

Soil management for poorly fertile soils (1st YEAR, 1st SEMESTER)

Credit value (ECTS) 9

Course category

Domain (Imposed)

Course holder:

Prof. PhD. Costică AILINCĂI

Discipline objectives (course and practical works)

Discipline “Soil management for poorly fertile soils ”, according to the course syllabus, focuses on:

- The study and the familiarization with the characteristics of low productive soils;
- Studying the soil tillage systems in the areas with low productive fields;
- The recognition of weeds and their integrated combat;
- Studying and establishing the rotation system for the areas with low productive fields;
- Studying and establishing the methods for increasing the fertility level of the soils affected by various forms of degradation (compaction, acidification, low content of organic matter and nutrients, erosion-affected soils etc.);
- Enhancing and mastering the practical knowledge on establishing the potentiation indices for the production capacity of agricultural fields.

Contents (syllabus)

Course (chapters/subchapters)
1. The objectives and the role of agrotechnics in the effective capitalization of low productive fields
2. Soil quality in Romania 2.1. The surface of agricultural land affected by different factors limiting the productive capacity; 2.2. The distribution of fields on pretability classes. 2.3. The agrophysical condition of soil. 2.4. The agrochemical condition of soil.
3. The impact of various agrotechnical measures in improving soil fertility 3.1 The influence of land organization and rotations on the physical and chemical characteristics of the soils – texture, structure, porosity, base saturation level, soil reaction, the content of organic carbon and mineral elements. 3.2 The impact of soil tillage systems on the physical and chemical characteristics of the soil. 3.3 The impact of soil fertilization and liming systems on the physical and chemical characteristics of the soil.
4. Agrotechnical measures and works for the cultivation of arable fields affected by erosion 4.1. Anti-erosion agrotechnics; Erosion affected areas in Romania; Factors leading to hydric erosion. The damages caused by erosion. 4.2. Territory organization. 4.3. The organization of the fields in rotation for the protection of the soil. 4.4. Conservative soil tillage systems. 4.5. Fertilization systems. 4.6. Antierosional cropping systems. 4.7. Sowing and tillage methods for crop preservation
5. The characteristics of applying agrotechnical measures in the areas affected by draught 5.1. The fields in rotation. Their characteristics in the draught affected areas. 5.2. Plants recommended to be cultivates and their grouping the in the cropping system. 5.3. Soil tillage, the fertilization of crops and other agrotechnical measures.

6. Agrotechnical measures and works for the capitalization of the fields affected by compaction 6.1 The machinery – soil – plant system. 6.2 Soil compacting processes. 6.3 The effects of soil compacting. 6.4 The impact of compacting processes on plants and soil. 6.5 The influence of soil tillage on. 6.6 Soil compaction prevention and combatting measures. 6.7 the improvement and the preservation of compacted soils
7. Agrotechnical measures and works on sandy fields 7.1. Areas affected by wind erosion in Romania; Factors leading to erosion and the resulting damages. 7.2. Territory organization; The structure of crops; Fields in rotation; 7.3. The application of fertilizers; 7.4. Soil tillage. 7.5. Sowing and maintenance works. 7.6. Anti-erosion cropping methods
8. Agrotechnical measures and works in various agriculture systems 8.1 Modern agriculture systems and the objectives of the modern agriculture systems. 8.2 The system of organic agriculture. 8.3 The system of sustainable agriculture. 8.4 The system of accurate agriculture. The development of expert systems for planning the sustainable use of low productive fields and technological recommendations.

Practical works
Assessing the quality of agricultural works made on sloping fields Drawing up and using the registers with the fields in rotation.
Establishing the soil tillage systems on different fields in rotation for soil protection
Establishing the fertilization system on the fields in rotation for soil protection Establishing the doses of fertilizers and the amendments for the fields degraded by erosion, compaction and acidification Drawing up the fertilization plan
Drawing up the fodder rotations Rotations for nurseries and tree plantations Rotations for the protection of soil
Establishing the technical elements for the ameliorative fertilization of degraded fields
Analysis and interpretation of pedological and agrochemical maps Knowing the mapping methods of soils, data analysis and interpretation
Establishing the indices of increasing production capacity of agricultural fields.
Final colloquium of knowledge evaluation

Bibliography

1. Gerard Jităreanu, Costică Ailincăi, Simion Alda, Ileana Bogdan, Costică Ciontu, Dan Manea, Aurelian Penescu, Mihai Rurac, Teodor Rusu, Denis Țopa, Paula Ioana Moraru, Adrian Ioan Pop, Marian Dobre, Anca-Elena Calistru - 2020 -Tratat de Agrotehnică, Editura “Ion Ionescu de la Brad”, Iași, 1240 pagini, (p. 1219-1233), ISBN 978-973-147-353-6.

2. Gerard Jităreanu, Costică Ailincăi, 2016 – Agrotehnica, Ed. “Ion Ionescu de la Brad” Iași, ISBN: 978-973-147-183-9.

3. Ailincăi Costică, Jităreanu Gerard, Lucian Raus, Țopa Denis- 2013 - Tehnologii de cultură și metode de protecție a solului - Crop technologies and methods for soil protection, Editura “Ion Ionescu de la Brad”, Iași, 2013, 212 p, ISBN 978-973-147-121-1.4.

Evaluation

Elements	No of points	%
Attendance	1.0	10
Evaluation during the semester	3.0	30
Examination	6.0	60
Final grade	10.0	100

Contact

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