

Course Unit	Integrated Pest Management		Field of study	Agricultural and Animal Production	
Master in	Agroecology		School	School of Agriculture	
Academic Year	2023/2024	Year of study	1	Level	2-1
Type	Semestral	Semester	2	ECTS credits	6.0
Code	6348-747-1205-00-23				
Workload (hours)	162	Contact hours	T 30	TP -	PL 30
			TC -	S -	E -
			OT 4	O -	

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Albino António Bento, José Alberto Cardoso Pereira

### Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. To know and understand the principles and components of integrated protection.
2. Knowing apply to every enemy of cultures, the different methods for estimating the risk.
3. Know and learn to interpret the concept of economic injury level and economic threshold.
4. To know the different means of protection against the harmful organisms.
5. To know the bioecology and behavior of different crops' enemies (pests, diseases, weeds, rodents, etc) and the harmful factors that make to vary its importance.
6. Evaluate the necessity of intervention.
7. Making decisions about indirect and preventive measures that must be putting in practice.
8. Being able to advise the use of direct means of protection (biological, microbiological, biotechnological, chemical or cultural), and recognize the advantages and disadvantages of the option.

### Prerequisites

Before the course unit the learner is expected to be able to:  
Students should have knowledge of plant pathology and entomology.

### Course contents

Concepts, principles and components of integrated protection. Integrated crop protection against insects, fungal diseases, bacterial, virus diseases, weeds and rodents: Systematic and morphology. Bioecology and behaviour. Symptomatology. Damage and losses. Harm Factors. Evaluation of intervention indispensability. Indirect measures of protection. Direct protection means.

### Course contents (extended version)

1. Evolution of the Integrated Pest Management and Integrated Production in Portugal
  - Concepts, principles and components of IPM
2. Evaluation of the needs of interventions.
  - Evaluation of the indispensability of intervention. Economic thresholds levels.
3. Integrated pest management of crops (vineyards, olives, apple, dry nuts. . . )
  - Pests (lepidoptera, coleoptera, diptera, homoptera. . . ) mites.
  - Diseases.
  - Bacteria, virus.
4. Systematics and morphology. Biology and behaviour. Sintomatology. Injury and losses.
5. Nocivity factors. Climatic conditions. Pest-host interactions
6. Parasitoids and prodactors action.
7. Evaluation of the needs of interventions.
8. Indirect means of protection
  - Increase natural biological agents
  - Cultural practices
9. Direct means of control
  - Biological control using entomophagous and entomophatogens
  - Biotechnical control
  - Chemical control
10. Protection against weeds. Direct control means
  - Mecanichal control
  - Biological control
  - Chemical control. Biological characteristics of herbicides (action mode, efficacy, toxicity, etc. )
  - Susceptibility of homologed insectices

### Recommended reading

1. Amaro, P. 1982. Introdução à protecção integrada. Lisboa 276 pp; Burges, H. 1981. Microbial control of pests and plant diseases. Academic press. 931 pp.
2. Howes, P. 1998. Insect pheromones and their use in pest management. Ch&Hall, 369pp; Kuhr, R. 1998. Pesticides and the future. IOS, 332 pp.
3. Pearson, R. & Goheen, A. 1998. Plagas y enfermedades de la vid. Mundi-Prensa; William R. Jarvis 1999. Control de enfermedades en cultivos de invernadero. Mundi-Pren
4. Ribeiro, J. & Gonçalves, M. 2000. Protecção integrada da vinha DGPC, 41 pp; Ribeiro, J. & Gonçalves, M. 2001. Protecção integrada de prunóideas. DGPC, 53 pp.
5. Gonçalves, M. & Cavaco, M. 1997. Produção integrada de pomóideas. DGPC, 60 pp; Lopes, A. 2000. Protecção integrada de hortícolas. DGPC, 65 pp.

### Teaching and learning methods

Methods of instruction: Lectures: planatory methodology, using the media. The participation of students is encouraged with placement of issues and presentation / discussion of cases. Laboratory classes: boratorial and field work with development of one or more reports using the bibliography of specialty. Oral presentation of a report.

### Assessment methods

1. Alternative 1 - (Regular, Student Worker) (Final)
  - Final Written Exam - 70%
  - Practical Work - 30%
2. Alternative 2 - (Student Worker) (Supplementary, Special)
  - Final Written Exam - 100%

Language of instruction

Portuguese

Electronic validation

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