Master of Science Programme In "Sustainable IPM Technologies for Mediterranean Fruit and Vegetable Crops"

Academic Year 2018-2019

Objectives

The Master of Science Programme in "Sustainable IPM Technologies for Mediterranean Fruit and Vegetable Crops" has been designed to train graduate agronomists, biologists and biotechnologists in 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 is based on an intensive learning course and on the preparation of an IPM project, whereas the second year is dedicated to scientific research related to a pest problem of economic importance for the Mediterranean region.

The main objective of the course is to prepare experts able to apply and transfer the IPM approach by combining all appropriate and innovative techniques in a total management system and by minimizing economic, health and environmental risks. Students build capacity and develop skills in:

- basic IPM principles and methodologies;
- preventive IPM measures: plant quarantine, pest risk analysis, certified propagating material, resistant/tolerant cultivars or graft combinations, biodiversity maintenance;
- sustainable use of pesticides and relative regulations; applications of alternative non-chemical pest management methods; food quality and safety;
- sound management of biotic and abiotic disorders in pre- and post-harvest;
- precise crop protection for supporting IPM programmes;
- training of IPM trainers to learn professional priorities and change the way of thinking about crop protection.

A one-week **IPPC-FAO/CIHEAM Bari short-course** is also organized as integral part of the programme. Such course is an opportunity for students to upgrade knowledge on the main principles and regulations on a proactive IPM approach and receive background information on trade facilitation, International Standards for Phytosanitary Measures (ISPMs) and guidance material on phytosanitary issues.

Another opportunity offered to students is the one-week Diploming Course: ***From a business idea to its project design: the enterprise culture in the innovation process management.*** By attending this module, students will receive knowledge and basic skills to create, develop and communicate an innovative entrepreneurial idea, through a new and attractive method.

In the second year, **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 pest or pathogen of great interest for the Mediterranean region. The aim is to promote the transfer of knowledge to and between the Mediterranean countries. The MSc thesis work can be carried out at CIHEAM Bari or other Mediterranean scientific research institutions. 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 Barigives support to Doctoral studies in the framework of its collaboration with Italian and foreign Universities.

ADMISSION

Selection of students is based on the evaluation of application documents.
Required level: At least 4 years of undergraduate studies in the fields of Agricultural Sciences, Biology or Biotechnology (with basic background in plant protection), or an academic level that qualifies applicants to undertake postgraduate level studies in their home country, or a minimum of 240 ECTS or its equivalent in the home country.

Submission of applications through the online procedure
Deadline: June 15, 2018

Registration fee: 200.00€/year.
Tuition fee: 500.00€/month (travel, accommodation and insurance expenses not included).

BENEFICIARIES

MSc programmes are open to candidates of any nationality.
In particular, courses are addressed to: graduate students, researchers, managers of research centres or public administrations, professionals in agriculture-related fields.

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

First-year Programme
Master/Master Universitario di I livello
October 2018 - June 2019

Unit I: Introductory courses
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
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: Information Technologies 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: IPM of fruits &vegetables in post-harvest
Post-harvest 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. Entrepreneurship ideas and projecting. IPM Project presentation.
Unit IX: IPPC-FAO/CIHEAM Bari short-course
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. International Plant Protection Convention (IPPC) and benefits. International Standards for Phytosanitary Measures (ISPMs). Phytosanitary capacity development. Implementation of Pest Risk Assessment activities. Implementation and organization of import verification and export. Certification. Market access for plants and plant products. Establishment and management of NPPO.

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. Sampling procedures. Pest identification procedures. Culturing. Biological, serological and molecular detection assays. Bioinformatics. Spectral measurements.

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

Pre-harvest
- Sampling methodology
- Pests monitoring, identification and management
- Pathogen detection, characterization and control
- Pest/pathogen epidemiology
- Remote sensing and information technology applications and forecasting models

Post-harvest
- Sampling methodology
- Pathogen detection, characterization and control
- Assessment of damages and losses
- Detection and control of mycotoxins and pesticide residues