

HR901-20 Advances in Crop Protection

24/25

Department

Life Sciences

Level

Taught Postgraduate Level

Module leader

John Clarkson

Credit value

20

Module duration

3 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

This module aims to teach students the importance and impact of plant pests, diseases and weeds on food production and provide them with a thorough understanding of their biology and ecology.

[Module web page](#)

Module aims

This knowledge will underpin an examination of the principles behind the wide range of different control approaches that can be applied and an analysis of how these may be combined in an integrated crop management system. The conflicting requirements of environmental and crop protection will also be addressed.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Causes of disease; types of plant pathogens Biology and ecology of pests, pathogens and weeds

Plant pathogen infection processes Introduction to molecular biology and application in plant pathology Plant pathogen detection and discrimination Plant population dynamics Chemical control measures for pests, diseases and weeds Biological control of pests, diseases and weeds Monitoring and forecasting of pests and diseases Plant genetics and resistance to pests and diseases Resistance management Components of integrated crop pest and disease management systems

Learning outcomes

By the end of the module, students should be able to:

- Demonstrate understanding of the impact of plant pests, diseases and weeds on food production and global food security
- Demonstrate understanding and have knowledge of the key concepts and mechanisms associated with the biology and ecology of plant pathogens, pests and weeds and how these relate to different control strategies.
- Have knowledge of and critically assess the range of advanced approaches for controlling pests, diseases and weeds.
- Develop and evaluate the components of integrated crop pest and disease management systems and how these interact with economics, legislation and the environment.
- Demonstrate understanding, knowledge and practice independently the experimental techniques in plant pathology, entomology and weed science

Indicative reading list

Agrios, GN. 2005. Plant Pathology (fifth edition) Academic Press. ISBN 0-12-044565-4 Cousens, R & Mortimer, M. (1995) Dynamics of weed populations. Cambridge University Press. Dent, D. (2000). Insect Pest Management. CABI Publishing, ISBN 0851993419 Dickinson M. Molecular Plant Pathology. (2003) Garland Science (UK) ISBN 1859960448 Fenner, M. (2000) Seeds: The ecology of regeneration in plant communities. 2nd Edition. CABI Publishing Grime, JP. (2002) Plant strategies, vegetation processes and ecosystem properties, 2nd Edition. John Wiley & Sons Ltd. Hajek, A. (2003) Natural Enemies: An Introduction to Biological Control. Cambridge University Press, ISBN 052165292 Hull, R. (ed) Matthews' plant virology. 4th ed. Harcourt Academic Press 2001. ISBN 0123611601 Jeffers, J.N.R. (1982) Modelling. Chapman & Hall, ISBN 0 412 24360 1

Koul, O; Dhaliwal, G. S.; Cuperus, G. W. (2004) Integrated Pest Management: Potential, Constraints and Challenges. CABI Publishing, ISBN 0851996868 Maier, R.M. et al (2000) Environmental microbiology Academic Press ISBN 0124975704 Matthews (2002) Matthews' plant virology (4th ed.) Roger Hull. Naylor, EL . (2002) Weed Management Handbook, 9th Edition. Blackwell Publishing Panda, N; Kush, G. S.; Khush, G.S. (1995). Host Plant Resistance to Insects. CABI Publishing, ISBN 085198632 Silvertown JW & Charlesworth D. (2001) An Introduction to Plant Population Biology (4th Edition). Blackwell Press. Singh RS. Plant Disease Management (2001) ISBN 1-57808-160-2; Strange, R. L. Introduction to plant pathology. Wiley-VCH, 2003. ISBN 047084973 8

[View reading list on Talis Aspire](#)

Subject specific skills

To understand the impact of plant pests, diseases and weeds on food production. To understand key concepts associated with the biology and ecology of plant pathogens, pests and weeds. To assess a range of advanced approaches for controlling pests, diseases and weeds. To develop and evaluate the components of integrated crop pest and disease management systems. To analyse the conflicting and complex requirements of environmental and crop protection.

Transferable skills

Analysis and evaluation

Study

Study time

| Type | Required |
|-------------------|-----------------------------|
| Lectures | 29 sessions of 1 hour (14%) |
| Seminars | 12 sessions of 1 hour (6%) |
| Practical classes | 2 sessions of 6 hours (6%) |
| Private study | 147 hours (74%) |
| Total | 200 hours |

Private study description

Independent research

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group A5

| | Weighting | Study time | Eligible for self-certification |
|----------------|-----------|------------|---------------------------------|
| Assessed Essay | 60% | 30 hours | Yes (extension) |
| In-module test | 40% | 20 hours | No |

Weighting Study time Eligible for self-certification

1 hour

Feedback on assessment

Written feedback released through Moodle.

Availability

Courses

This module is Core for:

- THRA-D4A3 Postgraduate Taught Food Security
 - Year 1 of D4A3 Food Security
 - Year 1 of D4A3 Food Security
- Year 1 of THRA-D4A2 Postgraduate Taught Sustainable Crop Production: Agronomy for the 21st Century

This module is Optional for:

- Year 1 of ULFA-C1A1 Undergraduate Biological Sciences (MBio)