CIHEAM
BARI

Master Courses
2026-27

Master in
ORGANIC FARMING AND FOOD SYSTEMS



Academic Year 2026 - 2027

DESCRIPTION

The one-year Master of Science Programme offers unique opportunities for motivated students to become the next generation of professionals and researchers in organic farming and food systems able to support further development of the sector in the Euro-Mediterranean countries and worldwide. The programme considers organic food production as a system approach from primary production to consumption with a view to achieving the objective of the farm-to-fork strategy of at least 25% of the EU's agricultural land under organic farming by 2030 and in transition to fair, healthy and environmentally friendly food systems.
The master programme proposes a system-oriented approach in organic agriculture as a complex and dynamic process that requires careful management to ensure long-term sustainability and resilience. It integrates knowledge and methods from multiple disciplines to create sustainable organic food systems that match the needs of local communities and territories in a range of bio-physical and socio-economic contexts. Learning and teaching strategies are combined to advance students' technical and analytical skills together with the important soft skills of communication, collaboration, creativity and critical thinking. At the end of the course, MOA students will be able to promote processes for the development of organic agriculture aimed at agroecological transition and sustainable food systems development.

After the MOA master students will:

- Master the principles and practices of organic agriculture, encompassing areas such as crop management, soil health, and pest and disease control.
- Develop strategies for planning and advocating the transition to organic agriculture, while embracing a holistic view and sustainability of the entire value chain.
- Evaluate organic farming and food production from environmental, social, and economic perspectives.
- Gain a comprehensive understanding of the policy and regulatory frameworks governing organic agriculture at local, national, and international levels.
- Employ innovative solutions to enhance the sustainability and resilience of organic farming and food systems.
- Cultivate collaborative problem-solving skills and adopt a systems-thinking approach to tackle intricate challenges within organic agriculture.

The programme involves CIHEAM Bari staff and international scientists and practitioners who have made exceptional contributions to the organic sector. The first year of the MSc programme comprises eight thematic units and an applied project. The teaching methods are hands-on and experiential, involving peer education, field trips, technical visits, and active participation in learning activities. Students will engage in various practical tasks and assignments to enhance their abilities and expertise. They will also apply cooperative problem-solving and systems thinking to tackle complex issues in organic agriculture. The master's program fosters strong partnerships with diverse enterprises, effectively connecting the worlds of academia and productive sectors. This connection enriches students' educational journey, providing them with a comprehensive learning experience and bolstering their professional opportunities.

The programme comprises eight thematic units (48 ECTS) and an applied project (12 ECTS), totalling 60 ECTS.

Unit I - Organic Food Systems, Sustainability and Agroecological Transition (on-line)	4	Jenny CALABRESE	5 -23 October 2026
Unit II – Organic Agriculture: Concepts, movement, regulatory Frameworks, Certification and Traceability	7	Ramez MOHAMAD	02 - 27 November 2026
Unit III- Soil Health, Plant Nutrition and Resource-Efficient Practices	6	Lea PISCITELLI	30 November – 18 December 2026
Unit IV – Plant Health Across Organic Value Chains	6	Vincenzo VERRASTRO	07 - 27 January 2027
Unit V – Organic Food Processing, Post-Harvest and Quality	7	Ivana CAVOSKI	1 – 19 February 2027
Unit VI - Sustainable Agribusiness, Value Chains and Entrepreneurship	7	Gianluigi CARDONE	01 March – 2 April 2027
Unit VII – Policy, Advocacy and Territorial Development	7	Gianluigi CARDONE	12 - 30 Aprile 2027
VIII: – Innovation, Digitalization and AI in Organic Systems	4	Vincenzo VERRASTRO and Maria Luisa VITALE	10 - 21 May 2027
Applied Project: Collaborative problem solving and system thinking	12	Ivana CAVOSKI and Ramez MOHAMAD	4, 5, 28 and 29 January 2027, 22 – 26 February 2027, 5 - 9 April 2027, 3 – 7 May 2027 24 May - 18 June 2027

UNIT I: ORGANIC FOOD SYSTEMS, SUSTAINABILITY AND AGROECOLOGICAL TRANSITION

This foundational unit introduces students to the philosophical, historical, and practical foundations of organic agriculture and agroecology, framing them in the conceptual context of sustainable food systems. The sub-units explore the evolution of agroecology and organic agriculture over time and connect them both to agricultural and social movements. Students examine how organic agriculture has transformed from early pioneers' vision (Organic 1.0) through certification-driven growth (Organic 2.0) to today's regenerative, values-based approach (Organic 3.0) and will learn about agroecology's evolution from the birth of the discipline, exploring the ecology of agroecosystems to the aspects related to social values and practices. This unit will introduce agroecology and its principles as a systems approach to sustainable farming, describe the role of systems thinking in agroecology, and explain its application to agroecological practices. Specific attention is devoted to describing the features of the agroecological transition and its interconnections with organic agriculture. The unit situates both Organic Agriculture and Agroecology within broader movements for food sovereignty, environmental justice, and sustainable development. The course explores both the four pillars of organic agriculture established by IFOAM - health, ecology, fairness, and care- and the 13 principles of agroecology, demonstrating how these principles translate into practical farming systems and policy frameworks. Interactive seminars with pioneers and practitioners of the organic and agroecology world provide firsthand insights into the movement's evolution.

AIMS

This unit aims to:

- ❖ Introduce the principles, historical development, and contemporary role of organic agriculture within sustainable food systems.
- ❖ Explain the principles of agroecology and their application to farming practices, territorial transitions, and policy frameworks.

LEARNING OUTCOMES

Students will be able to:

- ✓ Explain the core principles and concepts of organic agriculture and agroecology.
- ✓ Describe and compare the historical development of organic agriculture and agroecological movements.
- ✓ Analyse how organic agriculture and agroecology contribute to equitable, community-based food systems.
- ✓ Compare organic and agroecological development pathways across regional contexts.
- ✓ Propose farm- and territory-level transition actions informed by agroecological principles.

UNIT II: ORGANIC AGRICULTURE: CONCEPTS, REGULATORY FRAMEWORKS, CERTIFICATION AND TRACEABILITY

Organic agriculture is a production system based on specific principles and objectives that rely upon environmentally friendly practices and inputs. General and specific regulations govern this sector and apply to products (unprocessed, food, and feed) originating from agriculture, including aquaculture and beekeeping. They also govern certification, official controls, and trade of organic products with third countries. Based on these regulations and strict control systems, the organic products are certified and labelled. Advanced models of organic agriculture, such as biodynamic and organic regenerative, are becoming more recognised systems to boost organic production.

UNIT DESCRIPTION

This unit provides a comprehensive understanding of organic principles, concepts, and practices as drivers for organic standards. It also explains how organic integrity is maintained through certification systems, advanced traceability technologies, and consumer-facing transparency strategies. Students explore the complete regulatory framework governing organic certification and learn to navigate the complex requirements of EU Organic Regulation 2018/848. The unit covers emerging technologies including blockchain and digital certification that enhance transparency and prevent fraud throughout the organic value chain. Students gain practical experience with inspection and audit procedures, learning protocols, documentation requirements, and risk-based approaches that ensure organic compliance. The unit addresses international trade requirements, equivalency agreements, and challenges of maintaining organic integrity in global supply chains. Finally, the unit will provide a comprehensive overview of biodynamic agriculture and organic regenerative agriculture and how both systems are framed and regulated.

AIMS

This unit aims to:

- ❖ Explain how organic principles are translated into regulatory requirements and standards.
- ❖ Introduce EU organic production rules, certification, labelling, official controls, and international trade requirements.
- ❖ Develop practical understanding of inspection, documentation, traceability, and certification procedures.
- ❖ Compare organic, biodynamic, and regenerative approaches, distinguishing regulatory requirements from voluntary standards and claims.

LEARNING OUTCOMES

At the end of the unit, students will:

- ✓ Explain the relationship between organic principles, farming practices, and regulatory standards.

- ✓ Identify the EU regulatory requirements relevant to a given organic product or production scenario.
- ✓ Interpret and apply relevant provisions of Regulation (EU) 2018/848 to a case study.
- ✓ Prepare an inspection checklist and assess a simulated compliance case.
- ✓ Evaluate the use of digital traceability tools to support organic integrity and fraud prevention.
- ✓ Compare organic, biodynamic, and regenerative production approaches and distinguish their certification or assurance frameworks.

UNIT III: SOIL HEALTH, PLANT NUTRITION AND RESOURCE-EFFICIENT PRACTICES

Knowledge of sustainable soil management as a non-renewable resource is essential in organic farming. This unit will cover the basic principles of soil management and fertility using environmentally sustainable and regenerative practices that aim to maintain or improve soil health and ensure production quantity and quality. The unit will explore the main physical, chemical, and biological principles that regulate the functioning of the soil as a living system and whose understanding is fundamental for managing soil fertility in different environmental and climatic conditions. Organic farming and regenerative practices for soil fertility management will be described in detail and addressed within a comprehensive, strategic framework. A comprehensive, systemic perspective will be provided on organic soil management and fertility as a potential self-sustaining system, rather than one exclusively based on external inputs. Extra-cathedra lessons will be sustained by alternative teaching techniques, field visits, and practical activities. Moreover, time for sharing and discussing real-case issues with farmers will be included.

AIMS

This unit aims to:

- ❖ Explain the physical, chemical, and biological components of soil and their roles in soil functioning.
- ❖ Introduce soil fertility and plant nutrition within organic production systems.
- ❖ Present sustainable and regenerative practices for soil health and resource-efficient management.
- ❖ Develop skills for interpreting soil observations and analytical indicators.
- ❖ Examine farm-level examples of soil management under different environmental conditions.

LEARNING OUTCOMES

Students will be able to:

- ✓ Explain key soil functions and the role of soil organic matter and carbon.
- ✓ Differentiate fertilizers from soil amendments and assess their functions in organic soil management.
- ✓ Interpret selected soil indicators and recommend suitable fertility-management practices.
- ✓ Develop a basic organic soil fertility and nutrient-management plan for a defined farm case.

UNIT IV: PLANT HEALTH ACROSS ORGANIC VALUE CHAIN

Disease and pest management in organic farming is challenging, particularly given the strict limitations on chemical control and the need to maintain a delicate balance between external inputs and the ecosystem services on which sustainable management relies. Focusing on economically important Mediterranean crops, this unit provides a comprehensive understanding of holistic plant health management in organic farming systems, covering crop production and introducing post-harvest risks and management. Students will actively explore established and innovative biodiversity-based strategies for pest and disease control, gaining insight into the mechanism underlying these approaches. The unit will also provide knowledge on pest and contamination risks and prevention during storage, processing, and distribution, highlighting their importance for maintaining organic integrity and compliance throughout the farm-to-fork journey.

AIMS

This unit aims to:

- ❖ Introduce the principal pests and pathogens affecting Mediterranean crops.
- ❖ Explain preventive, biological and agroecological approaches to pest and disease management in organic production.
- ❖ Examine biological control mechanisms and the role of beneficial organisms.
- ❖ Introduce post-harvest biological risks and preventive management approaches.

LEARNING OUTCOMES

Students will be able to:

- ✓ Identify key pests, pathogens and symptoms affecting selected Mediterranean crops.
- ✓ Design an integrated preventive plant-health strategy consistent with organic production principles.
- ✓ Recommend measures to reduce biological deterioration and contamination during harvest, storage, and distribution.
- ✓ Assess proposed pre- and post-harvest plant-health practices for consistency with relevant organic requirements.

UNIT V: ORGANIC FOOD PROCESSING, POST-HARVEST AND QUALITY

Organic food processing is essential for transforming high-quality agricultural products into safe, nutritious, appealing and market-ready foods while preserving organic integrity and minimizing environmental impacts. This unit examines the scientific principles and practical applications of organic food processing, post-harvest management, and quality assurance across food value chains. Students explore the relationship between raw material characteristics, processing conditions, product quality, nutritional properties, food safety, and shelf life. Particular attention is given to physical, thermal, non-thermal and biological processing approaches, including fermentation and emerging resource-efficient technologies, and to their suitability for organic production. The unit addresses post-harvest physiology, handling, storage, preservation, cold

chains, and strategies to prevent food losses and waste. Sustainable packaging, product formulation, quality assessment, traceability, and the regulatory requirements relevant to organic processing are considered alongside consumer expectations and the links between food quality, nutrition and health. Through case studies, laboratory or demonstration activities, technical visits and applied problem-solving exercises, students critically evaluate technological options and design feasible improvements for small and medium-sized organic food enterprises. The emphasis is on selecting solutions that are technically effective, environmentally responsible, economically realistic, and compatible with organic principles.

AIMS

This unit aims to:

- Explain the scientific principles of organic food processing and preservation and their effects on safety, nutrition, sensory quality, and shelf life.
- Examine post-harvest handling and storage practices and strategies to prevent food losses and waste.
- Evaluate processing, fermentation, preservation and sustainable packaging options for organic products and small-scale enterprises.
- Introduce integrated approaches to food quality, food safety, organic integrity, and resource-efficient processing.

LEARNING OUTCOMES

Students will be able to:

- ✓ Analyse the effects of processing and post-harvest conditions on the microbiological, physicochemical, sensory, and nutritional quality of organic foods.
- ✓ Compare processing, preservation and packaging technologies and justify a suitable option for a defined organic product.
- ✓ Identify critical points for food loss, deterioration and contamination and propose preventive measures.
- ✓ Develop a feasible processing or post-harvest improvement proposal integrating quality, sustainability, and organic compliance.
- ✓ Select relevant quality and safety indicators and interpret results from a product case study.
- ✓ Evaluate how processing choices affect nutritional quality and inform responsible product development.

UNIT VI: SUSTAINABLE AGRIBUSINESS, VALUE CHAINS AND ENTREPRENEURSHIP

The unit explores sustainable agribusiness management within organic food systems, with a particular focus on the development and governance of organic value chains, entrepreneurship, and marketing strategies. Students will analyse how value chains are structured, coordinated and upgraded to create economic, social, and environmental value for all stakeholders. The module introduces sustainable farm and agribusiness management as a decision-making process involving resource allocation, business planning, market analysis, branding and marketing of organic products, investment strategies, and entrepreneurial opportunities. Attention is given to

entrepreneurship, innovation, business model development, and the creation of competitive and resilient enterprises within sustainable organic food systems. Through theoretical frameworks, analytical tools and real-life case studies, students will learn how to assess enterprise performance, identify value creation opportunities along the value chain, and design sustainable agribusiness strategies.

AIMS

This unit aims to:

- Introduce farm economics, sustainable agribusiness management, and entrepreneurship in organic food systems.
- Explain organic value-chain structures, governance arrangements, and opportunities for upgrading.
- Develop skills in business planning, market analysis, branding, and entrepreneurial decision-making.
- Introduce methods for assessing the economic, environmental, and social performance of organic enterprises.
- Examine investment appraisal, financial risk, and innovation management in organic agribusiness.
- Examine strategies for building resilient and competitive enterprises within sustainable value chains.

LEARNING OUTCOMES

Students will be able to:

- ✓ Map an organic value chain and analyse its actors, functions, governance, and opportunities for value creation.
- ✓ Design an entrepreneurial strategy or business model for a sustainable organic enterprise.
- ✓ Assess market opportunities and select suitable branding and marketing approaches for an organic product.
- ✓ Select and apply indicators to assess economic, environmental, and social sustainability.
- ✓ Justify management decisions that improve the resilience and competitiveness of an organic enterprise.
- ✓ Prepare an outline business and investment plan aligned with sustainability and value-chain objectives.

UNIT VII: POLICY, ADVOCACY AND TERRITORIAL DEVELOPMENT

Nowadays, organic agriculture is considered a key element to mitigate territorial and global concerns. Therefore, organic agriculture is becoming a consistently successful model for sustainable rural development. It helps protect natural resources and supports the socio-economic and cultural well-being of local communities. Understanding the socio-economic, cultural, and social capital of

local territories is important for improving and strengthening quality of life. Additionally, comprehensive exploration of both national and international policy frameworks is essential in shaping the growth and development of organic agriculture.

AIMS

This unit aims to:

- Introduce policy frameworks relevant to organic agriculture and sustainable territorial development.
- Examine how international, European and national policies and multi-actor processes shape organic-sector development.
- Explore the relationships between territorial assets, socio-economic conditions, stakeholder networks, and community participation.
- Introduce the design and evaluation of policy measures and organic action plans.
- Examine territorial case studies and transferable approaches to organic development.

LEARNING OUTCOMES

Students will be able to:

- ✓ Identify and explain policy instruments and territorial development opportunities relevant to organic agriculture.
- ✓ Analyse how policy choices and stakeholder collaboration influence organic-sector development.
- ✓ Assess territorial assets, socio-economic conditions, and stakeholder participation in a selected case.
- ✓ Propose evidence-informed policy or territorial strategies for advancing organic food systems.
- ✓ Draft an outline organic action plan for a selected territory or value chain, including priorities, stakeholders, and implementation measures.

UNIT VIII: INNOVATION, DIGITALIZATION AND AI IN ORGANIC SYSTEMS

This unit explores how digital technologies are reshaping the entire organic food and farming value chain while respecting organic principles and ecological values. Students examine how emerging technologies, including artificial intelligence (AI), precision farming, sensor technologies, and smart logistics, can improve efficiency, decision-making, sustainability, and transparency in organic systems. The unit addresses unique challenges and opportunities of integrating digital solutions within organic frameworks that prioritise ecological integrity and social equity. It also considers the social, environmental, and ethical implications of digitalisation in agriculture. Through real-world case studies, field visits, and design exercises, students will develop core sustainability competences such as systems thinking, digital literacy, strategic action, and adaptability, in line with the GreenComp and DigComp frameworks.

AIMS

This unit aims to:

- Introduce AI, precision agriculture, sensors, and digital logistics applications relevant to organic food systems.
- Explain opportunities and limitations of digital tools for sustainability, efficiency, and transparency in organic value chains.
- Examine the economic, social, environmental, and ethical implications of digital transformation.

LEARNING OUTCOMES

- ✓ Describe the main digital technologies relevant to organic farming and food systems and their potential uses.
- ✓ Evaluate a digital solution against sustainability, efficiency, transparency, and user needs in a defined case.
- ✓ Analyse interactions between technological innovation and environmental, economic, and social outcomes using systems thinking.
- ✓ Develop a context-sensitive proposal for adopting a digital tool while respecting organic principles.
- ✓ Identify and critically discuss ethical, cultural, economic and accessibility risks associated with digital transformation.

APPLIED PROJECT: COLLABORATIVE PROBLEM SOLVING AND SYSTEM THINKING

Understanding the activities and problems of organic enterprises is crucial to address the different challenges along the value chain. Students will have the opportunity to participate in activities addressing the main issues of the organic sector. The activities are designed to develop the students' capacity to observe, analyse, and propose solutions to complex phenomena by applying combined approaches gained throughout the course. Understanding a phenomenon within the context of a larger whole to understand things systemically and holistically literally means putting them into a context and establishing the nature of their relationships. This unit develops students' collaborative problem-solving competencies to effectively engage in a process to solve a problem by sharing understanding and pooling the knowledge and effort required to reach a solution. There is a paramount need for collaboration between disciplines, communities, practitioners, students, and researchers, which could help better achieve sustainable solutions. A collaborative learning process aims to address ‘real-world’ problems and gives diverse actors the opportunity to come together to resolve problematic situations beyond individual possibilities. Addressing these problems and finding relevant solutions are key issues in transdisciplinary research needed in organic food and farming systems.

AIMS

This unit aims to:

- Introduce methods for identifying and framing real-world challenges in organic enterprises and territories.

- Develop skills in stakeholder engagement, co-creation, and collaborative problem-solving.
- Support the integration of disciplinary knowledge into feasible responses to real-world challenges.
- Strengthen systems thinking, critical reasoning, teamwork and reflective learning.

LEARNING OUTCOMES

Students will be able to:

- ✓ Define and analyse a real-world challenge in an organic food or farming system using evidence from stakeholders.
- ✓ Apply appropriate dialogue, co-design and collaborative problem-solving methods.
- ✓ Map system actors, relationships, drivers and potential intervention points.
- ✓ Co-develop and present a feasible solution concept, explaining trade-offs, implementation steps and stakeholder roles.