

ONLINE COURSE

From the 'Lead in your field' series

PEST AND DISEASE MANAGEMENT

in vegetables, flowers and greenhouse crops

<https://cropaia.com/pest-disease-management-course/>



General Details	
Course Code:	PDM1C
Course Name:	Pest and Disease Management – Vegetables, greenhouse crops and flowers
Language of Instruction:	English
Delivery Method:	Online Course – Live sessions via a web conferencing platform. Recordings are provided.
Dates:	See our website for updated information.
Hours:	See our website for updated information.
Level and Prerequisites:	Intermediate.
Text:	
Certificate	Certificate of completion – Pest and Disease Management

Lecturer	
	<p>Mr. Guy Sela</p>
Credentials:	Senior agronomist Founder and former CEO at SMART Fertilizer Management Founder and CEO at Cropaia Founder at yieldsApp
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Course overview

Pests and diseases are one of the most important factors affecting crop production. Proper management is critical in order to avoid damages, meet regulatory standards, protect the environment and decrease pesticide resistance.

This course focuses on pest and disease management in vegetables, greenhouse crops and flowers. However, the principles that are discussed in this course are relevant also for many other crops.

An integrated pest and disease management approach is discussed throughout the course. We will learn methods to identify pests and diseases in the field, methods to avoid occurrence of pests and diseases, principles of biological control and pesticides, their properties and how to wisely use them.

How it works

We will have weekly live sessions, according to the schedule on our website.

There are two live online sessions every week, both on the same topic, so you can join at the time that is more convenient for you.

We do the sessions in a form of a webinar, using a webinar platform. Each week you will receive a link to connect to the session.

All sessions are recorded and we will send you the recording after the repetition session, so you can learn at your own pace.

You may ask questions during the live sessions and we will do our best to answer your questions within the time frame of the session.

Additional questions can be sent to the lecturer by email.

A short exercise will be given to the participants at the end of the course. The exercise is not obligatory, but required for receiving the course certificate.

Topic 1 – Pests and their identification

Introduction to insects and pests
Pests life cycle, effect of the environmental conditions, GDD
Damages caused by pests
Detection of pests – what to look for?
Scouting and monitoring
Scouting tools, aids and methods
Recognizing feeding patterns
Recognizing pest signs
Phytotoxicity
Whitefly
Thrips
Aphids
Spider mites

Topic 2 – Plant diseases and their identification

What is a disease
Damages caused by plant diseases
Disease causes – biotic vs. abiotic
Disease identification
 The complexity
 Steps in the diagnosis
 Signs and symptoms
Effect of the environmental conditions
Fungi – description, symptoms, spread, common fungal diseases and their hosts
 Downey mildew
 Powdery mildew
 Septoria
 Early blight
 White rust
 Phytophthora blight
 Fusarium wilt
 Pythium
 Rhizoctonia
Bacteria – description, symptoms, spread, common bacterial diseases
 Agrobacterium crown gall
 Bacterial soft rots
 Bacterial leaf spot
Viruses – description, symptoms, hosts, spread, common viral diseases
 TSWV
 CMV

Topic 3 – Pest management and control

Introduction to pest control
Economic damage threshold
Measures to manage, avoid and control pests
Cultural methods
 Crop rotation
 Managing irrigation and fertilization
 Controlling the environment
 Tunnels
 Greenhouse structure
 Anti-insect nets
Traps and pheromones
Sanitation
Weather and pest modelling
Planting dates and planting densities
Introduction to beneficial insects
Introduction to pesticides and biopesticides

Topic 4 – Management and control of plant diseases

Introduction and principles of disease control
The disease triangle
Avoiding the pathogen
Disease life cycle
Dissemination and dispersal pathogens
Physical dissemination
Intervention in the disease life cycle
Exclusion
 Sanitation
 Water disinfection
 Quarantine
 Other methods.
Avoidance
 Selecting crop
 The planting site
 Planting time and density
 Irrigation management
 Fertilization management
 Other methods
Eradication
 Different practices
 Crop rotation
 Alternative hosts
 Soil/media sterilization – steam, Metam sodium, heat.
Protection
 Mulches
 Controlling the environment
 Sanitation in the greenhouse
 Disinfectants

Topic 5 – Weeds and their management

Introduction to weeds and how they affect crop production
Competition
Critical competition period
Invasive weeds
Types of weeds
 Annual weeds
 Biennial weeds
 Perennial weeds
Identification of weeds
Integrated weed management
The effect of the environmental conditions
Practices to avoid weeds
Herbicides
 Preemergence herbicides
 Postemergence herbicides

Topic 6 – Pesticides and their properties

What are pesticides?
Chemical pesticides
Biopesticides
The pesticide label and how to read it
Handling precautions
The active ingredient
MOA symbols
Pesticide formulations
Modes of action of insecticides
Modes of action of fungicides
Modes of action of biopesticides
Contact pesticides
Systemic pesticides
Resistance to pesticides

Topic 7 – Biological control

Introduction to biological control
Techniques of biological control
Augmentation
 Of existing natural enemies
 Inoculative release
 Inductive release
 Selection and genetic engineering
Classical biological control
 Conservation
 Biological control agents
 Biochemicals
Biological control of pests
 Predatory insects
 Parasitic insects
Consideration for application of beneficial insects products
Aphidius colemani
Predatory mites
Predatory bugs
Viral biopesticides
Fungal biopesticides
Nematode biopesticides
Biological control of plant diseases
 Mechanisms of biological protection
 Biofungicides
 Agrobacterium
 Trichoderma
 Bacteriophages
 Predation by insects
Biological control of weeds

Topic 8 – Spray application techniques

Pesticide type and why it matters for the spray application

- Contact pesticides

- Systemic insecticides

- Translaminar insecticides

The spray application - droplet size

Spray drift and how to avoid it

Sprayer types

- Hydraulic sprayers

- Low-volume sprayers

Selecting a nozzle

- Spray patterns

- Spray angle

- Spray distance

Spray pressure

Sprayer capacity

Topic 9 – The spray program

The water quality

- Water acidity

- Water mineral content

- Turbidity

- How to solve water quality problems

Spray calculations – active ingredients, application rates, sprayer volume, speed

Selection of pesticides – considerations

Planning in advance

Additional properties of the pesticide that should be considered.

The Weather

Calibration of the spray equipment

Topic 10 – Exercise

Exercise

Q&A