

What is IPM?

Integrated pest management (IPM) uses environmentally sound, yet effective, tactics to keep pests from invading or damaging your home, garden, or landscape. IPM usually combines several methods for long-term pest prevention and management without harming you, your family, or the environment. Successful IPM begins with correctly identifying the pest, allowing you to select the appropriate and most effective methods and materials.

IPM prevention methods:

- ◆ Alter the home or garden environment to deprive pests of the food, water, and shelter they need to survive.
- ◆ Keep pests out of the home and garden using barriers, screens, and caulk.
- ◆ Plant pest-resistant or well-adapted plant varieties such as native plants.
- ◆ Discourage various pests by modifying the way you design, irrigate, fertilize, and manage your garden.
- ◆ Squash, trap, wash off, or prune out pests and use mulch for weed control.
- ◆ Encourage natural enemies of pests to live in your garden, eliminating the need for insecticides.

What about pesticides?

- ◆ Most pests can be managed without using pesticides.
- ◆ Use pesticides only if nonchemical controls are ineffective and monitoring confirms that pests are reaching intolerable or damaging levels.
- ◆ If pesticides are necessary, use them in combination with the nonchemical methods described above.
- ◆ Choose pesticides carefully. Use the least toxic, most effective material to protect human health and the environment.
- ◆ Examples of least toxic pesticides include:
 - Soaps and oils
 - Microbials such as *Bacillus thuringiensis* (Bt) and spinosad
 - Borate products in bait stations, for ants
 - Dusts such as borate or silica in cracks or crevices, for household pests



What are beneficial insects? Most gardens contain far more “good bugs,” or beneficial insects, than pest insects. Beneficial insects and other organisms that kill pests are called natural enemies. In any IPM program, it is important to avoid using certain pesticides that kill or harm beneficials. You can encourage beneficials by choosing plants that provide them with pollen and nectar and by keeping ants out of pest-infested plants. Learn to identify natural enemies, both in their adult forms and immature stages.

Common beneficials found in California gardens include:

- ◆ **Lady beetles (lady bugs):** Adults and larvae eat aphids.
- ◆ **Lacewings:** Larvae feed on many insect pests; you'll often see adults around lights.
- ◆ **Syrphid flies:** Larvae eat aphids; adults resemble honey bees and hover around flowers.
- ◆ **Parasitic mini-wasps:** Many species of tiny wasps lay their eggs inside pests such as aphids or caterpillars; after hatching, the larvae consume the pest and kill it.
- ◆ **Spiders:** All spiders feed on insects or other arthropods and are beneficial in the garden.



lady beetle adult and larva



lacewing adult and larva



syrphid fly adult and larva



parasitic mini-wasp attacking an aphid



spider

Minimize the use of pesticides that pollute our waterways. Use nonchemical alternatives or less toxic pesticide products whenever possible. Read product labels carefully and follow instructions on proper use, storage, and disposal.

For more information about managing pests, contact your **University of California Cooperative Extension office** listed under the county government pages of your phone book or visit the UC IPM Web site at ipm.ucanr.edu.

What you use in your landscape affects our rivers and oceans!

UC | University of California
CE | Agriculture and Natural Resources
University of California Cooperative Extension
Integrated Pest Management

UC ANR is an equal opportunity provider and employer.