Plant Breeding (III-rd Year of study, V-th Semester)

Credit value (ECTS) 2

Course category
Domain (Mandatory)

Course holder:
Lecturer dr. Violeta Simioniuc

Discipline objectives (course and practical works)

The aim of the course is to acquire knowledge about the objectives of plant breeding, the sources of biological materials that can be used to achieve the breeding objectives and methods to improve a cultivar.

The practical trainning aims to familiarize students with the laboratory techniques used in plant breeding, ways to examin plant material used during breeding, as well as performing specific functions of molecular breeding techniques, in the field or in the laboratory.

Contents (syllabus)

Course (chapters/subchapters)
1. General introduction into plant breeding **2. Organization of the breeding process**
3. Germplasm variability
4. Objectives of Plant breeding 4.1. Definition, classification, factors that determine the choice of breeding objectives 4.1.1. Breeding for yield capacity 4.1.2. Breeding for quality traits 4.1.3. Breeding for resistance to diseases and pests 4.1.4. Breeding for different maturation periods 4.1.5. Breeding for resistance to falling and shaking 4.1.6. Breeding for resistance to low temperatures 4.1.7. Breeding for drought resistance 4.1.8. Varieties and hybrids breeding
5. GERMOPLASM USED IN PLANT BREEDING 5.1. Importance, classification, characterization 5.2. The centers of origin and genetics of plant material 5.3. Collection, organization, study and conservation of germplasm
6. CONVENTIONAL METHODS USED IN PLANT BREEDING 6.1. Importance of plant breeding methodology 6.2. Classification and characterization of conventional breeding methods 6.2.1. Selection 6.2.2. Hybridization 6.2.3. Inbreeding 6.2.4. Mutagenesis 6.2.5. Polyploidy 6.2.6. Alternative methods used in plant breeding

7. Organisation of plant breeding activities
8. The germplasm examination during plant breeding process
9. Production of seeds and planting material with high biological value

Practical works
Organizing of horticultural plant breeding activities
Plant breeding field activities
Determination of variability in autogamous and allogamous plants
Determinintion of heritability in allogamous plants
Determination of heterosis in allogamous hybrids
Preservation of germplasm sources
Modern methods of plant breeding. Test.

References

LEONTE C., 1992 – Ameliorarea plantelor horticole şi tehnică experimentală.UAMV Iaşi.
LEONTE C., 1996 – Ameliorarea plantelor horticole. Probleme generale. Ed. Did. şi Ped., Bucureşti.
LEONTE C., 1997 – Ameliorarea plantelor horticole şi tehnică experimentală. Lucrări practice. UAMV Iaşi.
LEONTE C., 2003 – Ameliorarea plantelor. Ed. “Ion Ionescu de la Brad”, Iaşi.
LEONTE C, 2011 – Tratat de ameliorarea plantelor. Ed. Academiei Române, Bucureşti.
LEONTE C., SIMIONIUC Violeta, 2018 – Metode şi tehnici utilizate în cercetarea agronomică. Ed. “Ion Ionescu de la Brad”, Iasi.
SESTRAŞ R., 2004 – Ameliorarea speciilor horticole. Ed. AcademicPres, Cluj-Napoca.

Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Course	Exam	50
	Presence	20
Practical works	Oral assessment during the semester, verification tests and final laboratory colloquium.	30

Contact

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Plant Breeding (III-rd Year of study, VI-th Semester)

Credit value (ECTS) 2

Course category
Domain (Mandatory)

Course holder:
Lecturer dr. Violeta Simioniuc

Discipline objectives (course and practical works)

The aim of the course is to acquire knowledge about peculiarities of plant breeding, for the main horticultural species cultivated in Romania.

The practical trainning aims to familiarize students with the laboratory techniques used in plant breeding, ways to examin plant material used during breeding, as well as performing specific functions of molecular breeding techniques, in the field or in the laboratory.

Contents (syllabus)

Course (chapters/subchapters)
1. VINE BREEDING
1.1. The importance of breeding activities
1.2. The national program of vine breeding
1.3. The biological basis of the vine breeding
1.4. The aims of vine breeding
1.5. The breeding methods
1.6. Achievements in vine improvement
2. BREEDING OF FRUIT TREES AND SHRUBS
2.1. Apple breeding
2.2. Pear breeding
2.3. Plum breeding
2.4. Cherry breeding
2.5. Shrubs breeding
3. BREEDING OF VEGETABLE SPECIES
3.1. Tomato breeding
3.2. Eggplant breeding
3.3. Pepper breeding
3.4. Onion breeding
3.5. Cabbage breeding
3.6. Carrot breeding
3.7. Green peas breeding
3.8. Green beans breeding
Practical works
Clonal selection of vines
Determining the degree of ripening of wood for vines, fruit trees and shrubs
Assessment of frost resistance in vines

Evaluation of the culinary properties of pod beans
Determination of germination capacity and pollen viability
The floral constitution, the biology of flowering and the technique of hybridization to the vine
Floral constitution, flowering biology and hybridization technique in fruit trees. Testing

References

1. LEONTE C., 1992 – Ameliorarea plantelor horticole şi tehnică experimentală.UAMV Iaşi.
2. LEONTE C., 1996 – Ameliorarea plantelor horticole. Probleme generale. Ed. Did. şi Ped., Bucureşti.
3. LEONTE C., 1997 – Ameliorarea plantelor horticole şi tehnică experimentală. Lucrări practice. UAMV Iaşi.
4. LEONTE C., 2003 – Ameliorarea plantelor. Ed. “Ion Ionescu de la Brad”, Iaşi.
5. LEONTE C, 2011 – Tratat de ameliorarea plantelor. Ed. Academiei Române, Bucureşti.
6. LEONTE C., SIMIONIUC Violeta, 2018 – Metode şi tehnici utilizate în cercetarea agronomică. Ed. “Ion Ionescu de la Brad”, Iasi.
7. SESTRAŞ R., 2004 – Ameliorarea speciilor horticole. Ed. AcademicPres, Cluj-Napoca.

Evaluation

Forme de evaluare	Modalităţi de evaluare	Procent din nota finală
Course	Exam	50
	Presence	20
Practical works	Oral assessment during the semester, verification tests and final laboratory colloquium.	30

Contact

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