PRIMA
PARTNERSHIP FOR RESEARCH AND INNOVATION IN THE MEDITERRANEAN AREA

AgrEcoMed
FOSTERING AGROECOLOGICAL TRANSITION

"New AGRoecological approach for soil fertility and biodiversity restoration to improve ECOnomic and social resilience of MEDiterranean farming systems"

Deliverable 5.4
Protocols of methodologies for training

This project is part of the PRIMA Programme supported by the European Union, grant agreement PRIMA21_00018

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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 5.4, "Protocols of methodologies for training," which establishes a framework for knowledge transfer and capacity building among stakeholders in agroecological practices. It aims to enhance the skills of farmers, women, youth, and other participants in the Mediterranean agricultural sector by promoting a robust knowledge system that encourages cooperation and innovation. By educating participants on sustainable resource management and environmental impact reduction, Deliverable 5.4 significantly contributes to the project's overarching goal of fostering sustainable agricultural practices in the region.

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

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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.

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2.1 Relation of D5.4 with AgrEcoMed objectives

Deliverable 5.4, "Protocols of methodologies for training," is directly aligned with the objectives of the AgrEcoMed project, which aims to promote sustainable agricultural practices and enhance the resilience of Mediterranean farming systems. The relationship with the project's objectives can be outlined as follows:

1. Capacity Building: One of the primary objectives of AgrEcoMed is to empower farmers, particularly young people and women, by providing them with the knowledge and skills necessary to adopt new cropping systems and agroecological practices. Deliverable 5.4 supports this objective by offering structured training methodologies that enhance participants' capabilities, thereby fostering a more knowledgeable and skilled farming community.
2. Promotion of Agroecological Innovations: The project aims to facilitate the adoption of innovative farming practices that increase biodiversity and improve environmental sustainability. The training protocols will equip participants with the necessary tools to implement these practices effectively, ensuring that the innovations developed within the project are understood and applied in the field.
3. Knowledge Transfer and Networking: AgrEcoMed emphasizes the importance of knowledge sharing and collaboration among stakeholders. Deliverable 5.4 contributes to this objective by providing a framework for the transfer of knowledge and best practices among consortium members, thereby fostering a collaborative environment that encourages the co-creation of knowledge.
4. Dissemination of Results: The project seeks to disseminate its findings to a broader audience, including stakeholders and the research community. The training methodologies outlined in Deliverable 5.4 will be utilized in workshops and educational programs, directly supporting the dissemination objectives of the project and ensuring that the knowledge generated is accessible to all relevant parties.

In summary, Deliverable 5.4 is integral to achieving the objectives of the AgrEcoMed project by enhancing capacity building, promoting agroecological innovations, facilitating knowledge transfer, and supporting the dissemination of results. This alignment ensures that the project effectively addresses the challenges faced by Mediterranean farmers and contributes to the overall goal of sustainable agricultural development in the region.

2.2 Relation of D5.4 with other WP and deliverables

Deliverable 5.4 is closely linked to several WPs, particularly WP1, WP2, and WP6.

1. WP1 (Field Activities): The training protocols will support the implementation of field activities by providing participants with the necessary skills and knowledge to effectively engage in agroecological practices. This ensures that the methodologies developed in WP1 are applied consistently and effectively across different sites.
2. WP2 (Medicinal Plants): The training methodologies will also be relevant for WP2, where participants will learn how to utilize extracts from medicinal plants. The protocols will help standardize the training on the use of these extracts, ensuring that all partners are equipped to conduct in vivo tests and evaluate the effects on target organisms.
3. WP6 (Dissemination of Results): Deliverable 5.4 is integral to WP6, as the training protocols will be utilized in workshops and educational programs aimed at disseminating the project's findings. This will enhance the outreach efforts of the project, allowing for a broader dissemination of knowledge regarding agroecological practices.

Overall, Deliverable 5.4 serves as a foundational element that connects various WPs and deliverables, ensuring that the knowledge and skills developed throughout the project are effectively shared and implemented across all partners. This interconnectedness is crucial for achieving the overarching goals of the

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AgrEcoMed proposal.

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.

[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.

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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.

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:

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

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

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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.

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6. Conclusions

The AgrEcoMed project, supported by the PRIMA Programme and the European Union, represents a significant step towards enhancing sustainable agricultural practices in the Mediterranean region. Through a series of targeted workshops and training sessions, the project aims to disseminate knowledge on agroecological techniques that promote soil fertility, biodiversity restoration, and climate change adaptation. The collaboration among various stakeholders, including university professors, researchers, and local entrepreneurs, fosters a comprehensive learning environment that encourages the exchange of ideas and practices.

The upcoming workshops, focusing on topics such as conservation agriculture, organic agriculture, and climate change mitigation, are designed to equip participants with practical skills and knowledge that can be directly applied in their farming practices. By emphasizing the importance of sustainable agriculture, the AgrEcoMed project not only seeks to improve the economic viability of farming in the region but also aims to contribute to the overall resilience of agricultural systems against the challenges posed by climate change.

In conclusion, the AgrEcoMed project stands as a model for integrating scientific research with practical applications in agriculture, ultimately striving for a more sustainable and resilient future for Mediterranean farming communities. The commitment to ongoing education and collaboration will be crucial in achieving the project's objectives and ensuring long-term benefits for both the environment and local economies.

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