vital role in strengthening the knowledge system among Mediterranean farmers, particularly focusing on women and youth, by serving as a platform for sharing knowledge and best practices. The lab facilitates access to training resources that empower these groups to effectively adopt agroecological practices. Additionally, it promotes capacity building by providing structured training methodologies and resources that enhance the skills and capabilities of participants, enabling them to improve their practices and adapt to changing environmental conditions. The Educational Digital Lab also emphasizes the importance of co-creation and knowledge sharing among stakeholders, fostering collaborative learning environments where participants can engage with each other, share experiences, and develop innovative solutions to common challenges in agroecology. Furthermore, it addresses climate change by providing training on sustainable practices and technologies that help participants adapt to its impacts, thereby contributing to the project's goal of promoting resilience in agricultural systems. A significant objective of AgrEcoMed is to promote gender equality in agroecological practices, and the Educational Digital Lab is designed to be inclusive, offering targeted training and resources for women and young people, empowering them to take active roles in agricultural innovation and decision-making processes. Lastly, the lab serves as a key tool for disseminating knowledge and results from the project, ensuring that information reaches a broad audience and contributes to the overall impact of AgrEcoMed. In summary, Deliverable 5.2 is crucial for achieving the project's goals and ensuring the long-term sustainability of agroecological practices in the Mediterranean region.

2.2 Relation of D5.2 with other WP and deliverables

Deliverable 5.2, "Educational Digital Lab," is integral to the AgrEcoMed project and has several key relationships with other work packages (WPs) and deliverables:

- **Connection to WP5 (Strengthening Knowledge Systems):** Deliverable 5.2 is a core element of WP5, which focuses on enhancing knowledge systems and cooperation among Mediterranean farmers, particularly women and youth. The Educational Digital Lab serves as a platform for implementing training methodologies that promote capacity building and knowledge sharing among stakeholders.

Integration with Other Deliverables in WP5:

- **Deliverable 5.1 (Protocols of Methodologies for Training):** The Educational Digital Lab will utilize the protocols established in Deliverable 5.1 to ensure that training is standardized and effective. This relationship ensures that the methodologies are applied consistently across different training sessions.
- **Deliverable 5.3 (Interviews):** Insights from interviews conducted in Deliverable 5.3 can inform the content and structure of the Educational Digital Lab, ensuring that the training materials are relevant and tailored to the needs of the participants.
- **Deliverable 5.6 (Workshops):** The Educational Digital Lab will support the workshops organized under WP5 by providing digital resources and training materials that can be used during these events, facilitating hands-on learning and practical application of agroecological practices.
- **Collaboration with WP6 (Dissemination of Results):** Deliverable 5.2 supports WP6 by providing a digital platform for disseminating training materials and resources. This collaboration ensures that the knowledge generated through the Educational Digital Lab is effectively communicated to a broader audience, enhancing the project's impact.

- **Link to WP1-4 (Scientific Activities):** The Educational Digital Lab may incorporate findings and innovations developed in WPs 1-4, which focus on scientific research and agroecological practices. By integrating the latest research into the digital training resources, Deliverable 5.2 ensures that participants are equipped with up-to-date knowledge and practices.
- **Support for Gender Equality Initiatives:** The Educational Digital Lab is designed to promote gender equality by providing accessible training resources specifically aimed at empowering women and youth in agroecological practices. This aligns with specific tasks within WP5 that focus on enhancing the involvement of marginalized groups.

In summary, Deliverable 5.2, "Educational Digital Lab," is interlinked with various work packages and deliverables within the AgrEcoMed project, enhancing knowledge transfer, capacity building, and the overall dissemination of agroecological practices. Its integration with other components of the project ensures a cohesive approach to achieving the project's objectives.

2. Premise

Agroecology can be considered an approach to agriculture and food systems that integrates the use of ecological principles and biological cycle methods into traditional systems for the purpose of designing and managing more sustainable agriculture. More than a discipline, agroecology has roots in agricultural sciences, environmental movements, and rural development studies. For this reason, there is now substantial convergence on the idea that the term agroecology reconciles three dimensions: scientific discipline, social movement, and cultural practice (Francis, Lieblein et al., 2003; Méndez, Bacon et al., 2013; Altieri, 1995; van der Ploeg, Barjolle et al., 2019).

As a science, agroecology prioritizes research, participatory approaches, and interdisciplinarity that include the study of the entire food system, embracing ecological, economic, and social dimensions and their principles in the design and management of sustainable agriculture (Gargano, Licciardo et al., 2021).

As a set of agricultural practices, agroecology is based on the sustainable use of natural resources through the use of local varieties and breeds, crop rotation, polyculture, and the intercropping of cover crops or ecological service crops, on the knowledge and priorities of local farmers, and on the wise use of biodiversity to provide benefits at environmental, economic, social, local, and global levels (Gargano, Licciardo et al., 2021). Agroecological practices support the use of low-external-input techniques or those that mimic natural processes to produce food while enhancing the sustainability of agroecosystems (Migliorini, Wezel et al., 2017), and they value ecological processes and ecosystem services (soil, water, and biodiversity conservation, natural regulation of epidemics, etc. (Wezel, Bellon et al., 2009). Furthermore, agroecological practices promote improvements when farmers share their experimentation and research experiences aimed at making agriculture more sustainable and resilient [5]. Examples of agricultural practices implementing agroecological principles include organic farming, agroforestry, and mixed farming.

As a movement, agroecology defends farmers and rural communities, local and short food chains, the diversity of seeds and breeds, and the quality of food. Agroecology is the answer to how to transform raw materials for the food system and how to repair the rural context damaged by intensive industrial agricultural production. For the agroecological approach, food production generates local knowledge, promotes social justice, and strengthens the identity and culture of rural areas (van der Ploeg, Barjolle et al., 2019).

The agroecological approach has recently taken on an increasingly central role in the challenges of food systems and climate change adaptation, and the implementation of agroecological innovations finds in design

and co-creation¹ the most effective methodological approaches for implementation.

In this perspective, Tasks 5.1 and 5.2 of the AgrEcoMed project aim to promote the agroecological transition of agricultural enterprises, with particular attention to those run by young people and women, by strengthening the system of knowledge and cooperation among Mediterranean farmers.

To this end, the implementation of on-field training workshops is planned, aimed at entrepreneurs interested in creating a sustainable, resilient, biodiverse, and socially just production system. The workshop approach, in addition to facilitating the transfer of knowledge to entrepreneurs, stimulates interaction and collaboration among them and between them and stakeholders in the sector.

In particular, the AgroEcoMed training workshops aim to promote:

- Agroecological agriculture and efficient use of resources;
- The initiation of individual and joint actions aimed at mitigating and adapting to climate change (environmental and conservation practices, enhancement of agricultural landscapes);
- The organization of common work processes, short supply chains, and local markets of the Mediterranean agroecological system

3. Training workshop/s

The educational offering of the AgroEcoMed project aims to disseminate knowledge and best practices related to agroecological practices in shared contexts within the partnership through the organization of workshops. The training workshop approach aims to promote collaborative learning and skill development by combining the acquisition of theoretical knowledge with practical knowledge, experiences gained from interaction with other participants, and individual reflection.

The workshop, in addition to enhancing participants' professional skills, creates suitable conditions for fostering knowledge, stimulating discussion, and exchanging experiences and ideas among participating entrepreneurs, thus encouraging the establishment of relationships among them.

The training activity is supported by the Platform Lab, a space on the project's website (www.agrecomed.crea.gov.it) dedicated to collecting in-depth documents on the topics covered in the training activities. To use it, a Windows operating system and an Internet browser are required.

The AgrEcoMed workshop training offering includes field-based educational activities aimed at companies interested in agroecological transition, as the training program is designed to familiarize entrepreneurs with and transfer practical, applicative, and motivational aspects related to the agroecological practices present in the AgrEcoMed project.

To promote knowledge about agroecology, the AgrEcoMed website will include a curated collection of scientific literature, projects, and best agroecological practices².

¹ Co-creation is a strategy shared between companies and the territory aimed at sharing, combining, and renewing local resources and capabilities to add value to them.

² For best practices, the working methodology developed under task 5.3 is available.

The multimedia teaching units³ will cover topics such as the agroecological approach, conservation and precision agriculture, and alternative crops such as medicinal plants in rotation with cereal cultivation. The teaching units and materials produced for field training will be made available on the Platform Lab, which will also include a space for requesting information and clarifications on individual training activities.

Field training offers participants the opportunity to engage with real cases and successful experiences. The direct knowledge of concrete experiences allows participants in the training workshop to:

- Understand the potential of agroecological approaches applied in the visited farms;
- Gain ideas for innovating or improving the management and organization of their own farms from an agroecological perspective;
- Suggest new stimuli and ideas to improve internal structure and foster collaboration among entrepreneurial entities.

The field training workshop, which will last one day, will be divided into the following phases:

Afternoon

- Welcome lab: maximum duration 30 minutes

This is a moment, managed by the workshop organizers, aimed at introducing the training day and encouraging socialization through brief presentations by the participants and the host entrepreneur.

- In the lab: maximum duration 1.5 hours

This phase initiates the training workshop. An expert/teacher introduces and delves into the training topic and illustrates the on-field experience to be offered the next day. The evening concludes with a light dinner.

Morning

- Lab on field: maximum duration 3 hours

The field visit is organized to offer participants the opportunity to observe the application of the adopted agronomic technique, the results obtained, and the effects produced. The workshop allows participants to interact directly with each other, the teacher, and the entrepreneur, thus completing the acquisition of information.

- Closing Lab: duration 2.5 hours

The day's closing includes two moments. The first is aimed at consolidating the knowledge of the practice explored in the field through the exchange of reflections between participants and the teacher. The second, in a social setting accompanied by an agri-aperitif or light lunch, aims to promote the initiation of new contacts and relationships among participants.

The training activity will be conducted by university professors and researchers who are experts in the topics covered in the courses, supported in the field by the host entrepreneur or the project manager/representative. Once the workshop is concluded, the educational, photographic, and video materials will be archived and made available on the Platform Lab. For the field visit, the participation of

³ For the creation of the teaching units, the Rur@Lab application developed by CREA as part of the National Rural Network project will be used.

entrepreneurs from Spain, Morocco, and Tunisia will be supported by the respective project partners.

4. Workshop/s program

The table 2 outlines three upcoming workshops focused on sustainable agriculture and climate change adaptation. Workshop I, scheduled for July 2024, will cover Conservation Agriculture with a focus on Crop Rotation of Cereal and Medicinal Plants, coordinated by Prof. Candido Vincenzo and Prof. Sebastiano Delfine. In October 2024, Workshop II will explore Organic Agriculture, specifically The Supply Chain of Medicinal Plants, under the guidance of Prof. Sebastiano Delfine. Finally, Workshop III, taking place from March to April 2025, will address Mitigation and Adaptation to Climate Change through Diversification and Enhancement of the Rural Landscape, coordinated by Prof. Sebastiano Delfine.

Table 2. Overview of Workshops on Sustainable Agriculture and Climate Change Adaptation, 2024–2025.

Topic	Title/Data
Workshop I	
Topic	CONSERVATION AGRICULTURE
Title	Crop Rotation of Cereal and Medicinal Plants
Coordinator	Prof. Candido Vincenzo and Sebastiano Delfine
Period	July 2024
Workshop II	
Topic	ORGANIC AGRICULTURE
Title	The Supply Chain of Medicinal Plants: Cultivation, Processing, Production of Essential Oils, and Product Valorization
Coordinator	Prof. Sebastiano Delfine
Period	October 2024
Workshop III	
Topic	MITIGATION AND ADAPTATION TO CLIMATE CHANGE
Title	Diversification and Enhancement of the Rural Landscape
Coordinator	Prof. Sebastiano Delfine
Period	March – April 2025

5. Dissemination of the Workshop Program

The AgroEcoMed training workshop program will be disseminated online through:

- The AgroEcoMed project website (www.agrecomed.crea.gov.it), the National Rural Network website, and their social networks;
- The regional offices of CREA- Policies and Bioeconomy in Basilicata, Puglia, Calabria, Sicily, and Sardinia

- The Agriculture Departments of the Regions of Basilicata, Puglia, Calabria, Sicily, and Sardinia
- Professional Agricultural Organizations.

6. Conclusions

The "Educational Digital Lab (Online)" serves as a pivotal component of the AgrEcoMed project, designed to enhance the knowledge and skills of Mediterranean farmers, particularly focusing on women and youth. By providing a structured platform for training and resource sharing, the lab facilitates the adoption of agroecological practices that are essential for improving soil fertility and biodiversity.

Through this digital lab, participants gain access to a wealth of educational materials and methodologies that promote effective learning and knowledge transfer. The emphasis on co-creation and collaborative learning fosters an inclusive environment where stakeholders can engage, share experiences, and develop innovative solutions to common agricultural challenges.

In conclusion, the Educational Digital Lab is instrumental in achieving the overarching goals of the AgrEcoMed project. It not only empowers marginalized groups by promoting gender equality and inclusivity but also ensures the long-term sustainability of agroecological practices in the Mediterranean region. By equipping farmers with the necessary tools and knowledge, the lab contributes significantly to building resilience in agricultural systems and enhancing the overall impact of the project.

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- iv. <https://www.reterurale.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/22394>
- v. <https://uniseco-project.eu>

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