

## ONLINE COURSE

*From the 'Lead in your field' series*

# PEST AND DISEASE MANAGEMENT

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



## General details

<b>Course Code</b>	PDM1C
<b>Course Name</b>	Pest and Disease Management in Agriculture
<b>Language</b>	English
<b>Delivery Method</b>	Online course. Access to recordings provided. Downloadable materials in pdf format.
<b>Dates</b>	Flexible. Learn at your own pace. <b>Available.</b>
<b>Certificate</b>	Certificate of completion provided upon completing the final course exercise

## Course Instructor



Mr. Guy Sela is a distinguished figure in the field of agronomy and agriculture technology, making substantial contributions to the industry through his entrepreneurial endeavors.

As the CEO at yieldsApp and owner of Cropaia, Guy has dedicated over 22 years to transforming the international agricultural landscape. His expertise spans agronomy, water treatment, and business development, reflecting a comprehensive understanding of the intricacies involved in sustainable and innovative farming practices.

### Contact:

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Cropaia, as an educational company in agriculture, is dedicated to transforming the way farmers approach crop management.

### 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

**Registration and Access:** Upon registration, you gain access to the course.

Enjoy the flexibility of self-paced learning, with no time constraints on course completion or access to relevant materials. Delve into the intricacies of pest and disease management through recorded sessions and tailored materials.

Navigate the comprehensive content at your convenience, accommodating your schedule.

**Support and Interaction:** Connect directly with the instructor via email or Whatsapp for personalized support and clarifications specific to the course.

**Final Exercise and Live Session:** Undertake a hands-on exercise at the course's conclusion.

Unlock access to an exclusive live session, designed for in-depth discussions on practical applications and addressing specific queries.

**Certificate of Completion:** Successfully complete the course exercise to earn a course certificate, validating your expertise in pest and disease management.

## 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