UNIVERSITY OF MARYLAND EXTENSION | MASTER GARDENER

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IPM: A BEST PRACTICE FOR GARDENERS

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One of the best practices you can add to your gardening repertoire is IPM, "a research-based holistic approach to pest management that emphasizes biological (e.g., attracting natural enemies, cultural (e.g., planting disease-resistant varieties), and physical (e.g., hand removal of insect pests) approaches to prevent problems and control pests and diseases at acceptable levels….Monitoring and using organic or other low-risk pesticides only when pest or disease levels are unacceptable are also part of this management approach" (https://extension.umd.edu/hgic/topics/how-id-prevent-and-manage-plant-problems).

Many predators and parasitoids are your friends: they pollinate your plants and attack destructive pests, whether larvae or adult. For example, ladybugs will eat aphids, white flies, potato beetles, mites, and other bugs. According to Chris McLaughlin's "Predatory Insects in the Garden" in the magazine *Fine Gardening* (https://www.finegardening.com/article/predatory-insects-in-the-garden), the Green Lacewing insect is the "Aphid lion" of the garden, its larvae eating as many as 60 aphids in one hour. Lacewings also eat mealybugs, spider mites, scale, and thrips, etc. Tiny Trichogramma wasps "lay eggs inside the larvae of garden pests such as cabbage worms, cutworms, and borers," McLaughlin notes. As the eggs hatch, they eat the larvae from the inside.

As I've advised before, take at least a weekly walk around your garden to spot problems early on: Closely study visible plant parts, including undersides of leaves. Where you see a pest, are you looking at an egg, a larva, an adult? Once you've identified the pest or plant problem, try using physical and cultural methods first to resolve the problem. You may pick off destructive pests by hand, wash them off with a hose, or wipe them away with a cloth. Remove dead, diseased, and infested plant parts as needed (be sure to clean/disinfect your tools afterward). Of course, avoiding all-kill sprays means that your flowers, vegetables, and fruits may not look perfect. Learn to live with that. When I find a big yellow and black-striped caterpillar munching a milkweed leaf, I'm happy—that means a monarch butterfly will eventually emerge.

So when should you use a pesticide? When you've tried everything else to eradicate the problem. For example, one IPM control for bagworms is handpicking. Next, you may opt to lop off the branch to which the bag is attached. However, if the worms are crawling around on branches, and you can't get them all, you may need to spray. The University of Maryland Extension Service (https://extension.umd.edu/hgic/topics/bagworms-trees-and-shrubs) recommends using the microbial insecticide, B.t. (*Bacillus thuringiensis*), against bagworms between now and mid-July, as it works well only on immature bagworms.

As reassurance, the Minnesota Department of Natural Resources (https://www.dnr.state.mn.us/treecare/forest_health/spraying/bt_insecticide.html) states that studies show that "In general, Bt is very safe for use. The U.S. Environmental Protection Agency has found no hazards to human health associated with the use of Bt…. The EPA has exempted it from food residue tolerances, groundwater restrictions, endangered species labeling and special review

requirements. Bt has no known effect on … bees, fish, birds, and wildlife. It is the pesticide of choice for use near lakes, rivers, and dwellings."

Another effective IPM tool is knowing whether the plant is right for your zone, for the soil, for the amount of water, sun/shade that it gets. According to the UMD extension service, "The best management method is prevention. When you focus your time, attention, and efforts on growing 'the right plant, in the right place, in the right way,' you can greatly reduce plant problems."

Biodiversity is also an important part of IPM. With a variety of plants, you will attract a greater variety of insects. Using companion plantings helps, too. Much like using predator insects and parasitoids, planting different crops near one another makes IPM easier, helps with pollination, and provides habitat for those beneficial insects mentioned above. Amy Grant, https://www.gardeningknowhow.com/edible/vegetables/tomato/tomato-plant-companions.htm, notes that all types of onions and peppers, as well as spinach, lettuce, carrots, asparagus, and arugula, can be planted alongside tomatoes. A number of herbs and flowers are also good at deterring pests from tomatoes—for example, borage, parsley, mint, marigolds, and nasturtiums.

However, some plants *don't* do well together. For example, the Brassicas (broccoli, cabbage, etc.) should not be planted with tomatoes; nor should corn, as corn tends to attract the tomato fruit worm. Having potatoes near tomatoes increases the chance of potato blight disease.

All of these elements will affect how well the plant grows and how susceptible it is to disease and pests. For more information about gardening, visit http://extension.umd.edu/frederick-county/home-gardening, or call us at 301-600-1596.

For more information on integrated pest management, here are several sources:

1. <HG IPM_2018_A Common Sense Approach to Managing Problems in Your Landscape.pdf> is an eight-page pamphlet available on-line as a pdf. It is crammed with information about IPM and has lots of pictures of common predators and destructive insects, so you can tell the good guys from the bad guys.
2. https://www.youtube.com/watch?v=s420Grv88UA&t=2s Mike Raupp, "the Bug Guy," goes into the garden to show you how to deal with insects in the garden.
3. https://mda.maryland.gov/plants-pests/Pages/Pesticide-Information-for-Consumers.aspx From the Maryland Department of Agriculture comes this one-page flyer with lots of links to more detailed information on everything pest-related, from plants and pests to pesticide regulation to fly-by-night companies to watch out for.

Photos courtesy of the University of Maryland Extension

Lacewing adults are delicate, green or brown, with small heads and large eyes, like the one shown above. The wings are longer than the body, transparent, with a fine network of veins, and are about 1/2 to 3/4 of an inch long.
<https://extension.umd.edu/hgic/topics/lacewings>

Lacewing larvae, above, are feeding on an aphid. Although they are not magnified enough to see in this picture, the larvae are alligator-like in appearance, spindle shaped, yellow to brown in color, and mottled. They have spines along their sides and long curved mouthparts (mandibles). Lacewing eggs are often found in great numbers on plants infested with prey such as aphids or mites. <https://extension.umd.edu/hgic/topics/lacewings>

Two ladybug beetles feast on a leaf full of aphids. Ladybug beetles are the first line of defense for the home gardener against many soft-bodied pest insects. <https://extension.umd.edu/hgic/topics/predators-ladybird-beetles-ladybugs>

For more information about the Frederick County Master Gardener/Horticulture Program, visit: http://extension.umd.edu/frederick-county/home-gardening or call Susan Trice at the University of Maryland Extension Frederick County office, 301-600-1596.
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