

# Mediterranean Agronomic Institute of Chania

MASTER OF SCIENCE IN

2022 / 2023

## SUSTAINABLE AGRICULTURE

The postgraduate on Sustainable Agriculture is a two-year programme for graduates holding a university Bachelor degree in Agriculture or other related sciences leading to a Master of Science degree (**120 ECTS**).

In the first year participants follow the programme to: i) be introduced to agroecology, environmental indicators of integrated crop management and organic farming systems; ii) familiarize themselves with the certification systems of environmentally friendly and sustainable agricultural production; iii) present the latest advances in the management of soil, water and genetic resources in agriculture; iv) be exposed to a thorough background of crop protection; v) get acquainted with automation and modern recycled soilless greenhouse production methods; and vi) understand innovation and communication for sustainable farming.

### REQUIREMENTS

Applicants must have the academic level that qualifies them to undertake postgraduate level studies in their home country or equivalent to a minimum of four years undergraduate studies. Their degree must also be in a discipline compatible with the area of specialization requested. Additional conditions may be required for certain programmes.

The working language of MAICh is English. Selection is made on the basis of the files submitted by applicants – priority being given to applicants from CIHEAM member countries, and takes account of their academic results, professional experience acquired in the chosen field of specialization, reference letters and their competence in English.

The documentation required by CIHEAM MAICh includes:

- ▶ Academic records and transcripts
- ▶ Graduation degree
- ▶ Proof of English language competence
- ▶ Two letters of recommendation.

### SCHOLARSHIPS

Qualified candidates may be eligible for scholarship covering fully or partly: tuition, teaching material, board, lodging, health insurance and compensation.

The qualified first-year graduates are entitled to pursue their research in an environment fully equipped with the most updated facilities.

In the second year, students who have successfully completed the first year according to the CIHEAM/MAICh specific regulations develop a thesis based on research work.

The Master of MAICh (60ECTS) is awarded to those students who successfully complete the first year requirements but do not satisfy the additional required conditions which allow them to be accepted into the second year of the M.Sc. programme (120 ECTS) as stated in the CIHEAM/MAICh specific academic regulations.

The scientific results of graduate studies are usually announced in International Conferences and/or published in world-renowned journals.

### RESEARCH ACTIVITIES

- ▶ Evaluation of substrates in hydroponic systems and plant nutrition.
- ▶ Use of biochar as a soil amendment and for remediation of soils contaminated with heavy metals.
- ▶ Study of mediterranean insect pests activity and their bio-ecological characteristics
- ▶ Host-virus interactions essential for virus replication and resistance
- ▶ Genetic basis of weeds resistance to herbicides
- ▶ Comparison of nutrient and energy budgets of conventional and organic farming systems as environmental indicators

### INFORMATION

For more information, visit our website at: [www.iamc.ciheam.org](http://www.iamc.ciheam.org) or send inquiries to [livieratos@maich.gr](mailto:livieratos@maich.gr)



### HOW TO APPLY

Applications to study at CIHEAM MAICh must be made through the online application form that can be accessed by this link: <http://apply.maich.gr/>

## EDUCATIONAL SEQUENCE

**First-year Studies Programme.** The first-year Studies Program of the Curriculum is organised in 7 Units (60 ECTS).

**SEMESTER I** (October 2023 – February 2023)

**SAG520.11512.0 - Introduction to Sustainability (15 ECTS)**

- ▶ Agroecosystems & Population Dynamics
- ▶ Agro-Environmental Impact Assessment & Farm Management
- ▶ Ecotoxicology
- ▶ Climate Change Adaptation & Mitigation in Agriculture

**SAG530.1712.0 - Natural Resources Management (7 ECTS)**

- ▶ Water Management
- ▶ Soil properties & Quality Assessment
- ▶ Soil Microbiology
- ▶ Nutrient Management & Soil Fertility Improvement

**SAG540.1810.0 - Assessment of Genetic Resources (8 ECTS)**

- ▶ Seed Production & Quality Management
- ▶ Plant Breeding
- ▶ Agro-Biodiversity Assessment & Management

**SEMESTER II** (February 2023 – June 2023)

**SAG550.11510.0 - Crop Protection (14 ECTS)**

- ▶ IPM / Fungal & Bacterial Disease Management
- ▶ Detection & Epidemiology of Plant Virus Diseases
- ▶ Insect Management
- ▶ Weed Management

**SAG560.1612.0 - Current Topics in Sustainable Agriculture (5 ECTS)**

- ▶ Sustainable Circular BioEconomy
- ▶ Soilless Cultivation

**SAG510.1312.0 - BIOMETRICS (3 ECTS)**

- ▶ Crop Experimentation

**SAG572.1312.0 Systems Thinking / Innovation & Communication (5 ECTS)**

- ▶ Innovation & Communication in Sustainable Farming
- ▶ Systems Thinking / Farming System Research (Concepts & Practice)

**SAG500.1312.0 - Extended Essay (3 ECTS)**

## Second year - The Master of Science Programme (Project - 9 months duration, 60 ECTS)

Independently of the thesis thematic area, students acquire standard common competencies such as literature reviewing, hypothesis formulation and experimental design, sampling and collection of data, statistical analysis of acquired measurements, scientific writing and critical interpretation of results.

Linked to the thematic area of their research work, students gain specific competencies that might fall in different groups: molecular biology techniques, soil and plant tissue labs, sugars and antioxidants measurements in fruits, chlorophyll and carotenoids analysis in leaves, operation of fully automated hydroponics system.

## RECENT PUBLICATIONS

Salavert, F., Navarro, J. A., Owen, C. A., Khechmar, S., Pallás, V., Livieratos, I. C. (2020). *Cucurbit chlorotic yellows virus* p22 suppressor of RNA silencing binds single-, double-stranded long and short interfering RNA molecules in vitro. *Virus Research* 229, 197887.

Dimitrova, A., Milošević, M., Spanos, T., Livieratos, I., Gkisakis, V. D. (2020). Yellow or transparent? Comparison of sticky traps for monitoring functional arthropod diversity in an olive agroecosystem. *Animal Biodiversity and Conservation* 43, 159–167.

Chatzigianni, M., Ntatsi, G., Theodorou, M., Stamatakis, A., Livieratos, I., Roupahel, Y. & Savvas, D. (2019). Functional Quality, Mineral Composition and Biomass Production in Hydroponic Spiny Chicory (*Cichorium spinosum* L.) Are Modulated Interactively by Ecotype, Salinity and Nitrogen Supply. *Frontiers in Plant Science* 10, Article 140, doi: 10.3389/fpls.2019.01040.

Mathioudakis, M.M. et al. & Livieratos, I.L. (2018) A Thioredoxin Domain-Containing Protein Interacts with *Pepino mosaic virus* Triple Gene Block Protein 1. *Int. J. Mol. Sci.* 2018, 19(12), 3747.

Chatzigianni, M., Alkhaled, B., Livieratos, I., Stamatakis, A., Ntatsi, G. & Savvas, D. (2017). Impact of nitrogen source and supply level on growth, yield and nutritional value

of two contrasting ecotypes of *Cichorium spinosum* L. grown hydroponically. *J. Sci. Food Agriculture* doi: 10.1002/jsfa.8636. [Epub ahead of print]

Owen, C. A., Moukarzel, R., Huang X., Kassem, M. A., Eliasco, E., Aranda, M. A., Coutts, R. H. A., & Livieratos, I. C. (2016). *In vitro* synthesized RNA generated from cDNA clones of both genomic components of *Cucurbit yellow stunting disorder virus* replicates in cucumber protoplasts. *Viruses* 8(6), 170.

Gkisakis, V. D., Kollaros, D., Barberi, P., Livieratos, I. C. & Kabourakis, E. M. (2015). Soil arthropod diversity in organic, integrated and conventional olive orchards and different agroecological zones in Crete, Greece. *Agroecology & Sustainable Food Systems* 39, 276-294.



**CIHEAM  
MAI CHANIA**

**MEDITERRANEAN AGRONOMIC  
INSTITUTE OF CHANIA**

Alsyllo Agrokepjo, 1 Makedonias str  
73100 Chania, Crete, GREECE

T.: +30 28210 35000, F.: +30 28210 35001

E.: [info@maich.gr](mailto:info@maich.gr), W.: [www.iamc.ciheam.org](http://www.iamc.ciheam.org)