Section 2: What subjects will we cover in this course?

- Following is an overview of the course content.

- Note that there are text and supplementary reading assignments, and you will be responsible for this content as well.

Pests and humans

- Direct pests and indirect pests (vectors of plant and animal diseases).
- What makes an insect a pest?
- Pest status: major, minor, occasional, migrant, and potential.
- Not all arthropods are pests: some benefits.

Causes of pest and vectored disease outbreaks

- Population biology: births and deaths.
- Factors affecting abundance: self-regulation, climate and weather, competition(inter- and intra-specific, and with natural enemies).
- Density dependence and independence.
- How people can cause outbreaks of pests and vectors.

Sampling and monitoring arthropods

- Methods
- Components
- Types
- Allocation of sampling units

Insecticides and their formulation

- Background of insecticides
- Issues affecting introduction of new products
- Types of insecticides
- Formulations of insecticides
- The pesticide label
- Toxicity
- Safety

Application of insecticides

- Targets
- Droplet size
- Application equipment for: liquids, solids, others
- Rational application

Problems with using insecticides

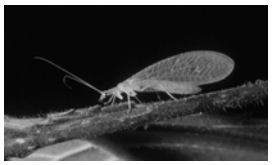
- Toxicity to humans
- Toxicity to wildlife
- Insecticide resistance
- Disease transmission

Environmental and cultural control

- Mechanical techniques
- Irrigation
- Fertilizer
- Sanitation
- Diversionary hosts
- Multiple cropping
- Separation in time and space
- Crop geometry

Biological control

- Successes of biocontrol
- Advantages and disadvantages
- Types of biocontrol agents: predators, parasitoids, and nematodes
- Techniques of biocontrol: inoculation, inundation, and conservation
- Reasons for failure of biocontrol



Insect pathogens

- Advantages and disadvantages
- Types of pathogens: fungi, viruses, bacteria, microsporidia
- Transmission of pathogens

Genetic control and area-wide management

- Sterile insect technique
- Eradication
- Other genetic approaches
- Area-wide management

Pheromones

- Pheromones/allelochemicals
- Pheromones in monitoring
- Attract-and-kill
- Mating disruption/confusion
- Alarm pheromones and oviposition deterrents

Host resistance

- Basis for resistance
- Mechanisms of resistance
- Compensation
- Induced resistance
- Problems with resistance
- Repellents

Physical measures

- Exclusion and barriers
- Traps
- Physical disturbance
- Sound
- Lethal temperature
- Controlled atmosphere
- Dusts and particulates
- Irradiation

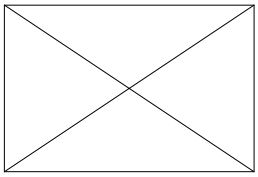
Legislation and regulation

- Exclusion
- Routes of entry
- Risk assessment
- Pesticide legislation
- Effects of regulation
- Genetically modified organisms

Emerging concepts and practices

- The integrated control/IPM concept
- Damage thresholds
- Forecasting
- Increasing host resistance
- Pesticide selectivity
- Eradication versus control
- What limits IPM adoption
- Decision support

View a Short Video on an Overview of IPM



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