Sveučilište u Zagrebu Agronomski fakultet
Svetošimunska cesta 25, 10000 Zagreb
Telefon: +385 (0)1 2393 777
E-mail: dekanat@agr.hr
Web: www.agr.unizg.hr

Weed Ecology (296588)

Nositelj kolegija

prof. dr. sc. Maja Šćepanović

Opis kolegija

With new, environmental friendly weed control methods knowledge of weed biology and ecology is of great importance. Objectives of the course Weed Ecology are: principles of weed ecology, genetic aspects of weeds, ecological characteristics of the life cycle; the influence of abiotic factors on growth and development of weeds; interferences in agroecosystems; biodiversity and changes in the composition of weeds. The subject specially deals with the possibility of prediction (determination of the weed seed bank) and application of predictive weed emergence models in determining the optimal weed control time. The object of the course is also problem of invasive weed species and their aerobiology.

ECTS: **3.00**

Sati nastave: 30
Predavanja: 20
Vježbe u praktikumu: 6
Seminar: 4

Ocjenjivanje

Dovoljan (2): 60-69%
Dobar (3): 70-79%
Vrlo dobar (4): 80-89%
Izvrstan (5): 90-100%

Izvođač predavanja

- prof. dr. sc. Maja Šćepanović

Izvođač vježbi

- doc. dr. sc. Valentina Šoštarčić
- Laura Pismarović, mag. ing. agr.

Izvođač seminara

- doc. dr. sc. Valentina Šoštarčić
- Laura Pismarović, mag. ing. agr.

Vrsta kolegija

- Graduate studies / MS Courses taught in English (Izborni kolegij, 1. semestar, 1. godina)

Opće kompetencije

Basic knowledge of weed biology

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Oblici nastave

- Lectures
  Principles of weed ecology, genetic aspects of weeds, ecological characteristics of the life cycle; the influence of abiotic factors on growth and development of weeds; interferences in agroecosystems; biodiversity and changes in the composition of weeds, possibility of weed prediction and application of predictive weed emergence models in determining the optimal weed control time, invasive weed species and their aerobiology.
- Laboratory practice/exercises
  1) Determination of germinating seed in the population of seeds harvested from plants in field teaching. Determination of intra-population variability by weight and seed volume 2) Destructive methods for weed seed viability test: Tetrazolium test and Crush test). 3) Weed seed bank analysis – method of seiving 4) Determination of seeds isolated from seed bank and determination of seed viability 5) Determination of allelopathic effect of weed species on germination of test species 6) Laboratory for aerobiology of the Public Health Institute 'Dr. Andrija Štampar: Demonstration of pollen monitoring method in the air and in the honey
- Field work
  Experimental station Šašinovečki Lug - collecting weed seeds to determine weed germination / dormancy. Taking soil samples for soil seed analysis for the purpose of weed emergence prediction
- Seminars
  Ecology of selected weed species

Ishodi učenja i način provjere

Ishod učenja	Način provjere
To demonstrate the importance of biological and ecological features of weeds in different ecosystems IU2 To explain the reasons for changes in weed species in agricultural areas	Written exam
To find out how abiotic and biotic factors influence the appearance of weed species	Written exam and Seminar
To explain the role of competitive and allelopathic effect of weed species on agrochemicals	Written exam
To determine the composition of the weed flora of the agricultural area by analyzing seeds from the soil sample	laboratory excercies colloqium

Način rada

Obveze studenta

- Attendance to lectures exercises and seminars
- presentation of seminar
- laboratory excercies colloqium

Polaganje ispita

Elementi praćenja	Maksimalno bodova ili udio u ocjeni	Bodovna skala ocjena	Ocjena	Broj sati izravne nastave	Ukupni broj sati rada prosječnog studenta	ECTS bodovi
Colloqium – laboratory excercises test	15%	0-59% 60-69% 70-79% 80-89% 90-10%	Nedovoljan (1) Dovoljan (2) Dobar (3) Vrlo dobar (4) Izvrstan (5)	6	13,5	0,45

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Elementi praćenja	Maksimalno bodova ili udio u ocjeni	Bodovna skala ocjena	Ocjena	Broj sati izravne nastave	Ukupni broj sati rada prosječnog studenta	ECTS bodovi
Seminar – oral presentation and written part (voluntarily)	30%	0-59% 60-69% 70-79% 80-89% 90-100%	Nedovoljan (1) Dovoljan (2) Dobar (3) Vrlo dobar (4) Izvrstan (5)	4	18	0,6

Elementi praćenja	Maksimalno bodova ili udio u ocjeni	Bodovna skala ocjena	Ocjena	Broj sati izravne nastave	Ukupni broj sati rada prosječnog studenta	ECTS bodovi
Written test	55%	0-59% 60-69% 70-79% 80-89% 90-100%	Nedovoljan (1) Dovoljan (2) Dobar (3) Vrlo dobar (4) Izvrstan (5)	20	58,5	1,95
Total				30	90	3

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Tjedni plan nastave

1. L Introduction to Weed Ecology. History and Guidelines on Weed Science. The importance of biology and weed ecology for agricultural production and agrochemicals
2. Field teaching: Experimental station Šašinovečki Lug - collecting weed seeds to determine weed germination / dormancy. Taking soil samples for soil seed analysis for the purpose of weed emergence prediction
3. L The classification of weeds. Life forms of plants. Physiological classification of plants. Weeds as a result of human activity. The relation of weeds to ecological factors-ecological indices and plant life forms
4. L Distribution of weed populations, changes over time and population distribution estimates. E Abundance and methods of measuring population abundance. Changes in population structure and dynamics over time. Calculation - predicting changes in the weed population dynamics in a quiet and periodic environment
5. Sexual and asexual reproduction. Dispersal of weeds in space (primary and secondary dispersal). L The composition of weed seeds in soil within the agroecosystem. Determination of germinating seed in the population of seeds harvested from plants in field teaching. Determination of intra-population variability by weight and seed volume
6. Effect of abiotic and biotic factors on germination and growth of weeds: development of plants from seeds to germs
7. Destructive methods for weed seed viability test: Tetrazolium test and Crush test).
8. Weed seed bank analysis – method of seiving
9. The effect of abiotic and biotic factors on phenological development of weeds: from germination to maturation (seed formation). Determination of the growing degree days for development of certain phenological phases of weed species. Determination of seeds isolated from seed bank and determination of seed viability
10. Interaction among populations – competition and allelopathy. Intra iand inter competition. Factors of competition – light, nutrition, water and space. Allelopathy – role of allelopathy on agroecosystem, allelopathic effect of weed species Determination of allelopathic effect of weed species on germination of test species
11. Invasive plant species - defining problems; methods of entry of invasive plant species; economic harm of invasive weed species; allergen potential of plant species. Flora Croatia database - analysis of the presence and distribution of invasive weeds in the Republic of Croatia
12. Methods of monitoring pollen of allergenic plant species; pollen forecast for the Republic of Croatia; Alergo-alert-application for monitoring the pollen of allergenic plants in the air; an introduction to melisonopalinology
13. Laboratory for aerobiology of the Public Health Institute 'Dr. Andrija Štampar: Demonstration of pollen monitoring method in the air and in the honey - a presentation of the pollen sampler plant located on the roof of the Institute; Preparation of pollen measuring device (in air and in the honey); microscopy of pollen samples; microscopic presentation of pollen of alergenic plants - Ambrosia artemisiifolia, Chenopodium spp., Rumex spp., Plantago spp
14. Work shop about seminar preparation and presentation
15. Student presentation and discussion

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Obvezna literatura

1. Šarić T., Ostojić Z., Stefanović L., Milanova S., Kazinczi G., Tyšer L. (2011). The changes of the composition of weed flora in South-eastern and Central Europe as affected by cropping practices. Proceedings of the 3rd International Symposium on Weeds Sarajevo, 20-21 May, 2011 (part I). Herbologia, Vol. 12 (1): 4-16
2. Booth B. D., Murphy S. D. i Swanton C.J. (2003). Weed ecology in natural and agricultural systems.
3. Zimdahl R. L. (2007): Fundamentals of Weed Science (third edition). Academic press, USA
4. Kohli, R. et al (2001). Allelopathy in Agroecosystems. Food Products Press An Imprint of The Haworth Press, New York.
5. Weber (2004). Invasive Plant Species of the World- A reference guide to environmental weeds. CABI Publishing, USA.
6. Monaco, T et al (2001). Weed Science – principles and practices. Part: Weed

Sličan kolegij na srodnim sveučilištima

- Weed Ecology and Management, University of Vermont

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