



# Mediterranean Organic Agriculture

Course Coordinator: Lina Al Bitar

## ○ Aims

The Programme aims at preparing graduates to produce innovation in Mediterranean organic agriculture, creating and maintaining sustainability in the farming system, assisting and contributing to national development of organic legislations and regulatory framework.

## ○ Objectives

The main objective of the Programme is to train graduated agronomists and agricultural engineers for future professional careers in the domain of Organic Agriculture. Within this framework, the general learning outcomes are:

- developing agronomic skills related to practices and techniques of Mediterranean Organic Agriculture production and management;
- developing skills related to legislation, inspection, certification and labelling of organically-produced food and fibres;
- building capacity in socio-economic analysis and market strategy for organic agriculture;
- providing trainees with the necessary tools and expertise to assess the agricultural, environmental, and socio-economic opportunities and constraints of organic agriculture in different Mediterranean areas.

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## Part 1 - The Master Programme

The programme is organized in **11 Units (70 ECTS)**

Duration: **9 months, from October 2018 to June 2019**

**1-26 October 2018**

### **UNIT 1 - INTRODUCTORY COURSES (7 ECTS)**

#### **Content:**

- ✓ Information and Communication Technologies
- ✓ Criteria for bibliographic search and technology of search
- ✓ Principles of organic agriculture and Agroecology
- ✓ Biodiversity and crops
- ✓ Crop response to water and climate change: eco-physiological and engineering aspects

#### **Learning outcomes:**

Students learn how to develop familiarity and search through Internet, use excel, and develop the ability to search for, collect, process, read and interpret research results. Trainees should become knowledgeable of sustainable alternative farming practices and conversion requirements to organic agriculture and ways and means to enhance the quality of agroecosystems and biodiversity protection. They would be able to plan for an assessment of biodiversity from the field level to landscape level through farm level.

**Evaluation procedure:** written exams and practical work (exercises, assignments)

**29 October - 9 November 2018**

### **UNIT 2 - ORGANIC LIVESTOCK HUSBANDRY FARMING (4 ECTS)**

#### **Content:**

- ✓ Organic poultry farming
- ✓ Organic ruminants farming

#### **Learning outcomes:**

Trainees also learn the tools to apply, in their home countries, techniques for the production of eggs and chicken meat organically through the selection and

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use of local hardy breeds. They acquire the competence about principal feedstuffs for ruminants and the different feeding.

**Evaluation procedure:** written exams

**12 November – 30 November 2018**

## UNIT 3 - SOIL FERTILITY MANAGEMENT IN ORGANIC FARMING (6 ECTS)

**Content:**

- ✓ The soil: biotic and abiotic components
- ✓ Cover crops, fertilizers and biomasses recycling for managing the soil fertility in organic farming
- ✓ Impact of fertilization, soil tillage and crop rotation on soil properties and crop growth

**Learning outcomes:**

Students will learn to evaluate the environmental and agronomical importance of specific interactions among soil constituents, nutrients and pollutants, underlining; to maintain and possibly increase the soil fertility in organic agriculture using several sustainable strategies. Trainees will learn also how soil biological parameters react on organic fertilization and how soil microorganisms and humus formulation can be enhanced by farmyard manure (FYM) and other organic fertilizers.

**Evaluation procedure:** written exams and practical work (exercises, assignments)

**3 December 2018 – 21 December 2018**

## UNIT 4 - INSECT, DISEASE AND WEED MANAGEMENT (6 ECTS)

**Content:**

- ✓ Organic weeds management
- ✓ Plant protection against diseases in organic production
- ✓ Organic insect management

**Learning outcomes:**

Trainees learn how to organize plant protection in organic production and to select the best tools to combat pathogens. They gain skills on main biological control practices as a method of pest control. Trainees become knowledgeable

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of weed biology and ecology, and learn how to manage weeds in organic farming and the positive function of weeds.

**Evaluation procedure:** written exams and practical work (exercises, assignments, group presentations)

**2 - 18 January 2019**

## **UNIT 5 - GLOBAL MARKETS AND MARKETING FOR ORGANIC AGRO-FOOD PRODUCTS (4 ECTS)**

**Content:**

- ✓ Global markets and the socio-economic impacts of organics
- ✓ Marketing of agro-food products
- ✓ Consumer behaviour for organic foods. Trends in Mediterranean countries and Literature overview
- ✓ Sustainable supply chain

**Learning outcomes:**

Students acquire knowledge of tasks and approaches in marketing to be enabled to independently develop a marketing concept for an organic company. Students will get practical insights into the overall trade policy issues that affect the outcomes for farming communities and affect the adoption of organics. They learn the multiple linkages between organic farming and rural development, especially from the perspective of resilience and risk management.

**Evaluation procedure:** written exams and practical work (exercises, assignments)

**21 January - 15 February 2019**

## **UNIT 6 - ORGANIC FARMING ECONOMICS, POLICY DEVELOPMENT AND SOCIAL ASPECTS (8 ECTS)**

**Content:**

- ✓ Principles of farm economics
- ✓ Support policies for organic agro-food systems
- ✓ National Action Plan for organic agriculture
- ✓ Socio-economic Impact of Organic Farming in Developing Countries

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## **Learning outcomes:**

Trainees understand business performance through evaluation of productivity, efficiency and profitability, to identify strengths and weaknesses of business choices. They acquire some basic knowledge/ terminology about several tools and procedures of agricultural policies, with special reference to organic food productions. Students become familiar with basic concepts of farm development and would be able to relate the development of organic farming in their countries to global trends.

**Evaluation procedure:** written exams and practical work (exercises, assignments)

**18 February – 15 March 2019**

## **UNIT 7 - ORGANIC STANDARDS AND LEGISLATION (8 ECTS)**

### **Content:**

- ✓ Organic Production and Sustainable Development: Frameworks and Strategies
- ✓ Organic regulation in the EU and Mediterranean countries
- ✓ Accreditation, certification and inspection in organic system
- ✓ Regulations and procedures for the authorization to the use of organic pesticides and fertilizers

## **Learning outcomes:**

Students understand how the Principles of Organic Agriculture are translated into regulatory frameworks. Students become knowledgeable of the 3-tiered system of oversight in current use within the organic trade. Students gain a direct understanding of the knowledge and skills needed to work in an organic certification agency. Students get familiar with the European regulation on organic standards and how to implement it for certifying organic products or production processes and they also learn the importing rules. They learn about legislations, elements of Toxicology and document preparation in relation to the preparation of a dossier for the authorization to the use of organic fertilisers and pesticides.

**Evaluation procedure:** written exams and practical work (exercises, assignments); student project design and presentation in a written and oral format.

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**18 March – 12 April 2019**

## **UNIT 8 - QUALITY, SAFETY AND POST-HARVEST HANDLING OF ORGANIC CROPS (8 ECTS)**

### **Content:**

- ✓ Organic food quality and safety
- ✓ Post-harvest techniques
- ✓ Food Hygiene Regulations: rules and new requirements
- ✓ Food quality and safety certification schemes
- ✓ Traceability and Quality Management System in food supply chain

### **Learning outcomes:**

Trainees become knowledgeable of the implementation of food quality and safety systems on farm according to the main internationally recognized standards. They become knowledgeable of principles of voluntary and compulsory regulations of food safety and food quality in EU; knowledgeable of principles to realize a risk analysis; knowledgeable of methods to lead external/internal audits. They also learn the post-harvest handling of fresh produce and how to retain the quality of the products and extend market life.

**Evaluation procedure:** written exams and reports

**15 April - 7 June 2019**

## **UNIT 9 - ORGANIC MEDITERRANEAN COMMODITIES PRODUCTION (10 ECTS)**

### **Content:**

- ✓ Organic horticulture growing
- ✓ Organic grapevine growing
- ✓ Organic olive growing
- ✓ Organic beekeeping
- ✓ Organic aquaculture
- ✓ Project and statistics
- ✓

### **Learning outcomes:**

Students become knowledgeable of the main agronomic practices, soil fertility management, advantages and disadvantages of compost and organic fertilizers

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utilization and the main regulatory aspects related to organic horticulture and growing media production in organic vegetable production. Students learn how to design a soil fertility and crop nutrition plan and pest management plan based on the basic principles of organic farming. They acquire a detailed knowledge of all aspects of organic olive production systems and learn how to manage vineyards under organic conditions (choice of rootstock, the most suitable form of training, soil management with particular attention to fertilization, phytosanitary protection, etc.). They also become knowledgeable of beekeeping management (environment, production conditions, feeding, protection, etc.). They also learn how to breed aquaculture organically and under which conditions and standards to be certified.

Students are expected to understand the role of statistics in research, perform descriptive and inferential statistical analysis, use statistical analysis software and perform an experiment.

**Evaluation procedure:** written exams and practical work (exercises, assignments), case-study presentation.

**10 - 14 June 2019**

## UNIT 10 - IMPACT ASSESSMENT OF ORGANIC AGRICULTURE (2 ECTS)

### Content:

- ✓ Assessment of the Impact of Organic Agriculture on the Economies of Developing Countries (economic, environmental and social)
- ✓ Life cycle assessment: a comprehensive methodology for environmental impact assessment

### Learning outcomes:

Trainees become knowledgeable of the implementation of the aforementioned method and of the assessment of the impact of the organic production techniques on the economies of their countries. They learn how to assess organic systems, from a life cycle perspectives, as a basic step to optimize the performance of organic agricultural practices in each single step of organic production or product processes.

**Evaluation procedure:** written exam and practical work (exercises, assignments)

**October 2018 - June 2019**

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## UNIT 11 - PROJECT (7 ECTS)

### **Content:**

Supervised group project on different topics of organic management introducing the approach to research in organic farming. Field trials are designed to compare organic crop management systems including: organic fertilization, crop association and intercropping, mulching, weed management, water management, etc.

### **Learning outcomes:**

Trainees acquire the direct hands-on field and laboratory experience.

This project enables participants to:

- apply the theoretical concepts learnt during the formal instruction (organic principles, soil fertility management, plant protection, etc.);
- develop skills on data monitoring, collection and processing;
- improve report writing and oral communication skills;
- develop group potentialities by stimulating individual skills.

### **Evaluation procedure:**

Final written report

**17 June 2019**

**FINAL EXAMS**

## Course organization

### **EXAMINATIONS**

Participants take an examination at the end of each subunit. Examinations are in the form of oral or written exams (i.e. sets of questions, exercises, multiple-choice). Questions can also cover seminars topics, field lectures and technical visits. Evaluation is made by the lecturers or by the scientific tutor of the course.



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Participants may retake failed exams only once and up to 8 ECTS.

At the end of the course, participants have to pass a final comprehensive oral exam before an international Examination Board.

**WORKING LANGUAGE: English**

## **ACADEMIC STAFF**

Master courses are given by MAIB scientific staff and international prestigious visiting professors (from universities, higher institutions, research centres, international organizations); field lectures are also given by MOA experts from the private sector.

## **TOURIST TRIP**

A tourist trip is organized for first-year classes. The aim of the trip is to make students discover some interesting places in Italy and get familiar with its historical and cultural heritage. Furthermore, the trip is a great opportunity to socialize in a context other than the Campus.

## **DIPLOMING COURSE**

**From a business idea to its project design: the enterprise culture in the innovation process management 18 - 21 June 2019 (5 ECTS)**

### **Content:**

- ✓ Project cycle management: methods and tools for an innovative idea design
- ✓ Lean Business Model Canvas: tools to analyse and evaluate the economic sustainability of the entrepreneurial idea
- ✓ Web and communication tools: how to improve and strengthen web usage to develop and communicate the entrepreneurial idea

### **Learning outcomes:**

Knowledge and basic skills to create, develop and communicate an innovative entrepreneurial idea. Development of an innovative entrepreneurial idea proposal

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**Evaluation procedure:** oral presentation of the project proposal

## Part 2 - The Master of Science Programme

The Master of Science Programme is organized in two parts: Preparatory research methodologies and supervised research work: thesis and defence (60 ECTS)

### **PREPARATORY RESEARCH METHODOLOGIES (10 ECTS)**

**Content:**

Scientific English and writing. Bibliographic research and thesis writing. Research methodology in organic agriculture. Advanced statistics.

**Learning outcomes:**

Basic and technical knowledge on how to set up a research project, define methodology, collect and analyse data, care about content and style in thesis writing.

### **RESEARCH WORK (50 ECTS)**

**Content:**

Conducting a research activity in the field of organic agriculture and elaborate an original thesis, related to agronomic, legal or social and economic aspects of Mediterranean organic agriculture. The MSc thesis is mainly carried out at MAIB or at research Institutions of the student's country of origin under the supervision of MAIB researchers and external professors. Topics of MSc theses are chosen among the following research lines.

**Learning outcomes:**

Acquiring knowledge and ability in:

- ✓ Conducting a research work
- ✓ Writing an experimental thesis
- ✓ Delivering seminars
- ✓ Preparing scientific paper to announce at National and International Conferences and/or published in scientific journals

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- ✓ Elaborating strategies for managing pests and soil fertility
- ✓ Developing action plans and legislations for organic agriculture
- ✓ Conducting surveys and developing questionnaires for consumer and market analysis
- ✓ Organic food processing and safety

## Research activities: topics generally available for Master of Science theses

- ✓ Management of cropping systems and soil fertility, quality of agricultural products and agricultural by-product recovery
- ✓ Biological control and natural biomolecules
- ✓ Sustainability of agricultural and natural systems
- ✓ Economic and market research
- ✓ Socio-economic impacts and impacts of support policies

## Indicative Master of Science theses realized within the area

### I.

- ✓ Title: Comparison of organic and conventional farms/wineries in Batroun region - Lebanon: sustainability case study. – 108 p.
- ✓ Author: SKAF Ludmila (Lebanon)
- ✓ Place of realization: IAMB - ITALY
- ✓ Thesis directors: G. Calabrese and S. Roupheal

### II.

- ✓ Title: Development of strategies for biocontrol of the invasive pest *Drosophila suzukii* in Italy by means of Hymenopteran parasitoids – 87 p.
- ✓ Author: PANEL Aurore, Danièle, Claudine (France)
- ✓ Place of realization: IAMB - ITALY
- ✓ Thesis directors: N. Baser and G. Anfora

### III.

- ✓ Title: Exploitation of organic palm date (*Phoenix dactylifera* L. cultivar Siwi) fruits collected from Bahariya Oasis (Egypt) through bioprocessing technology. – 56 p
- ✓ Author: HASSAN Bahaaaldin Mamdouh Mohamed Hassanin (Egypt)
- ✓ Place of realization: IAMB – ITALY
- ✓ Thesis directors: I. Cavoski and R. Di Cagno

### IV.

- ✓ Title: A new framework law on organic agriculture in Egypt: a proposal. - 262 p.
- ✓ Author: IBRAHIM Mahmoud Mohamed Said Mohamed (Egypt)

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- ✓ Place of realization: IAMB – ITALY
- ✓ Thesis directors: L. Guarrera and A. Abdelaziz

## Course organization

### **EXAMINATIONS**

Students present the progress of their research work before a Supervising Team twice during the academic year:

- **1<sup>st</sup> Seminar:** bibliographic search; project proposal (objectives, materials and methods) and related written draft;
- **2<sup>nd</sup> Seminar:** presentation and scientific value of the research work (modelling, laboratory or field activity) and related written draft.

At the end of the course, they discuss their thesis and pass a final comprehensive oral exam before an international Examination Board.

**WORKING LANGUAGE: English**

### **ACADEMIC STAFF**

Students' research theses are supervised by MAIB researchers and external professors in collaboration with MAIB staff.

**Further detailed information is available on: [www.iamb.ciheam.org](http://www.iamb.ciheam.org)**