


5.00 credits

35.0 h + 15.0 h

Q2

Teacher(s)	Baret Philippe ;Draye Xavier (coordinator) ;
Language :	French > English-friendly
Place of the course	Louvain-la-Neuve
Learning outcomes	
Evaluation methods	The assessment method will be communicated at the beginning of the term.
Teaching methods	Lectures, computer exercises, field trips
Content	<p>Population genetics</p> <ul style="list-style-type: none"> <li>• Gene and genotype frequencies, Hardy-Weinberg principle</li> <li>• Factors of variation (selection, migration, mutation, drift)</li> <li>• Diagnostics (population structure, inbreeding)</li> <li>• Quantitative genetics</li> </ul> <p>Values</p> <ul style="list-style-type: none"> <li>• Decomposition of genotypic variance and heritabilities</li> <li>• Selection and heterosis</li> <li>• GWAS and genomic selection</li> </ul> <p>Biotechnologies and plant genome manipulation</p> <ul style="list-style-type: none"> <li>• Cloning, haplo-diploidization, interspecific crosses, protoplast fusion, and transgenesis</li> <li>• Plant breeding</li> </ul> <p>Reproduction modes, constraints, and opportunities of plant reproduction systems</p> <ul style="list-style-type: none"> <li>• Genetic diversity management</li> <li>• Description and critical analysis of different breeding strategies (crossbreeding and phenotypic selection schemes applied to self-pollinating, cross-pollinating, and vegetatively propagated plants; exploitation of heterosis)</li> <li>• Critical assessment of the potential contributions of each breeding strategy in relation to selection objectives and the determinism of the trait under study</li> <li>• Consequences in terms of conservation and exploitation of genetic diversity, improvement of qualitative and quantitative traits, diversification of production. Integration of different strategies into current breeding.</li> <li>• Climate change and sustainable agriculture: selection for organic farming, adaptation to environmental stresses (salinity, water resources, toxicities, pests and diseases, etc.), preservation of biodiversity,</li> </ul>
Inline resources	The resources are posted on Moodle.
Bibliography	Références citées dans les montages powerpoint fournis
Faculty or entity in charge	AGRO

<b>Programmes containing this learning unit (UE)</b>				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Forests and Natural Areas Engineering	BIRF2M	5		
Master [120] in Agricultural Bioengineering	BIRA2M	5		