

## BAGB203 Plant Pest Identification and Control

ECTS Value: 5 ECTS

### Overall Objectives and Outcomes

This module will provide a basic knowledge of the biology of pests and pathogens and of the pest control strategies that may be applied in cropping systems. During this module, the participants will learn to identify key insect pests, weeds and pathogens, assess their economic impact and the potential use of crop protection strategies. Building on this fundamental knowledge and the expertise gained through contextual and/or work-based learning, the participants will develop integrated pest management (IPM) strategies for key crops and/or pests. The assessment of this unit will be project-based, and learners will collect and analyse data from an identified cropping system. National and international policies and legislation regulating pest management will be discussed.

#### Unit Content:

Identify and classify key pests and pathogens: biology of important plant diseases; identification; impact on crop production; principles of disease control; main insect groups, their taxonomy and identification, morphology, life histories, economic damage and control; weed identification and their life cycles, and impact on crop production.

Techniques and options for the management of example weed, pest and disease problems: crop rotation, resistant varieties, companion planting, intercropping, irrigation, crop nutrient management; pest and disease management in conventional, organic and low input agriculture; ecology of pest species; augmentation and conservation of natural enemies.

Developing integrated pest and disease management strategies: pest/disease monitoring techniques and forecasting and decision-support systems; concept of integrated pest management; use of a combination of preventive, cultural, mechanical, biological and chemical methods; agricultural sustainability; national and European Union legislation.

By the end of this module, the learner will be able to:

#### Competences

- a. critically review key pests and pathogens;
- b. develop strategies and implement techniques for pest and disease management;
- c. predict example weed, pest and disease problems and evaluate their economic and biological significance;
- d. combine different pest management methods which may be applied as part of an integrated pest management system.

#### Knowledge

- a. describe the lifecycle of commonly occurring weeds, pests and diseases;

- b. relate the biology, epidemiology and population dynamics of example weed, pest and disease problems to the occurrence and severity of, and control strategy for, their outbreaks;
- c. identify the basic legislation regulating pesticide use and pest management in Malta and the European Union;
- d. identify factors associated with increased pest risk.

### Skills

- a. identify and classify key pests and pathogens;
- b. evaluate the options for the management of example weed, pest and disease problems;
- c. choose appropriate control measures for specific pest problems and combine them into integrated pest management systems;
- d. apply an integrated pest management strategy for a particular crop;
- e. evaluate progress towards the targets set by national and regional policies and legislation;
- f. evaluate the key conditions for integrated pest management;
- g. evaluate the important contribution of integrated pest management in sustainable farming;
- h. prepare a crop monitoring report based on data collected through the use of pest and/or disease monitoring techniques;
- i. present crop protection practices;
- j. discuss the potential implementation of crop protection strategies based on collected field data;
- k. identify key pests and pathogens;
- l. assess the use of crop protection strategies and techniques;
- m. use crop monitoring techniques to inform pest management;
- n. implement integrated pest management strategies;
- o. implement integrated disease management strategies;
- p. use presentation software;
- q. use scientific and agricultural equipment in a work-place environment;
- r. prepare reports and to make use of communication technologies.

### Mode of Delivery

This module adopts a blended approach to teaching and learning. Information related to the structure and delivery of the module may be accessed through the IfE Portal. For further details, kindly refer to the Teaching, Learning and Assessment Policy and Procedures found on the Institute for Education's website.

## Assessment Methods

This module will be assessed through: Fieldwork, Report, and Presentation.

## Suggested Readings

### Core Reading List

1. Deguine J-P, Gloanec C, Laurent P, Ratnadass A, Aubertot J-N. (2017). Agroecological Crop Protection. Springer Netherlands.
2. Reddy PP (2013). Recent advances in crop protection. Springer India
3. Flint ML (2012). IPM in practice. Second Edition. University of California Agriculture & Natural Resources.
4. Agrios, G.N. (2005). Plant Pathology, London: Academic Press.
5. Elzinga R.J. (2004). Fundamentals of Applied Entomology, 6th Edition, Pearson Education Incorporated.

### Supplementary Reading List

1. Radcliffe, Hutchison, Cancelado (2009). Integrated Pest Management: Concepts, Tactics, Strategies and Case Studies. Cambridge University Press.
2. Knauff, David, (2007) Principles of Field Crop Production. Oxford: OUP.