

Objectives

Presentation – context:

Worldwide evolutions of Agriculture (environmental and societal changes) raise issues on paradigm shift in plant breeding and plant protection. We propose students to imagine cultivated varieties for tomorrow, new plant protection strategies and their implementation within production chains. This teaching module lays foundation of plant sciences applied to agrosystems management and mobilizes MSc skills within an applied multidisciplinary context.

General objective:

- Provide disciplinary knowledge, methods, competences and know-how, to think about global scale evolution in varietal innovations and crop protection.
- Learn how to conceive new plant models and protection systems in line with natural resource management, integrated within innovative or traditional cropping systems.
- Acquire new operational skills and discover scientific executive careers in plant breeding and plant protection sectors.

Teaching methods:

- ✓ Project based learning
- ✓ Small group project
- ✓ Interaction with professionals and experts from various disciplines
- ✓ Seminars and interactive lectures
- ✓ Personal learning environment

Program

This module is will be taught in English. Thus, a B1 CECRL level in English is a prerequisite.

Organization

- ✓ One item per week
- ✓ A four-weeks applied transversal project (for example, which maize for our plastic bags, which pesticide-free bananas limiting impacts on farmers' health?)
- ✓ Field visits

Item 1: Analyze and predict the effect of global changes on cropping systems (climatic changes, societal expectations, pests, food security, diversification of agricultural production)

Item 2: Define crop ideal-type adapted to environmental constraints and innovative cropping systems (ideotypes, biocontrol, resistance, tolerance, genotype/environment interaction)

Item 3: Methods to reach this ideal-type (genetic innovations, plant-pest-natural enemy interactions, link between genotype and phenotype, control of genetic recombination)

Item 4: Technical, societal and legislative challenges (perception towards innovation, public acceptability, mode of production, participatory selection, legal challenges)

Assessed competences

Key concepts to be mobilized:

Global changes, biocontrol, ideotype, genetic innovation, biotic interaction

Tools and methods to control:

Tools of modern bioscience

Behavior:

Ability to identify a problem, group work, knowledge mobilization, imagination, initiative, ability for synthesis

Prerequisite

- Bases in biology of organisms
- Plant protection
- Genetics and breeding

Evaluation modalities

*Written report (12 pages maximum)

*Oral presentation (15 mn)

*Assessment of individual participation

Associated research partners or professionals

- Agropolis research partners
- Professionals of plant breeding and crop protection sectors