

UCD School of Agriculture and Food Science

Professional Diploma in Integrated Pest Management and the Sustainable Use of Pesticides

Students must complete a total of 20 credits of core modules.

| Core Module Details | Core Module Description |
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| <p>Module 1</p> <p>CPSC 30060 Biology and control of weeds, pests and diseases of crops</p> <p>ECTS Credits 5, Semester 2</p> | <p>What will I learn?</p> <p>Introduction to important aspects of weed biology relevant to crop production including dormancy, seeding, spread, germination and induced resistance. Identification of common weeds and plants and the use of plant identification guides and keys. Recognition of some of the most commonly encountered plant and weed families Cultural and chemical control of weeds, use of selective and non-selective herbicides, pre and post-emergence use, residual and contact herbicide use etc . Overview of the biology and ecology of important invertebrate pests. The biology, life histories and identification of major pest groups. Study of the main types of pest damage, the nature and causes of pest outbreaks and the basic principles of prevention and control.</p> <p>The biology and control of key plant diseases including the biology, symptoms and signs, diagnosis and control of key pathogens of crops and plants. Analysis of the impact of key fungal pathogens on yield and quality of field crops including explaining how plant pathogens build up to cause epidemics on field crops. Chemical, cultural and integrated methods for prevention and control of diseases. Focus on how pathogen resistance towards key fungicide chemistry can develop using recent relevant case studies. Understanding crop damage directly induced by environmental factors and damage caused by pests and pathogens. Chemical regulation of plant growth: the biology and mode of action of plant growth regulators (PGR); regulation of principal stages in the life cycle by endogenous and exogenous PGRs.</p> |
| <p>Module 2</p> <p>AESC 30240 Pesticide use, Integrated Pest Management and the environment</p> <p>ECTS Credits 5, Semester 2</p> | <p>What will I learn?</p> <p>This module examines the pest management concept as an alternative to more traditional approaches to pest control that are heavily reliant on pesticide use. The module covers the following topics:</p> <ul style="list-style-type: none">i. A review of population control theory, and the nature and causes of pest population out breaks in agro-ecosystems.ii. A review of past pest control strategies and the reasons for the failure of exclusively pesticide based systems using cotton as a case study.iii. The concepts, aims and differences between Integrated Pest Control (IPM) and Rational (Supervised) Pest Control.iv. The concept and practical evaluation of pest control thresholds; the development of pest monitoring systems, pest |

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| | <p>forecasting and delivery of practical pest control advice using case studies from Irish, UK and European arable agriculture.</p> <ul style="list-style-type: none"> v. Non-pesticide approaches; biological control using vertebrate, invertebrate and microbial control agents; biological control strategies in different cropping circumstances; classical, augmentative, and inundative techniques; practical production of natural control agents; ecology of natural beneficial pest control agents in Irish crops; crop management for the conservation of natural pest control agents. vi. Integration of pest control strategies (chemical, biological, cultural, legislative) in different crop production systems. |
| <p>Module 3</p> <p>CPSC 30070 Integrated pest management (IPM) principles and practices</p> <p>ECTS Credits 5, Semester 2</p> | <p>What will I learn?</p> <p>Practical IPM approaches for weed, pest and disease control in farm-based crop management. The practical evaluation of pest control thresholds; the development of pest monitoring systems, pest forecasting and delivery of practical pest control advice using case studies examples . Current use of non-pesticide approaches; biological control - use of non-chemical control agents; practical production of natural control agents and importance of good crop nutrition. Practical examples of the use of natural beneficial pest control agents in Irish crops , practical crop management practices for the conservation of natural pest control agents</p> <p>Implementing appropriate IPM guidelines for integrated weed pest and disease control measures -, using support tools and awareness of decision support services for Agricultural and Horticultural/Forestry Crops. The practical development of an effective pest control programme, including the quantification of an economic damage threshold, and the planning and implementation of an IPM approach in this situation.</p> <p>Pesticides Use; Comparative assessment at user level to help professional users make the most appropriate choices on pesticides with the least side effects on human health, non-target organisms and the environment among all authorised products for a given pest problem, in a given situation.</p> <p>Logistics and appropriate record keeping. Application and spraying of pesticides, correct sprayer use, calibration, and maintenance of equipment. Health and safety in pesticide use, safe use, handling and storage of pesticides.</p> |
| <p>Module 4</p> <p>CPSC 30080 Use of integrated pest management practices in crop management</p> | <p>What will I learn?</p> <p>This module will be completed as a detailed project (8000 to 12000 words) on the use of IPM practices for the sustainable use of pesticides in crop production. The project will be directed as a participant led study detailing the use of IPM practices and guidelines in combination with a pesticide-based strategy to control key target pests in an important aspect of crop production systems in Ireland. There will also be a requirement to present a topic (literature) review section which will require a targeted reading of scientific and technical material appropriate to the project title. This will include review of any</p> |

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| programmes ECTS Credits 5, Semester 2 | computer-based IPM tools and decision support systems available which can be used as part of this component of the course. The attendee will be required to present logged practical work material including documented crop advisory work schedules which used IPM principles and practices in the use of pesticides. |
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