

Integrated Pest Management (IPM) Learning Module Fact Sheet
Introduction to Integrated Pest Management (IPM)

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The words “integrated pest management” mean using harmonized, varied strategies to control unwanted creatures such as insects, deer, rodents, and birds. This system first evolved from observing the way subsistence farmers in Southern Asia exploited natural cycles to reduce pest pressure. The success of an IPM program relies on an emphasis of observing/scouting and planning.

- Chemical controls are often a last resort
- Observe & study a pest’s behavior, physiology, and ecology
 - Goal: use the pest’s biology against it
- Emphasis on observation & planning.

What is a pest?

A pest is any unwanted animal and can be vertebrates like deer and rodents, or invertebrates like cockroaches and mites. Similarly, a weed is any unwanted plant. Plants like crabgrass and dandelion are commonly seen as weeds but an unwanted Queen Anne’s Lace/Wild Carrot (*Daucus carota*) can be considered a weed in the wrong landscape.

Two important concepts about pests:

- 1) The longer a space is out-of-use, the risk of pest infestation increases over time
- 2) Some insects wander indoors and are called “incidentals” when they are not indicative of a wider infestation. For example: A wood cockroach (*Parcoblatta pennsylvanica*) does not prefer to live in human dwellings, but individuals may wander in by accident

The foundations of an IPM program

The first tools of an IPM program are consistent monitoring or scouting for pests, signs of pests, or new ways pests may enter the space. Well-organized recordkeeping ensures your program is trackable, this is especially important in schools. Forecasting future pest issues will rely on the quality of the data you collect and the records you keep. Thoughtful forecasting pushes your program into the firmly preventative position you want to be in.

- Surveillance & Scouting: The frequency of scouting depends on your program and its needs; where scouting intervals, frequency, duration, and strategy (i.e., use of traps, what traps to deploy) should evolve over time and be as dynamic as your needs require. Record weather and climate data when scouting, such as: daily high & low temperature, precipitation, humidity.
- Record Keeping: Thorough records need to be kept; traceable records may be legally required if your program uses chemical controls (pesticides, herbicides). Thorough continuous records allow for new people to continue the program if personnel change. Periodically you may wish to audit your IPM program to look for ways to improve or incorporate new technology

- **Forecasting:** Consistent recordkeeping will allow you to track patterns and anticipate potential infestations in the future. This means you will be able to act preventatively and proactively versus being in a weaker, reactionary position. Acting preventatively by using your records to forecast is a primary goal of an IPM program.

Basic types of IPM control strategies

- **Cultural Controls:** These are actions you take that will reduce the ability of the pest to establish, stop them from reproducing, stop the pest from spreading, and/or stop the pest from surviving at all. Excluding the pest from first establishing is the primary goal. For example, a structure like a school or greenhouse, creating an impenetrable “sealed envelope” while “decoy cropping” is sometimes used in agricultural fields to lure birds or insects from areas of production.
- **Biological Controls:** A strategy using one organism to fight off (or kill) another, often insects. These are typically low-toxicity strategies but can be variably successful depending on the situation and pest. Nematodes, bacteria (*Bacillus thuringensis*, “BT”), fungi, and parasitoids (insect parasites) are commercially available to control different insect species
- **Chemical Controls:** All commercial-grade pesticides require an applicator’s license. The label directions are the law. Pesticides, fungicides and herbicides are important tools that are typically used as a last resort. **Pesticide runoff** and **pesticide drift** is when wind or water gathers pesticides and carries them to another location, usually and most detrimentally a lake, river, or underground water table.

Pesticide resistance

A well-organized IPM program that utilizes cultural and biological controls is your important contribution to combating pesticide resistance. Modern, targeted pesticide products take a long time to develop. Limiting or stopping pests from developing resistance accomplishes two immediate goals; first it ensures a wider variety of products are available for a longer period and second, buys time for new products to be developed.

- Resistance is typically a result of pesticide overuse
- Fungi are especially good at developing resistance to fungicides
- Mosquitoes, ticks, fleas, lice and other pests of public health concern are also at risk of developing a resistance or immunity to our pesticides.
- Once a pest begins developing immunity, a much harsher product is usually required for control

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