

Study Programme: Agronomy
Course Unit Title: Plant Ecophysiology
Course Unit Code: 3DAI2075
Name of Lecturer(s): Full professor Maksimović V Ivana, (practice) Assistant professor Marina I. Putnik-Delić
Type and Level of Studies: Doctoral Academic Studies
Course Status (compulsory/elective): Elective
Semester (winter/summer): Summer
Language of instruction: English
Mode of course unit delivery (face-to-face/distance learning): Face to face
Number of ECTS Allocated: 10
Prerequisites: Passed exam in Plant physiology at the undergraduate level
<p>Course Aims:</p> <p>Acquiring of advanced knowledge in the field of role and impact of environmental factors on crop metabolism. Special emphasis will be on plant reactions to various stress factors and ways their tolerance may be increased, as ecophysiological studies lead to information fundamental for an understanding of the mechanisms underlying adaptive strategies.</p>
<p>Learning Outcomes:</p> <p>On successful completion of this subject, the students should:</p> <ol style="list-style-type: none"> 1) be able to understand and critically analyse new literature considering effects of different abiotic and biotic factors on crop metabolism; 2) be able to use the acquired knowledge in their own research work or in practice
<p>Syllabus:</p> <p><i>Theory</i></p> <p>Definition and subject of ecophysiology, stress, acclimatization, adaptation. Photosynthesis - mechanism and importance. Photorespiration - the impact of CO₂, CO₂ and light, acclimatization, adaptation, regulation, different factors affecting it; Respiration: glycolysis, Krebs cycle and electron-transport chain, oxidative phosphorylation, respiratory coefficient of alternative ways of respiration, respiration and hypoxia: response of plants, acclimatization, adaptation, variations in different environments; Transport of nutrients to the phloem, symplastic and apoplastic movement, the influence of environmental factors, transport of products of photosynthesis over long distances; Water regime, water potential and conductivity, transport through the xylem, turgor pressure, water uptake, transpiration, stomatal regulation, other mechanisms of regulation. Freezing and heath resistance, nutritional stress, hypoxia, interactions among stress factors. Plant life-cycle, dormancy, germination, flowering, fruiting.</p> <p><i>Practice</i></p> <p>Growing plants in a semi-controlled conditions, provoking stress (drought, hypoxia, lack of light) and following up the various parameters in these conditions.</p>
<p>Required Reading:</p> <p>Hans Lambers, F. Stuart Chapin III, Thijs L. Pons, Plant Physiological Ecology. Springer, ISBN: 978-0-387-78340-6</p> <p>Taiz L, Zeiger E, Møller IM, Murphy A (2014) Plant Physiology and Development, Sixth Edition, Sinauer Associates.</p>

Weekly Contact Hours: 8	Lectures: 30	Practical work: 90	
Teaching Methods: Lectures, Practical classes, Consultations, study, research work			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	points
Active class participation		written exam	
Practical work	40	oral exam	60
Preliminary exam(s)		
Seminar(s)			
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			