Integrated/ Intelligent Pest Management (IPM)

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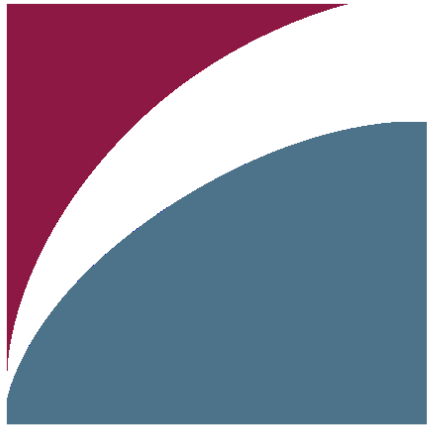

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- Ag Agent in Hanover County
  - 2012
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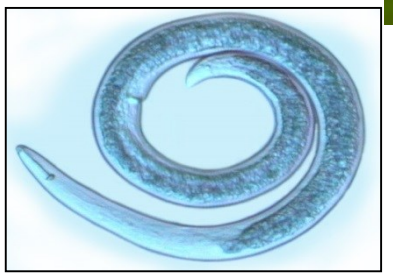
Integrated Pest Management

- Combines appropriate tactics into a single plan to reduce pests and their damage to an acceptable level.
- Plan ahead and choose from a variety of control tactics

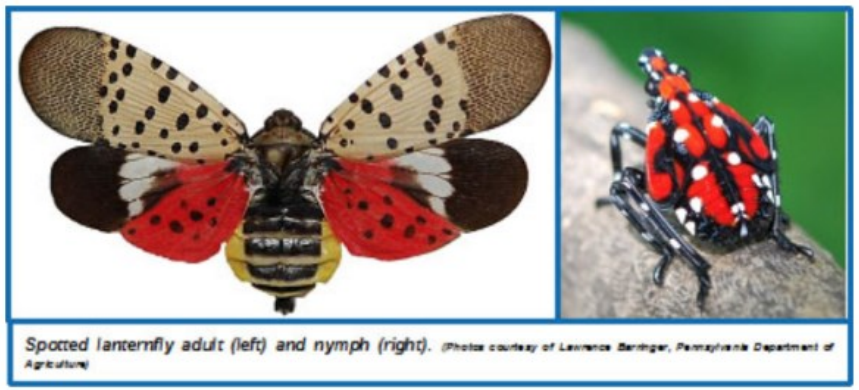
Types of Pests



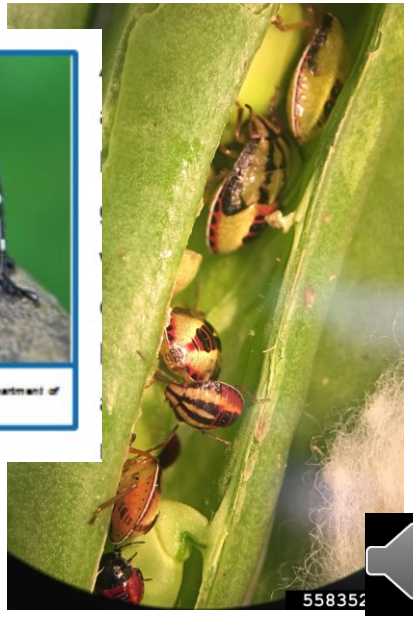
- Diseases (fungi, bacteria)
- Nematodes (microscopic roundworms)
- Insects (six legs)
- Arachnids (eight legs): spiders, mites, ticks
- Weeds
- Mollusks (snails, slugs)
- Vertebrates (rodents, birds)

Pest Control Goals

- Prevention
  - fungus diseases
- Suppression
  - reduce to an acceptable level
  - most insects
- Eradication
  - isolated infestations



Spotted lanternfly adult (left) and nymph (right). (Photos courtesy of Lawrence Barringer, Pennsylvania Department of Agriculture)



Pest Control Decision Making

- Is the problem actually caused by a pest?
  - If so, what pest?
  - What host?
- Is the problem severe enough to warrant the use of one or more applied controls?
- Is the pest in a vulnerable life cycle stage?
- What effective, manageable, and affordable control options are available?
- Did I keep records?
  - Did I look back at my records?

Integrated Pest Management

- Proper identification of the pest
- Knowledge of the pest's life cycle and habits
- Accurate assessment of pest population size and distribution
- A list of factors that attracted the pest to the site
- Good information about management methods, both chemical and nonchemical
- Long-term plans for prevention or suppression of troublesome pest populations.

IPM Control Methods

Genetic Control

Select pest/pathogen resistant cultivars, varieties, or strains

Biological Control

Beneficial organisms: insects, bacteria, fungi, nematodes

Cultural Control

Biosecurity and sanitation protocols, training

Physical Control

Barriers, squishing pests, wind, vacuums

Behavioral Control

Manipulate the pests behavior: pheromone traps, pesticides

Chemical Control

A last resort; the host of '-cides'

www.cropwalk.ag/post/controlmeth

Host Resistance and Genetic Control

The ability of a plant or animal to resist an attack by a pest.

- Chemicals in host repel pest or prevent it from completing its life cycle
- Host is more vigorous or tolerant than other varieties and less likely to be damaged
- Host has physical characteristics that make it difficult to attack

Biological Control

- Controlling pests using other organisms such as natural enemies:
  - Parasitoids
  - Predators
  - Pathogens
  - Weed feeders
- Microbes, Fungi and Pathogens
- Does not eradicate pest
- Degree of control fluctuates

Behavioral Control

The use of chemicals that don't necessarily kill an organism for control:

1. Any substance or mixture of substances intended for preventing, repelling, or mitigating any pest
2. Any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant

Most common way to alter the behavior of animal pests = pheromones

Cultural Control

Alter environment, condition of host plant or animal, or behavior to prevent or suppress infestation.

- Rotating crops
- Cultivating soil
- Vary time of planting or harvesting
- Planting trap crops
- Adjusting row width/ thinning
- Pruning
- Fertilizing

Mechanical Control

Alter the environment, host plant or animal through physical controls.

- Traps
- Screens
- Barriers
- Fences
- Nets
- Radiation

- Electricity
- Lights
- Heat
- Refrigeration
- Water
- Humidity

Sanitation

Prevent or suppress populations by removing pests, food sources, or shelter.

- Improving cleanliness
- Eliminate harborage/ remove crop residues
- Decontaminate equipment, animals, or transplants

Chemical control

- Is it necessary?
- Identify pest and susceptible life cycle
- Use least toxic chemical first
- Wear personal protection
- Read product labels to avoid buying the wrong chemical
  - Look for the pest and crop on the label
  - Read when to apply, how much
  - How you will apply the pesticide?
- Treat plant thoroughly

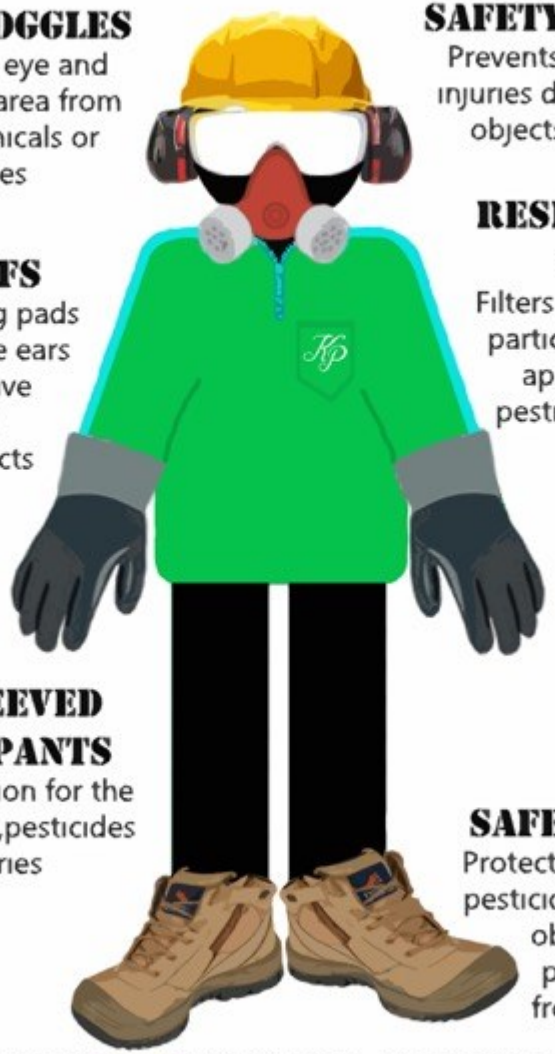
PERSONAL PROTECTIVE EQUIPMENT (PPE)

SAFETY GOGGLES
Protects the eye and surrounding area from water, chemicals or particles

SAFETY HELMET
Prevents from head injuries due to falling objects and falls

EAR MUFFS
Noise absorbing pads that protect the ears from excessive noise and foreign objects

RESPIRATORY MASK
Filters out unwanted particles and limits apsorption of pesticide vapours



SAFETY GLOVES
Protects the hands againts pesticide contact and injuries

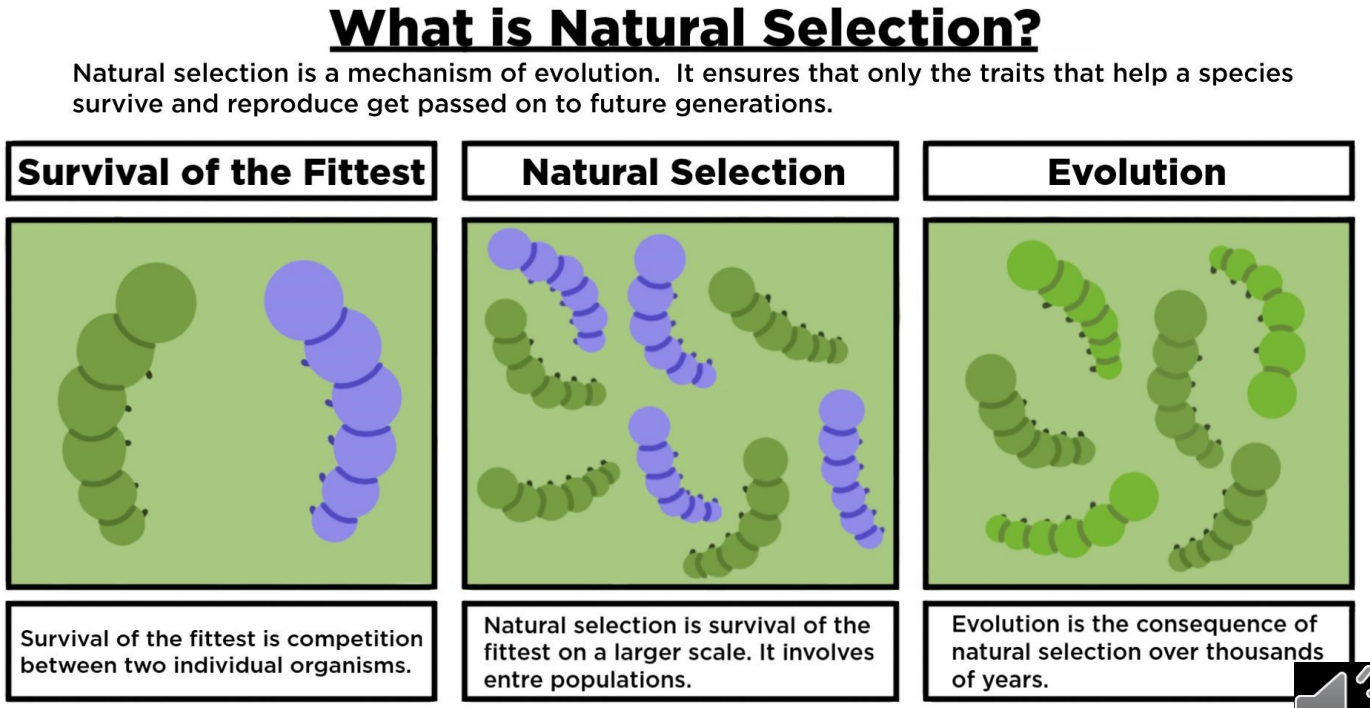
LONG SLEEVED SHIRT & PANTS
Acts as protection for the skin from pests,pesticides and injuries

SAFETY BOOTS
Protects the feet from pesticide spills, falling objects and punctures from below

KILLEM'S PEST CONTROL OFFICER (PCO)

Avoid Pest Resistance to Pesticides

- Rotate pesticide families
- Use pesticides only when necessary
- Practice IPM principles



IPM Conclusion

1. Prevent pests of host
2. Identify pest and population size
3. Learn pest biology and lifecycle
4. Research all management options
5. Use least toxic method that provides control
6. Develop a plan that prevents future outbreaks
7. Use different control methods to prevent resistance

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