Cultural Control

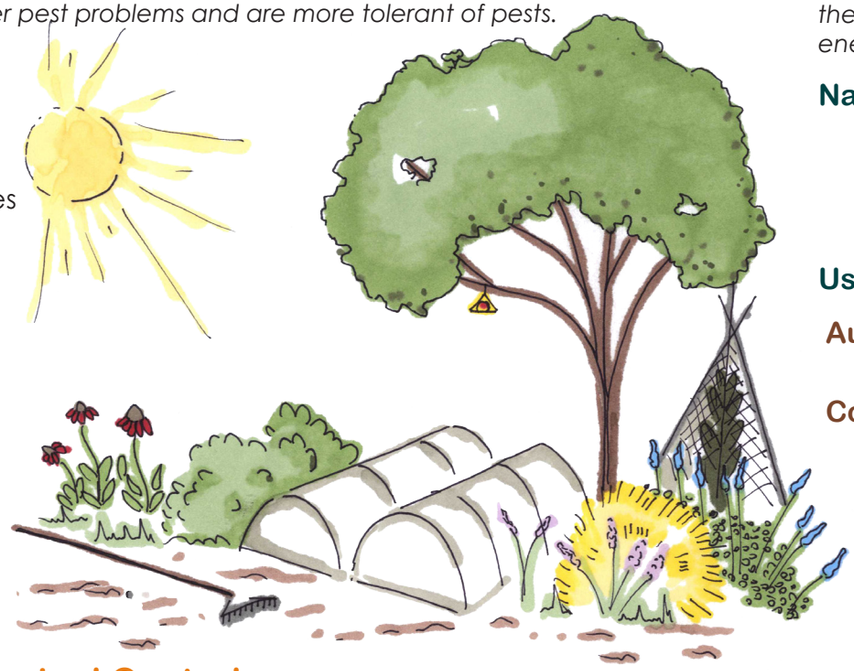
Cultural control techniques address the manner in which we cultivate plants and are directed at reducing and avoiding pest problems. At the heart of cultural control are practices to maintain plant health. Healthy plants have fewer pest problems and are more tolerant of pests.

Start with Healthy Plants:

- Incorporate resistant varieties
- Include native plants
- Choose well-adapted plants
- Practice proper planting techniques

Avoid Pest Problems:

- Practice crop rotation
- Practice companion planting
- Utilize trap crops
- Manage fertility and irrigation
- Adjust planting dates
- Follow good sanitation practices



Biological Control

Biological control uses natural enemies of pests to suppress or prevent a pest outbreak. Insects, pathogens and weeds have predators that feed upon them, and/or diseases that make them weak or die. These are the natural enemies that we take advantage of with biological control.

Natural Enemies: The Three Ps

- **Predators:** insects, birds, bats, reptiles and amphibians
- **Parasitoids:** small insects that develop on or inside a host insect
- **Pathogens:** disease-causing agents

Using Biological Control

Augmentation: purchase and release natural enemies to prevent the buildup of pest populations or reduce outbreaks

Conservation: attracting and protecting natural enemies native to the landscape

Conservation Practices:

- Reduce pesticide use
- Provide flowering plants as a nectar source
- Provide shelter in the landscape
- Protect natural enemy habitat
- Encourage birds, bats, amphibians and reptiles

Mechanical and Physical Controls

These tools directly remove or kill pests, or physically keep insect pests from reaching their hosts by means of a barrier or trap. Some methods alter the physical environment to make it unfavorable to pests. Mechanical and physical controls have relatively little impact on natural enemies and other non-target organisms, and are compatible with biological controls. They can be rapid and effective, and are well suited for the home landscape.

Control Measures Include:

- Habitat manipulation
- Creating barriers
- Trapping pests
- Hand removal
- Mulching

Chemical Control

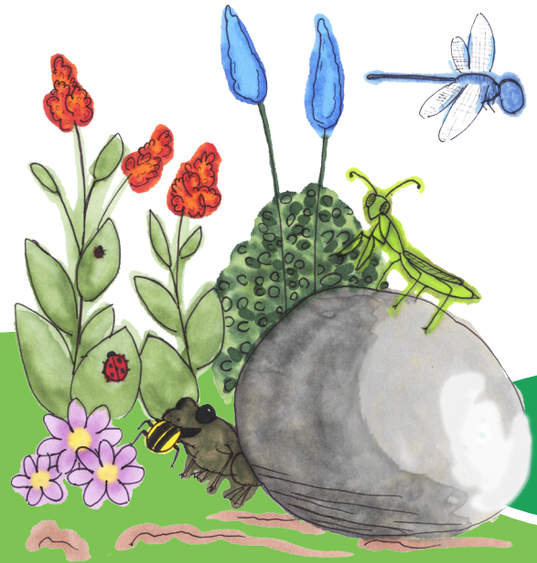
Many people think chemicals do not have a place in IPM; however, when used responsibly, pesticides can fit well into an IPM program. There are many different types of chemical controls, some of which are compatible with IPM. Use pesticides judiciously and select chemistries that have a narrow host range. Many highly-selective products are not only safe for non-target, beneficial insects, but also safer for the environment. It is best to rely on chemical pesticides as a last resort in IPM.

Using Pesticides in IPM:

- Spot treat only infested plants or stems
- Wear personal protection gear
- Use selective chemistries
- Properly identify the pest
- Treat only primary pests

Classes of Pesticides:

- Microbial and botanical pesticides
- Horticultural soaps and oils
- Insects growth regulators (IGRs)
- Minerals and metals
- Synthetic chemicals



Implementing IPM

The Goal of IPM is to prevent, avoid, or reduce a pest problem using multiple tactics.

The IPM toolbox includes:

- Cultural Practices
- Mechanical Techniques
- Physical Applications
- Biological Controls
- Chemical Applications

IPM Basics:

- **Knowledge is Key** – know your plants and common pest problems
- **Practice Prevention** – stop pests before they are a problem
- **Monitor the Landscape** – scout regularly for plant problems
- **Know Your Options** – consider the costs and benefits of control
- **Develop a Strategy** – incorporate multiple management tools
- **Evaluate** – determine how the controls worked and what you learned

IPM is used for:

- Vegetable and ornamental gardens
- Fruit trees and shrubs
- Lawns
- Indoor pests
- Houseplants
- Stored food
- Schools and public buildings

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Hannah Wahlmeier
Jimi Underwood

For more information, visit http://entoplp.okstate.edu/ipm/ or contact your local county extension office.

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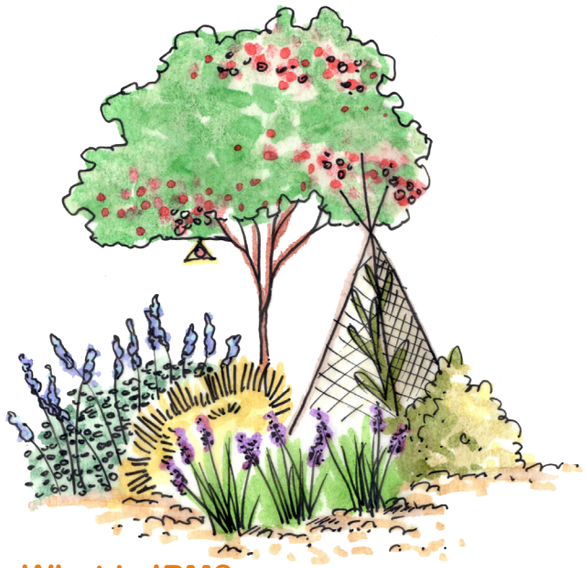

What is IPM?

Integrated Pest Management (IPM) is an effective and environmentally sensitive approach to pest management. IPM utilizes a combination of common-sense practices including physical, cultural, biological, and chemical techniques to prevent and control pests. This system relies heavily on information; success is driven by understanding the life cycles of pests and their interaction with the environment. IPM focuses on preventing pest problems before they occur. When pest problems do arise, management options focus on those with the least possible impact on human health and the environment.

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