



Don't let the bugs beat you to it

Preventive medicine is a good thing, but not when it comes to insect control in the home garden. Don't apply pesticides as a matter of course. Use chemicals only when you know that insects are present and causing damage, and there are no other means of control.

You can beat the bugs by regularly checking your plants carefully for both beneficial and pest insects. Catching pest infestations early will make control easier.

Some fruits and vegetables need more watching than others. Various types of insects love to feast on broccoli, cabbage, cauliflower, peas and—late in the season—green beans and turnips. Young tomato plants are susceptible to flea beetles and cutworms, but once past the early growth stage, tomatoes are not as vulnerable to insect damage. Melons, corn, cucumbers, and squash are relatively safe from pests (except for earworms on corn).

Some of the most common insect pests and control measures for each are described below. Consult with your local Extension Master Gardener Program for options that will work best for you.

Cabbage maggot

These underground larvae inflict damage on cabbage family varieties and radishes. Flies lay eggs on plant stems or near the ground level. The eggs hatch into maggots.

Destroying crop refuse and trash in the fall will help eliminate overwintering sites for these pests. Controlling wild mustard around the garden will help reduce cabbage maggot fly populations. Covering plants with floating row covers helps keep flies from laying eggs on or near plants. Surrounding stems with paper collars might help deter downward movement of maggots that do hatch on the stems.

The adult fly is susceptible to dusts or sprays of methoxychlor or malathion. Several applications at 10- to 14-day intervals should eliminate the problem.

Garden symphylan

Garden symphylans are small, 12-legged insects, about ¼ inch long, that live in the soil. They often arrive in gardens in manure taken from an old manure pile.

These pests feed on the roots of many garden plants, causing stunting or death. They are hard to find, but evidence of their presence is short, stubby roots and stunted plants. Because symphylans do not make their own tunnels through the soil, you can partially control them through frequent tilling.

Natural enemies feed on symphylans, but the populations of these enemies are not sufficient to reduce heavy infestations.

Flea beetle

This tiny, blue-black beetle eats holes in the leaves of many garden vegetables. The larvae also bore tiny tunnels just under the skin of potato tubers.

Floating row covers can protect plants from flea beetles. Mature plants often can sustain a lot of flea beetle damage without suffering reduced yields, so control may be unnecessary. If damage is heavy, pesticides can be used to control the insect on cole crops.

Cutworm

Several species of cutworms damage crops by cutting off seedlings at the soil line, eating holes in edible roots, and feeding on foliage. Treating soil with insecticides at planting time does little good.

For cutworm control in small areas, hand-pick climbing cutworms from plants during the evening or scratch the soil to uncover them during the day.

For additional control, place a 3-inch-high cardboard collar around the stems of young plants and push it 1 inch into the soil.

Pesticides can help control cutworms. If cutworms are cutting plants below ground level, apply the pesticide to the soil. If they are climbing up and damaging foliage, spray or dust the leaves.

Aphids

Aphids come in a variety of colors. Black aphids infest green beans late in the summer. Green aphids infest cabbage family plants and are especially annoying on broccoli and cabbage, where they hide within the head. Aphids weaken plants by sucking juices from their tissues and can spread disease.

Resident ladybugs and other predators can substantially reduce aphid populations. Take care to protect and encourage these predators. Also limit damage by removing aphids with a stream of water from a garden hose or by smashing them. Insecticidal soap can be used to control aphids. Other pesticide options are also available.

Cucumber beetle

This is a green ladybug with black spots. It damages vegetables by chewing holes in leaves and can spread disease.

Use floating row covers to protect plants, but remove the covers from cucumbers, melons, and squash when they start to bloom so bees can pollinate them. Hand-picking is another effective control method. Pesticides also can be used to manage this pest.



The cucumber beetle is a green ladybug with black spots. It damages vegetables by chewing holes in leaves and can spread disease.

Cabbage worm

These larvae attack cabbage family varieties. Cover plants with floating row covers to prevent the butterfly (adult stage of the cabbage worm) from laying its eggs on plants. Larvae often can be removed by hand-picking. Pesticides are another option for controlling larvae.

For more information

How to Identify, Scout, and Control Insect Pests in Vegetable Crops (EC 1626)

A Pocket Guide to Common Natural Enemies and Crop and Garden Pests in the Pacific Northwest (EC 1613)

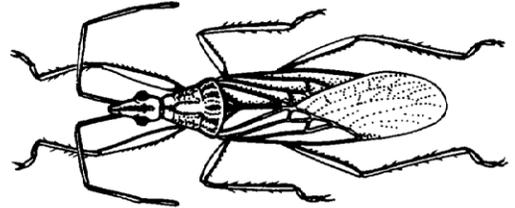
Available in the OSU Extension catalog:

<http://extension.oregonstate.edu/catalog>

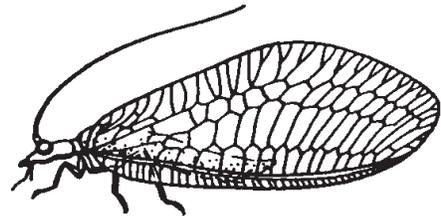
Drawings from *Insects and Mites of Economic Importance in the Northwest*, reproduced with permission.

Beneficial garden insects

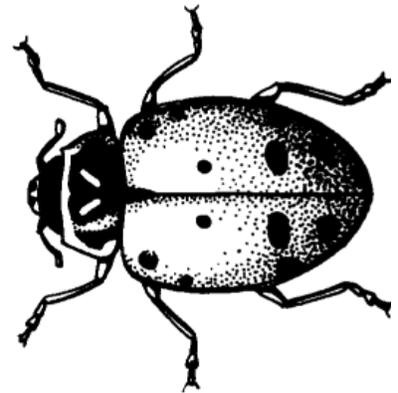
The following are beneficial insects, not pests. Beneficial insects feed on pest insects and help gardeners with pest insect control. Try to avoid killing beneficial insects.



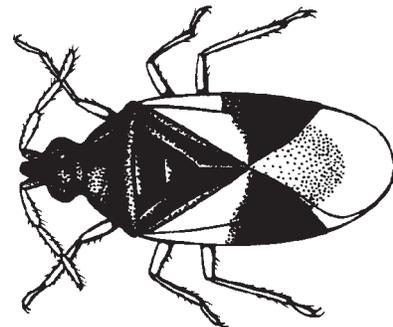
Western Damsel Bug *Nabis alternatus* Parshley



Green Lacewing *Chrysoperla* spp.

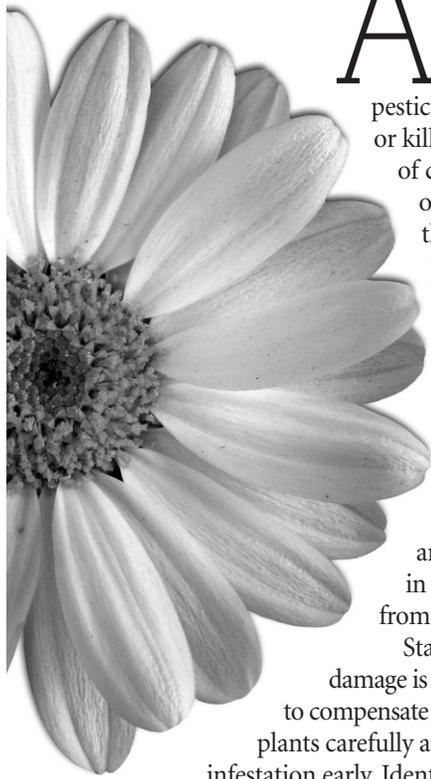


Lady Beetle *Hippodamia* spp., *Coccinella* spp.



Minute Pirate Bug *Orius tristicolor* (White)

Alternatives to chemical control of insect pests



You can plant a variety of small-flowered plants such as daisies to attract beneficial insects to your garden.

Although gardeners sometimes assume that organic pesticides are not toxic, it is important to remember that they are still pesticides and are formulated to deter or kill a pest. The primary advantage of choosing an organic pesticide over a synthetic pesticide is that the organic product breaks down faster, and will not persist as long in the environment.

Many alternatives to organic and synthetic pesticides are available for gardeners who want to avoid chemical control of insect pests. Simply knowing which insects are detrimental to garden plants and which are beneficial can go a long way in helping you protect your plants from hungry bugs.

Start by deciding how much insect damage is acceptable. Plant extra vegetables to compensate for some loss. Monitor your plants carefully and often in order to catch an infestation early. Identify insects that you suspect to be pests.

Try these methods to minimize insect damage:

- Select insect- and disease-resistant vegetable varieties. Avoid those plants that attract insects or are susceptible to diseases. Tuber and root crops (e.g., potatoes and carrots) and cole crops (e.g., radishes, cauliflower, cabbage, broccoli, turnips, and rutabagas) are susceptible to wire worms, symphylans, cabbage maggots, onion maggots, and other soil insects. Beans, beets, chard, peas, cucumbers, spinach, and squash are more insect-resistant.
- Keep plants healthy by watering adequately. Fertilize and thin plants to reduce competition for moisture and nutrients.
- Remove weeds to conserve soil moisture and eliminate hiding places for pest insects.
- Encourage natural enemies of insect pests such as insect predators, parasites, nematodes, bats, geese, ducks, chickens and other birds.
- Attract beneficial insects to your garden by planting small-flowered plants such as daisies, alyssum, yarrow, dill, angelica, clover, and coneflower. Make sure something is in flower throughout the season.

- Avoid growing the same types of vegetables in the same spot year after year. A four-year rotation is best. Avoid large plantings of any crop.
- Exclude insects from plants by using fiber materials, row covers, or other barriers such as plastic bottles, plant collars, and hot caps.
- Remove any plants that become infested. When a crop is finished producing, remove all plant residue. Pick up and destroy fallen fruit and nuts.
- Use traps. Pheromone traps disrupt insects' mating cycles, while yellow sticky boards catch winged aphids, whiteflies, leafhoppers, and fungus gnats.
- Hand-pick pests or knock them off plants with a stream of water from a garden hose. Kill the insects by putting them in a cup of soapy water.
- If all else fails, the least toxic insecticides include botanicals such as neem and pyrethrin; microbials such as *Bacillus thuringiensis* (Bt) and beneficial nematodes; and products such as insecticidal soap, horticultural oil, and diatomaceous earth. Always identify the pest before choosing a pesticide, and use pesticides according to label directions. Spot spray infestations only, and avoid spraying plants when they are in bloom. Garden-wide sprays and spraying plants in bloom can harm bees and other beneficial insects.

Beans, beets, chard, peas, cucumbers, spinach, and squash are less susceptible to insect damage than tuber and root crops and cole crops.

