



MASTER & MASTER OF SCIENCE PROGRAMMES IN "PRECISION INTEGRATED PEST MANAGEMENT (IPM)

FOR FRUIT AND VEGETABLE CROPS"

ACADEMIC YEAR 2019-2020

OBJECTIVES

The Master of Science Programme in "Precision IPM for Fruit and Vegetable Crops" has been designed to train graduate students with a background in plant health and food safety in a modern and sustainable integrated management of economically important pests affecting Mediterranean fruit and vegetable crops. The two-year programme is structured as follows: the first year (Master) is based on an intensive learning course and on the preparation of an IPM project, whereas the second year (Master of Science) is dedicated to scientific research on a plant or food health problem of major economic importance for the Mediterranean region.

The main objective of the Master course is to prepare experts able to apply and transfer the IPM approach by combining all appropriate and innovative technologies in a total management system and by minimizing economic, health and environmental risks.

A one-week IPPC-FAO/CIHEAM Bari short-course is also organized, as integral part of the Master programme, to upgrade knowledge on the main principles and regulations on plant quarantine, certification of plant propagating material, trade facilitation and International Standards for Phytosanitary Measures (ISPMs).

In the MSc programme, students who have successfully completed the first year and have met all the prerequisites set by the Institute, carry out scientific research and draft a final thesis on an original topic related to a plant or food health problem of great interest for the Mediterranean region. The aim is to provide practical technical solutions and promote the transfer of knowledge to and between the Mediterranean countries. The scientific outcome of the research work is usually announced on the occasion of national and international conferences and/or published in scientific journals.

ORGANIZATION

First Year: 72 ECTS

- Nine Teaching Units **72 ECTS**

Diploma: Master of MAIB / Master Universitario di I livello

Duration: 9 months

Second Year: 60 ECTS

- Preparatory research methodologies **10 ECTS**
- Supervised research work **50 ECTS**

Diploma: Master of Science

Duration: 12 months

ACCESS TO FURTHER STUDIES

Students who have been awarded the CIHEAM Master of Science Diploma have access to **PhD programmes**. CIHEAM Bari gives support to Doctoral studies in the framework of its collaboration with Italian and foreign Universities.

CANDIDATES' PROFILE

Courses are addressed to graduate students, researchers, managers of research centres or public administrations, professionals in the following **disciplines:** plant health, crop production and protection, biology, biotechnology, agricultural engineering, horticultural sciences, farm management, natural sciences, environmental sciences (with basic background in plant protection).

Required level:

- **Three years (180 ECTS) or Four years (240 ECTS) of university studies;**
- **Four years out of five of university studies (240 ECTS)**, upon agreement between the sending University and CIHEAM Bari;
- **Five years of university studies (300 ECTS);**
- **Professionals** having a degree (3-4years) and at least **2 years** of experience in a field related to the Master Programme.

ADMISSION

Selection of students is based on:

1. Screening of documents sent online by candidates to support their application;
2. Online test to assess candidates' technical skills and abilities;
3. Online English test;
4. Skype interview.

Submission of applications through the Online procedure

Deadline: May 31, 2019

COSTS

Registration fee: 200.00€/year.

Tuition fee: 500.00€/month (travel, accommodation and insurance expenses not included).

BENEFICIARIES

Master and MSc programmes are open to candidates of any nationality.

SCHOLARSHIPS

CIHEAM BARI grants **full or partial scholarships** to candidates according to a ranking list. Priority is given to students coming from CIHEAM-Member countries and other Mediterranean, Balkan and Middle Eastern Countries.

LANGUAGE OF INSTRUCTION: English

For further information and application procedure: www.iamb.ciheam.org

In the 1st year programme students build knowledge and develop skills in:

- basic IPM principles and methodologies
- proactive measures; sustainable use of pesticides and relative regulations; applications of alternative non-chemical pest management methods
- sound management of biotic and abiotic disorders in pre- and post-harvest; food quality and safety
- smart decisions support systems
- communication and entrepreneurship

In the 2nd year programme students build capacity and develop skills in:

- innovative field and/or laboratory techniques/methodologies/technical protocols relating to the research topic
- in-depth and critical analysis of research data
- autonomy in work and teamwork
- bibliographic research on English scientific material
- preparation of a scientific paper

FIRST-YEAR PROGRAMME MASTER/MASTER UNIVERSITARIO DI I LIVELLO OCTOBER 2019 – JUNE 2020

Unit I: Introductory courses

General principles of thematic areas of great interest for agriculture that can be shared between the three programmes of the Master: biodiversity, climate change and high technology for agriculture. English language. Information and Communication Technologies (ICTs). Criteria for bibliographic research.

Unit II: Introduction to IPM

Basic principles of plant pests, pathogens, nematodes, physiological disorders and weeds. Disease diagnosis, pest and weed identification, pathogen detection using classical and advanced diagnostic methods. IPM concepts.

Unit III: Pest/pathogen control

Basic genetic in plants. Breeding and biotech resistance. Conventional and non-conventional control methods. Regulated pesticides and bio-pesticides. Chemical and non-chemical means of pest control. Natural enemies application.

Unit IV: Smart Decision Support Systems in IPM

Innovative technologies for spatial pest/disease analyses. Forecasting, modelling and Decision Support Systems.

Unit V: IPM of vegetable crops in pre-harvest

Morphological, ecological, epidemiological characteristics of key pests and pathogens of vegetable crops. Pest monitoring, identification/detection and IPM in accordance with EU Regulations.

Unit VI: IPM of fruit tree crops in pre-harvest

Morphological, ecological, epidemiological characteristics of key pests and pathogens of fruit tree crops. Pest monitoring, identification/detection and IPM in accordance with EU Regulations.

Unit VII: Food safety

Post-harvest pests/diseases. Food contaminants and related regulations. Quality systems for certification in the agro-food sector (International Food Standards). Postharvest technology.

Unit VIII: Global market, communication, entrepreneurship & project

Good Agriculture Practices and Certification in the global market. Communication skills. Social innovation and Entrepreneurship ideas. IPM Project preparation and presentation.

Unit IX: IPPC-FAO/CIHEAM Bari short-course on 'Developing phytosanitary capacity'

Principles and international regulations on quarantine pests/pathogens. Pest Risk Analysis. Pest/disease monitoring procedures. Production and use of certified propagating material and related regulation. European and Mediterranean Plant Protection Organization (EPPO). International Plant Protection Convention (IPPC) and benefits. International Standards for Phytosanitary Measures (ISPMs). Market access for plants and plant products.

SECOND-YEAR PROGRAMME MASTER OF SCIENCE

Preparatory research methodologies

Scientific English. Bibliographic research. Scientific writing. Safe laboratory practices. Statistical analysis. Dedicated courses on conventional and advanced laboratory/field techniques related to the research topics.

Supervised research work

Topics of MSc theses on pests of fruit and vegetable crops are to be chosen among the following research lines:

- Sampling methodology and technical protocols
- Pests monitoring, identification, detection, characterization and management
- Pest epidemiology
- Remote sensing, GIS and information technology applications to plant health
- Pest forecasting models
- Detection and control of mycotoxins and contaminants in agricultural products Assessment of damages and losses