

IPM & Beneficial Insects

Integrated pest management (IPM) uses environmentally sound, yet effective, ways to keep pests from annoying you or damaging plants. IPM programs usually combine several pest control methods for long-term prevention and management of pest problems without harming you, your family, or the environment. Successful IPM begins with correct identification of the pest. Only then can you select the appropriate IPM methods and materials.

Preferred IPM methods include:

- ◆ Planting pest-resistant or well-adapted plant varieties such as native plants.
- ◆ Discouraging pests by modifying the way you design, irrigate, fertilize, and manage your garden.
- ◆ Altering the garden or home environment to deprive pests of the food, water, shelter, or other requirements they need to thrive.
- ◆ Keeping pests out of the home and garden using barriers, screens, and caulking.
- ◆ Squashing, trapping, washing off, or pruning out pests.
- ◆ Relying on good bugs in your garden to eat pests, eliminating the need for insecticides that can end up in our waterways.

Turning to pesticides:

- ◆ Many pests can be managed without the use of pesticides.
- ◆ Use pesticides only if nonchemical controls are ineffective and pests are reaching intolerable levels.
- ◆ Use pesticides in combination with the methods described above.
- ◆ Choose pesticides carefully. Use the least toxic, most effective material to protect human health and the environment.
- ◆ Examples of least toxic insecticides include:
 - Soaps;
 - Oils; and
 - Microbials such as *Bacillus thuringiensis* (Bt) and spinosad.

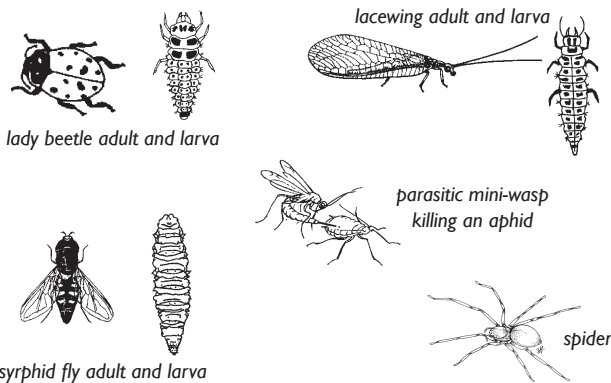


Most gardens contain far more good bugs, or beneficial insects, than pest insects.

Beneficial insects and other organisms that kill pests are called natural enemies. In any pest management program, it is important to encourage these natural enemies by avoiding pesticides that kill them. You also can encourage beneficial insects by choosing plants that provide them with pollen, nectar, and shelter and keeping ants out of pest-infested plants. Learn to identify good bugs, both in their adult forms and immature (larval) stages.

Common good bugs found in California gardens include:

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



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 www.ipm.ucdavis.edu.



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