UNIVERSITEIT GENT

Studiefiche

Academiejaar 2023-2024

Life Cycle Biology, Physiology and Behaviour of Plant-parasitic Nematodes (C003951)

Cursusomvang *(nominale waarden; effectieve waarden kunnen verschillen per opleiding)*

Studiepunten 4.0 **Studietijd 120 u**

Aanbodsessies en werkvormen in academiejaar 2023-2024

A (semester 2)	Engels	Gent	hoorcollege
			werkcollege
			peer teaching
			zelfstandig werk

Lesgevers in academiejaar 2023-2024

Wesemael, Wim	WE11	Verantwoordelijk lesgever
Perry, Roland	WE11	Medelesgever

Aangeboden in onderstaande opleidingen in 2023-2024	**stptn**	**aanbodsessie**
International Master of Science in Agro- and Environmental Nematology	4	A

Onderwijstalen

Engels

Trefwoorden

Agro-ecosystems, biology, ecology, interaction, population variability

Situering

This course builds upon the acquired information of some of the general courses and is therefore given in the 2nd semester.
Plant-parasitic nematodes have an important impact on agro-ecosystems. They damage crops and, as a consequence, reduce their yield. The course˙Life Cycle Biology, Physiology and Behaviour of Plant-parasitic nematodes´ provides information on life cycle biology linked to functional aspects of physiology and beheviour. It is necessary to understand host-parasite interactions and the ability of plant-parasitic nematodes to survive in the absence of a host and to locate and invade the host. This knowledge is vital in order to develop rational novel control strategies based on perturbing the nematode life cycle.

Inhoud

The course overviews the principle groups of plant-parasitic nematodes: root-knot nematodes, cyst nematodes, migratory endoparasitic nematodes, semi-endoparasitic nematodes, and ectoparasitic nematodes.
For each of these groups details of their life cycle and behaviour, host response to parasitism, effect on plant growth and yield, cytogenetics, morphological particularities, principle species and their identification, and interactions with other plant pathogens, are discussed. Specific aspects of hatching physiology, host location, survival attributes, and behaviour will be presented in the context of possible targets for novel control strategies.

Begincompetenties

Students should have basic academic knowledge of both botany and zoology.

Eindcompetenties

1 Advanced knowledge of theories, models, areas, methods, techniques, processes and applications from Biology and Agronomy to be applied to analyse and solve new or complex theories or experimental problems in Nematology in Agro-ecosystems, Nematology in Natural Ecosystems and Nematode systematics (Taxonomy, Phylogeny, Biodiversity).
2 Apply specialized knowledge of nematode systematics of plant- and insect-parasitic nematodes and all free-living nematode taxa for creative and efficient problem solving and

research in Agro-ecosystems or Natural-ecosystems.

3 Investigate and understand interactions between Nematology and related science domains such as genetics, plant biology, ecology and ecotoxicology, molecular biology and, statistics and integrate them in a multidisciplinary way to facilitate problem solving practical applications and solutions in the area of agronomy and/or the environment or general biology.

4 Demonstrate profound understanding in the most recent scientific developments as presented by an international team of experts in nematology.

5 Recognise nematological problems in developing countries and be creative/inventive in efforts to tackle these problems.

6 Demonstrate critical consideration and evaluation of known and new theories, models or interpretation within the field of nematology. Show creativity to formulate hypotheses and to discover new relationships and to formulate a valid opinion derived from basic data and information which may, in certain circumstances, be limited, incomplete or contradictory.

7 Independent systematic and critical evaluation of personal thinking and acting, and translate this into well thought out conclusions and improved solutions in Nematology.

8 Build up independent logical and analytical reasoning within and outside the discipline of Nematology, and comprehend and critically evaluate complex reasoning.

9 Demonstrate problem-prevention and problem-solving abilities in agriculture or the environment, and use them in diverse situations or in a non-familiar context.

10 Interact in English with nematologists originating from different countries who may have English as a second language.

11 Act ethically and socially responsible within a group of people originating from all over the world and with different cultural backgrounds.

12 Be able to take up a job in which biology, agronomy and nematology is of paramount importance.

13 Initiate outreach programmes to inform the local people about the importance of nematodes and organize trainings in recognition of the symptoms of nematode infection and how to remedy the adverse effects.

Creditcontractvoorwaarde

Toelating tot dit opleidingsonderdeel via creditcontract is mogelijk mits gunstige beoordeling van de competenties

Examencontractvoorwaarde

Dit opleidingsonderdeel kan niet via examencontract gevolgd worden

Didactische werkvormen

Werkcollege, Hoorcollege, Zelfstandig werk, Peer teaching

Toelichtingen bij de didactische werkvormen

Seminar prepared and presented by groups of students. Subjects to be selected from a list with suggestions. Visit to European nematological laboratories active in the subjects treated in the course (see course Networking and Seminars); visit to field experiments. Critical evaluation of published work related to life cycle biology of PPN
Seminars by visiting scientists

Leermateriaal

Power point presentations put at the disposal of the students through Ufora; photos, videos, additional scientific papers
Teaching book: Perry, R.N. & Moens, M. (2006). Plant Nematology (€ 70)
Geraamde totaalprijs: 70 EUR

Referenties

Perry, R.N. & Wright, D. (1998). Physiology of Nematodes
Luc, M., Bridge, J. Sikora, R. (2006). Nematodes of Tropical Crops
Evans, K., Trudgill, D. & Webster, J. (1993). Plant-Parasitic Nematodes in Temperate Agriculture.
Brown, R.H. & Kerry, B. (1995): Principles and practices of nematode control

Vakinhoudelijke studiebegeleiding

Staff nematology laboratory ILVO

Evaluatiemomenten

periodegebonden en niet-periodegebonden evaluatie

Evaluatievormen bij periodegebonden evaluatie in de eerste examenperiode

Mondelinge evaluatie, Schriftelijke evaluatie met meerkeuzevragen, Schriftelijke evaluatie met open vragen

Evaluatievormen bij periodegebonden evaluatie in de tweede examenperiode

Mondelinge evaluatie, Schriftelijke evaluatie met meerkeuzevragen, Schriftelijke evaluatie met open vragen

Evaluatievormen bij niet-periodegebonden evaluatie

Tweede examenkans in geval van niet-periodegebonden evaluatie

Examen in de tweede examenperiode is mogelijk

Toelichtingen bij de evaluatievormen

Period bound (80%) : The written exam evaluates whether the student disposes of the necessary basic knowledge. The oral exam will go more into depth and will evaluate if the student is able to use the acquired knowledge. The student can prepare the answers.

Eindscoreberekening

Non period bound evaluation (20 %): frequently during lectures en certainly at the end of a chapter; searching for the knowledge that is acquired and exploration of self-collected information
Period bound evaluation (80 %)