

## Plants That Attract Beneficial Insects

Some plants repel insect pests naturally, while others attract beneficial insects. Plant them among your flowers and vegetables to help keep unwanted insects away and improve the health and flavor of desired plants.

- ✿ Alternate rows of herbs—spearmint, peppermint, sage, and anise—with vegetables to attract beneficial insects.
- ✿ Surround vegetable gardens with borders of perennials, including goldenrod, tansy, aster, and other nectar-rich flowers. Marigolds and zinnias—two popular annuals—also work well.
- ✿ Salvia, dill, fennel, and yarrow may also be used to attract beneficial insects.
- ✿ Plant an assortment of seed producers, including black-eyed Susan, coreopsis, and sunflowers.
- ✿ Make your plantings diverse to attract a broader range of beneficial insects.
- ✿ Spiders are our friends—share your garden with them.

# 1 try pesticide alternatives



## Protect the Chesapeake Bay

Like farmers, homeowners play an important role in protecting our soil and water resources, especially the Chesapeake Bay. This series of fact sheets highlights various conservation measures—best management practices—that farmers use to produce healthy crops and protect water quality in the Chesapeake Bay and its tributaries. Homeowners can apply these same conservation measures to home, lawn, and garden projects. Working together, we can make a difference for the Bay. For more information on ways to improve your lawn or garden and protect the Bay, contact the organizations listed on the back panel.

Maryland Department of Agriculture

## What You Can Do Without Pesticides

Only a handful of the many insects in an average yard or garden are considered pests. And most plants can tolerate some insect damage without significant loss to yield or appearance. Whenever possible, choose insect and disease resistant varieties of garden plants and turfgrasses. Remember, the goal is to make your lawn or garden a healthy place for preferred plants and insects. If you decide that you have a pest problem that requires attention, use the least toxic method of control—don't simply reach for the spray bottle at first sight of an insect, weed, or disease.



## Principles of Integrated Pest Management

Many farmers rely on Integrated Pest Management (IPM) to manage insects and weeds with fewer pesticides. IPM requires frequent pest monitoring for infestation or crop damage. A range of management strategies is used only if pests reach threatening levels or begin to cause serious crop or plant damage. Many of the options used in IPM are available through local garden shops, mail order catalogs, and the Internet.



## Physical Controls

- ✿ Prune out heavily infested plant parts and diseased branches. This is very effective against localized infestations of scale insects and tent caterpillars.
- ✿ Place a protective floating row cover of polypropylene on vegetables to form a physical barrier against insects. Remember to remove the cover during morning hours for insect-pollinated crops, such as summer squash and cucumbers.
- ✿ Place stiff paper tubes or wrap aluminum foil around young vegetable or flower transplants to stop cutworms.
- ✿ Wash insects and mites off with a stream of water instead of pesticide sprays.
- ✿ Hand-pick insect pests and slugs and destroy egg masses.
- ✿ Place flat boards next to plants to attract slugs. When slugs crawl under the boards to escape sunlight, lift the boards and discard the slugs.

## Preventive Measures

- ✿ Plant flowers and vegetables together to help attract beneficial insects. Alternate rows of herbs with vegetables to attract other beneficial insects.
- ✿ Place bird and bat houses in your garden. Birds and bats consume hundreds of insects daily.
- ✿ Time plantings to avoid peak periods of infestation. Set out squash transplants early to avoid borers that lay eggs in June. If planting a second squash crop, sow after mid-July.
- ✿ Keep gardens free of debris such as dead plants, discarded bricks, or brush piles to limit hiding places for insect pests and slugs.
- ✿ Remove crop debris from the garden following the harvest. Dead plants provide winter hiding places for insects and diseases, which can cause problems the following spring.
- ✿ Plow or till gardens in fall. In addition to improving soil structure, tilling also disrupts the life-cycle of many insect pests, exposing larvae and pupae to winter cold.
- ✿ Plant cover crops—such as winter rye—in your garden to revitalize the soil and control erosion during the off season.



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## Disease Inhibitors

- When possible, choose plants that are resistant to diseases.
- Rotate vegetables and annual flowers so that the same plant does not occupy the same area every year.
- Space and prune plants to improve air circulation and quicken leaf drying following watering.
- Water lawns and gardens early in the day. Watering at night encourages disease. Substitute drip irrigation for overhead watering.
- Keep disease from spreading—remove infected plants or prune out diseased parts.



## Less-Toxic Alternatives

When used according to the label instructions, the following products are less toxic to the environment than other commercially available products. Most are available at local nurseries and home improvement centers. When possible, buy ready-to-use products (RTUs).

### Insecticidal Soaps

Can be sprayed directly on garden plants and shrubs to kill a variety of pests, including spider mites, whiteflies, aphids, mealybugs, and scale insects.

### Pyrethrum, Rotenone, and Neem

Derived from plants, these kill most insects—including beetles, weevils, and aphids—on contact. Take care to spray directly on the pest, since they will also kill beneficial insects.

### Horticultural Oils

Can be sprayed on plants during dormancy to kill overwintering insects and mites. These oils can also be used during the growing season to control spider mites, aphids, and whiteflies on ornamentals.

### B.t. (*Bacillus thuringiensis*)

A biological insecticide that can be used to control young caterpillars, including the larvae of the imported cabbageworm.



## Garden Friend or Foe? Learn to Tell the Good Bugs from the Bad Bugs

Not all insects are unwanted pests in your lawn and garden. There are many “beneficial” insects that will prey on garden pests. By growing plants that give them food and shelter, minimizing pesticide use, and providing alternative ground covers, you can attract beneficial insects to your lawn or garden.

### GARDEN FRIENDS



#### DRAGONFLIES

Large, colorful insects that dart and hover over ponds. They have large eyes that occupy most of the head and two pairs of wings that may be plain or patterned. Dragonflies catch and eat their prey in flight. Smaller dragonflies eat mosquitoes, midges, and small moths. Large dragonflies may also capture beneficial bees, butterflies, or other dragonflies.



#### HOVER OR SYRPHID FLY \*

Resembles a small bee. The adults hover around nectar sources and their larvae feed on aphids, mealybugs, and other small insects.



#### LACEWINGS \*

Lacewing larvae prey on aphids, whiteflies, thrips, and mites. The adults are green or brown, with small heads and large eyes. The larvae are spindle-shaped, yellow to brown, and mottled.



#### LADYBIRD BEETLES (LADYBUGS)

The ladybird beetle and its larvae eat aphids, mealybugs, scales, and other small insects.



#### LIGHTNING BUGS (FIREFLIES)

This garden friend is easily recognizable on summer evenings as large groups light up the sky. Firefly larvae eat snails and slugs.



#### PARASITIC WASPS

Parasitic wasps vary in size and attack a variety of caterpillars, beetle larvae, flies, and aphids.



#### PRAYING MANTID

Will eat anything they happen upon, including each other.



#### SOLDIER BEETLES

Adult soldier beetles are usually found on flowers. The larvae prey on cutworms, gypsy moth larvae, slugs, and snails.



#### SPIDERS

Prey on anything they capture.

### GARDEN FOES



#### APHIDS

This garden foe destroys plants by sucking the sap from stems or leaves. Many species transmit plant diseases. Virtually every plant has a least one aphid species that attacks it.



#### GARDEN SLUG

One of the most despised garden pests, slugs eat leaves, stems, flowers, and roots. Small seedlings in the garden are especially vulnerable. Slugs prefer cool, moist hiding places during the day. Wet spring conditions favor slug problems.



#### IMPORTED CABBAGEWORM

A common pest of cabbage, broccoli, cauliflower, kale, kohlrabi, mustard, radish, and turnip plants. The adult cabbageworm is a white butterfly with several black spots. It emerges in early spring to lay tiny yellow eggs on the undersides of leaves. The larvae are velvety-green with a yellow or orange stripe down their backs.



#### SCALE INSECTS

These minute and highly specialized insects are often hidden by a waxy or scalelike covering. They attack a variety of plants, including ornamentals, house plants, and fruit trees. They secrete a honeydew that is attractive to aphids.



#### SPIDER MITES

This garden foe is reddish-brown or pale in color, has eight legs, and is barely visible to the unaided eye walking on the undersides of leaves. Spider mites suck the contents of individual plant cells with their mouthparts, causing leaves to look dirty or stippled. Silken webbing under and between leaves may be evident when populations are high.



#### STRIPED CUCUMBER BEETLE\*\*

Striped cucumber beetles emerge early in the season and often eat young seedlings of cucumbers, squash, pumpkins, and melons. Adults later feed on leaves, vines, and fruits. They transmit bacterial wilt disease.



#### WHITEFLIES\*\*

A major threat in greenhouses, whiteflies also attack many garden plants, including tomatoes.



## If You Must Use Pesticides...

Pesticides can be toxic to humans, animals, plants, and fish. Choose the least toxic pesticide that will be effective for your problem and always read the entire label before applying a pesticide to your lawn or garden. A product labeled “Caution” means it’s slightly toxic.

“Warning” means the product is moderately toxic. The words “Danger or Poison” accompanied by a skull and crossbones mean the product is extremely toxic. Here are some other important guidelines to keep in mind when using pesticides:



- Identify the pest and severity of the problem, then select the proper product.
- Buy only the amount of pesticide that you need, for the present pest problem.
- Follow the directions on the product label carefully. Use the proper amount in the frequency specified, and only for the purpose and conditions outlined.
- Apply the product according to label instructions at the time indicated.
- Wear all protective clothing specified on the label.
- Store pesticides in a locked, dry, well ventilated area—out of the reach of children.
- Use kitty litter to soak up small spills and dispose in a tightly-sealed plastic bag.
- Wash hands immediately after applying any pesticide.
- Never apply pesticides near streams, ponds, wells, or wetlands.
- Never apply pesticides to bare ground or eroded areas.
- Use pesticides as part of the IPM approach, not as a “cure-all.”
- Buy ready-to-use products (RTUs) and avoid concentrates if possible.

