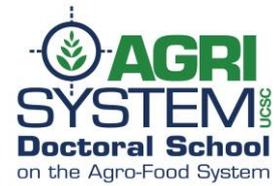




UNIVERSITÀ
CATTOLICA
del Sacro Cuore



GENETIC MODIFICATION AND ASSISTED EVOLUTION TECHNOLOGIES IN PLANT BREEDING

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Course Aims

This course is conceived with the idea to provide the participants with basic knowledge on the most advanced approaches, as implementation of the classical ones, used for improving the characteristics of the present day cultivars of species of agricultural interest. Improving the characteristics of cultivated crops is fundamental for increasing the sustainability and resilience of agriculture in a context of climatic changes.

Among the different methodologies usable to this aim, the course will be mainly focused on a series of techniques, recently applied in the plant breeding field and globally referred as Assisted Evolution Technologies, such as Genome Editing and Cisgenesis. Starting from relevant examples retrievable from the scientific literature, the course will describe these methods, explaining also how these approaches can result in the obtaining of new cultivated varieties not considerable as genetically modified.

Methodology

Lectures (8 hours in total)

Course Description

A variety of new methods, globally called as Assisted Evolution Technologies or New Plant Breeding Techniques (NBTs), are available allowing the obtaining of new plant cultivated varieties with traits of interest, by enabling a more precise and faster change of plant's genome than conventional plant breeding approaches.

This course aims at:

- i) introducing, starting from the scientific literature, the background and the methodologies of the NBTs. In particular, the course will be focused on different techniques as: Genome Editing, Cisgenesis and Oligonucleotide Directed Mutagenesis. For each technology, significant papers will be used for introducing the methodology and explaining the possibilities of its use in the plant breeding sector.
- ii) explaining the differences among the varieties obtained in this way and the ones obtained by Genetic Modification. Finally, it will be provided a vision on the present day Plant Genome Editing – Policies and Governance.

Recommended Texts

Course slides and scientific papers provided by the lecturer.