

**UNIVERSITI TEKNOLOGI MARA****AGA582: INTEGRATED PEST MANAGEMENT (IPM) IN HORTICULTURE CROP**

Course Name (English)	INTEGRATED PEST MANAGEMENT (IPM) IN HORTICULTURE CROP APPROVED
Course Code	AGA582
MQF Credit	3
Course Description	This course will give the special features in managing common specific pests and diseases in horticultural crops. Horticultural crops in the context of this course will refer to selected fruit crops, vegetables and greenhouse vegetables (or under structures such as rain shelters). Emphasis will be given to early detection and diagnosis since they are the key factors especially to greenhouse pest management, as well as the proper techniques and application of pesticides as and when they are needed. The main contents will focus on identification, biology, ecology and management of insect pests and diseases of horticultural crops, including fruits, vegetables and greenhouse crops. Emphasis will be on Integrated Pest Management (IPM) strategies employed to maintain pests below damaging levels while minimizing the use of traditional insecticides and fungicides.
Transferable Skills	1. Ethically and Socially Sensitive Demonstrate practical and contemporary knowledge of relevant professional, ethical and legal frameworks 2. Expert in Field Demonstrate professional skills, knowledge and competencies
Teaching Methodologies	Lectures, Blended Learning, Discussion
CLO	CLO1 Explain the beneficial and harmful arthropods and disease symptom associated with horticultural crops . (C1, PLO1) CLO2 Demonstrate the biology and ecology of common arthropods associated with horticultural crops. (A3, PLO5) CLO3 Explain the type of injury and associate it with the arthropod pest and diseases.(P2, PLO2) CLO4 Relate the management tactics that are used to minimize injuries by arthropod pests and disease pathogens. (C4, PLO9)
Pre-Requisite Courses	No course recommendations
Topics	
1. 1.0 INTRODUCTION 1.1) 1.1 History of IPM implementation in Malaysia 1.2) 1.2 Importance of IPM in horticultural crops	
2. 2.0 COMMON INSECT PEST IN HORTICULTURAL CROPS 2.1) 2.1 Definition of Economic Damage 2.2) 2.2.1 Definition of Economic Threshold Level 2.3) 2.2.2 Definition of Economic Injury Level 2.4) 2.2 Basic component of IPM 2.5) 2.3 Type of Damage 2.6) 2.4 Symptom of Damage 2.7) 2.5 Outbreak of Pest	

3. 3.0 COMMON DISEASES IN HORTICULTURAL CROPS 3.1) 3.1 Definition of Pest and Disease 3.2) 3.1.1 Common Orders of Pest 3.3) 3.1.2 Common Disease Pathogen 3.4) 3.2 Monitoring and surveillance of outdoor pest and diseases 3.5) 3.3 Monitoring and surveillance of indoor pest 3.6) 3.4 Pest Control Technology 3.7) 3.4.1 Cultural methods 3.8) 3.4.2 Mechanical methods 3.9) 3.4.3 Biological methods 3.10) 3.4.4 Host plant resistances 3.11) 3.4.5 Chemical methods
4. 4.0 GREENHOUSE INTEGRATED PEST MANAGEMENT 4.1) 4.1 Step in implementing IPM 4.2) 4.2 IPM in fruits and vegetables 4.3) 4.3 Pesticide formulation
5. 5.0 MANIPULATING GREENHOUSE ENVIRONMENT 5.1) 5.1 Forecasting of pest outbreak and analysis 5.2) 5.2 Forecasting of diseases outbreak and analysis
6. 6.0 FIELD HORTICULTURAL CROP INTEGRATED PEST MANAGEMENT 6.1) 6.1 Agro-Pesticides Management 6.2) 6.2 Agro-Pesticides Application 6.3) 6.3 Pesticide Safety
7. 7.0 ISSUES AND CHALLENGES IN IMPLEMENTING IPM CONCEPT 7.1) Current issues and implementation of IPM in horticultural crops

Assessment Breakdown		%
Continuous Assessment		60.00%
Final Assessment		40.00%

Details of Continuous Assessment				
	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Concept Map	20%	CLO4
	Case Study	Case Study	20%	CLO3
	Presentation	Virtual Presentation	20%	CLO2

Reading List	Recommended Text	<ul style="list-style-type: none"> Muniappan, R., Shepard, B.M., Carner, G.R., Ooi, P. A. C. 2012, <i>Arthropod Pests of Horticultural crops in Tropical Asia.</i>, CABI Publications.
	Reference Book Resources	<ul style="list-style-type: none"> Abrol D.P. & Shankar, U., <i>Integrated Pest Management Principles and Practice.</i>, 2nd Edition Ed., CABI Publications. Flint, M.L. . University of California, 2012, <i>IPM in Practice Principles and Methods of Integrated Pest Management.</i>, Second Edition Ed., ANR. Publication 3418. Reddy, P.P. . 2016, <i>Sustainable Crop Protection under Protected Cultivation.</i>, Springer Publication Abrol D.P. 2014, <i>Integrated Pest Management Current Concepts and Ecological Perspective</i>, 3rd Edition Ed., Elsevier Publication
Article/Paper List		This Course does not have any article/paper resources
Other References		This Course does not have any other resources