TRACK THEME: WATER MANAGEMENT IN HORTICULTURE

- Wageningen University (Netherlands) for the M1
- University of Catania (Italy) for the M2

M2 at University of Catania, Italy

Specific training objectives

Students attending the M2 at University of Catania should be able to:

- evaluate the conditions of horticulture production in different agro-ecological environments, assessing possible innovations and their expected consequences;
- analyse techniques for water supply and irrigation in horticultural crops, in line with current approaches for sustainable use and management of natural resources;
- design irrigation systems in horticultural crops, that are compatible with environmental preservation.

Course structure

In this slot and during the first semester, students take the obligatory courses for a total of 30 ECTS. The second semester is entirely dedicated to the preparation of the master thesis (30 ECTS).

First semester	
	ECTS
Fruit tree crops in Mediterranean climate	6
Vegetable and flower crops	6
Vegetable protected crops	6
Techniques of natural treatment and reuse of water	6
Irrigation systems	6
Total ECTS of the first semester	**30**
Second semester	
Library, lab and field work aimed at preparing the master thesis	30
Total ECTS of the second semester	**30**
TOTAL ECTS (1st + 2nd semester)	**60**

DESCRIPTION OF THE COURSES

Fruit tree crops in Mediterranean climate (6 ECTS)

Students will learn detailed technical aspects in breeding and cultivation of the main fruit tree species in the Mediterranean area, such as especially citrus, olive and grape, in addition to fruit tree crops. Lessons and practices will take into account: origin and diffusion of the species involved; their morpho-physiological aspects; bio-agronomic characteristics and technological properties of the varieties; propagation and nursery; crop management.

Vegetable and flower crops (6 ECTS)

The aim of the course is to deepen knowledge concerning the most important vegetable and ornamental crops in Italy. This know-how will be fundamental for an expert to be able to organise and manage production process in order to maximise yield, improve quality, reduce environmental impact. The course will be divided in lectures, lab activity and field excursion. These activities will concern the knowledge of the crops in terms of biology, crop requirements, and available cultivars. The main aspects of growing processes will be taken into consideration, with reference to crops that are representative of botanical groups, of plant and produce characteristics, and of specific growing processes.

Vegetable protected crops (6 ECTS)

The course is aimed at giving the students specific knowledge of growing methods and processes, with particular emphasis on crop organisation and management and technological support, for vegetables to be cultivated under greenhouse. The course, organised in lectures and field activity, will start from the main reasons justifying the adoption of certain processes; then the main aspects concerning soilless crops, seedling production and nursery activity, integrated and organic production, production timing and scheduling will be presented.

Techniques of natural treatment and reuse of water (6 ECTS)

Origin of waste water. Wastewater collection systems. Quantitative and qualitative characteristics of wastewater. Statement to the discharge and treatment of waste water. Natural treatments of waste water: wetlands, lagoons and storage tanks. Health effects and agronomic irrigation with wastewater on soil and crops. Technological aspects of irrigation with wastewater. Statement to the reuse of wastewater. Illustration of case studies on disposal and reuse of treated wastewater techniques with extensive type.

Irrigation systems (6 ECTS)

This module is focused on soil hydrology, crop water requirements and irrigation techniques, providing criteria for design and management of irrigation systems, with particular reference to sprinkler and drip irrigation. Specific topics on the use of unconventional water resources for irrigation, such as wastewater, will be developed.