MERCURY

Plant Health & Pest Management

15 – 19 August 2027
Cairo (Egypt)



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Plant Health & Pest Management

Ref: 16420_1019921 **Date:** 15 – 19 August 2027 **Location:** Cairo (Egypt) **Fees:** 4000 Euro

Introduction:

The Plant Health and Pest Management course equips learners with the in-depth theoretical foundations and applied frameworks needed for protecting crops and landscapes. This course unites plant pathology, entomology, and integrated pest control strategies to foster sustainable crop protection. We explore key principles of plant vigor, disease resistance, pest ecology, monitoring, threshold decision-making, and integrated interventions.

This Plant Health and Pest Management program emphasizes linking plant health maintenance with ecological pest suppression. Students will examine real-world systems and case studies to deepen conceptual understanding. The scope spans from fundamentals through advanced integrated pest management across agricultural, horticultural, and landscape systems.

Targeted Groups:

This Plant Health and Pest Management training targets professionals seeking specialized knowledge and skills:

- Agronomists and crop protection advisers.
- Horticulturists manage ornamentals and greenhouse crops.
- Plant pathologists and entomologists in research or extension.
- Agricultural extension agents and field officers.
- Nursery and landscape managers.
- Graduate students in plant sciences.

Course Objectives:

Participants will achieve the following objectives by completing the Plant Health and Pest Management course:

- Master foundational theory of plant health and the dynamics of pests, pathogens, and host interactions.
- Apply diagnostic skills to identify diseases, insect pests, and abiotic plant stresses from symptoms.
- Analyze pest risk and establish action thresholds under different cropping scenarios.
- Design integrated pest management IPM plans combining cultural, biological, mechanical, and chemical strategies.
- Evaluate intervention effectiveness through monitoring, feedback loops, and adjustment.
- Develop preventative plant health programs that minimize pesticide use.
- Critically appraise novel pest control methods e.g., push-pull, biocontrol in context.

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- Communicate technical decisions on plant health and pest strategy to stakeholders.

Targeted Competencies:

Participants will gain the following competencies during the Plant Health and Pest Management program:

- Ability to diagnose plant health issues due to pests, pathogens, or abiotic stress.
- Skill in designing tailored IPM plans for crops and landscapes.
- Competence in threshold-based decision making and risk assessment.
- Proficiency in integrating biological control agents and beneficial organisms.
- Experience in monitoring, record keeping, and data-driven pest management.
- Judgment in selecting cultural, mechanical, or chemical tools in balanced systems.
- Insight into regulatory, safety, and environmental aspects of plant protection.
- The capability to adapt strategies in response to changing pest pressures or conditions.

Studying Scenarios:

In this Plant Health and Pest Management training, participants will develop their skills through the analysis of the following scenarios:

- Grain farm with increasing aphid infestations.
- The greenhouse is facing fungal and insect problems.
- Nursery affected by root nematodes and foliar pests.
- Vineyard with diseases under humid conditions.
- Orchard applying push-pull pest control.
- Landscape is losing beneficial insects from broad-spectrum sprays.
- Vegetable field showing pesticide-resistant worms.

Course Content:

Unit 1: Foundations of Plant Health & Pest Ecology:

- Principles of plant health and vigor.
- Plant pathology fundamentals: pathogens, disease cycles.
- Insect and arthropod pest ecology.
- Soil health and plant nutrition influence.
- Abiotic stresses: drought, salinity, temperature.
- Host-pathogen-environment interactions disease triangle.
- Ecological balance and soil microbiome roles.

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Unit 2: Diagnostic Methods and Pest Identification:

- Symptom vs sign: recognizing disease indicators.
- Laboratory diagnostics: microscopy, culturing, and molecular tools.
- Insect and mite identification techniques.
- Weed and nematode diagnosis.
- Use of dichotomous keys and field guides.
- Sampling protocols and statistical inference.
- Remote sensing and digital image diagnosis.

Unit 3: Pest Monitoring, Risk Assessment & Thresholds:

- Monitoring and scouting protocols.
- Pest population estimation methods.
- Damage assessment and injury thresholds.
- Action thresholds in different cropping systems.
- Risk modeling and forecasting pest outbreaks.
- Record keeping and historical trend analysis.
- Decision support systems and pest risk tools.

Unit 4: Integrated Pest Management Strategies:

- Cultural control: crop rotation, sanitation, and variety selection.
- Mechanical and physical control: traps, barriers, pruning.
- Biological control: predators, parasitoids, microbial agents.
- Chemical control: selective pesticides, mode of action, resistance.
- Combining methods: synergistic integration.
- Integrated plant health management IPHM frameworks.
- Case studies: push-pull, attract-kill, biopesticides.

Unit 5: Strategy Implementation, Evaluation & Adaptive Management:

- Planning IPM deployment and scheduling.
- Safety, regulatory, and environmental compliance.
- Field implementation, logistics, and stakeholder buy-in.
- Monitoring post-implementation impact.
- Measuring success and feedback loops.
- Adjusting strategies under resistance or changing pressure.
- Long-term sustainability and scaling methods.

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Final Insights & Key Takeaways:

Participants will possess a robust theoretical foundation in plant health and pest management. They will confidently design, implement, and refine integrated strategies in real agricultural and horticultural settings.