



# SMARTGARDEN™ —When to Use Pesticides

Prevention is best, but sometimes extra help is needed

Even gardeners who use preventive measures to reduce the risks of pest and disease problems with their plants occasionally experience infestations. Identifying the cause and assessing the potential for further damage are the first steps before deciding whether action needs to be taken and then selecting appropriate control measures.

## DIAGNOSING THE PROBLEM

If you are unfamiliar with a plant malady, it's critical to pin down the culprit before attempting to control the problem. Numerous books and publications are out there to assist your diagnosis, as well as local cooperative Extension offices, botanical gardens, and plant societies—many reachable on the Internet. And of course AHS members can contact the Society's Gardeners Information Service (GIS) by calling (800) 777-7931 ext. 131 or by sending an e-mail to [gis@ahs.org](mailto:gis@ahs.org).

Many plant problems are easily identified. The fungal disease black spot is familiar to anyone who grows roses, and many azalea growers will recognize the thickened, distorted leaves and flowers characteristic of azalea leaf gall. The numerous light green caterpillars on your cabbage leaves are the likely cause of the large holes nearby. And the heavily pruned shoots of a tomato plant point a guilty finger toward the conspicuous horned caterpillar munching his way through the foliage.

## DETERMINING CONTROL METHODS

Once you identify the cause of your problem the next step is to determine whether control measures are warranted and, if so, what type. Many pests and diseases can be controlled mechanically by handpicking the pest or pruning diseased stems or branches to prevent further spread.

For instance, azalea leaf gall does little damage to the shrub and the individual galls can be easily plucked off and destroyed. And though destructive, tomato horn worms usually invade a garden in small numbers, so if discovered early, they can be removed by hand. A hard spray of water is sometimes all that is needed to reduce the population of sucking insects such as aphids to a tolerable level.

On the other hand, if black spot is left untreated, it can devastate a susceptible rose. And an uncontrolled infestation of cabbage worms can render cole crops inedible. In such instances, the potential damage of a pest or disease may warrant considering more radical measures to control its further spread.

## WHEN PESTICIDES BECOME NECESSARY

The goal when using a pesticide is to achieve control of the specific pest or disease with minimum impact on

the rest of the environment. Select the least-toxic effective pesticide, apply it at the optimal time for control, and use the correct dosage.

The synthetic chemical pesticides used in commercial horticulture and agriculture were once readily available to home gardeners, but with heightened safety concerns and tightening of environmental regulations in recent years, fewer synthetic pesticides are now on the retail market. This has led to a boom in the development and use of pesticides derived from natural sources such as plants or minerals. These include botanical insecticides, insecticidal soaps, horticultural oils, and mined minerals.

These pesticides generally break down quickly into safe by-products and thus are good choices for pest control. Like any pesticide, however, they can be toxic to humans or other non-target animals and should be applied with care in accordance with the manufacturers instructions.

■ **Botanical insecticides** are extracted from plants. Some of the more commonly available are: *pyrethrum*—an effective, broad-spectrum contact poison; *rotenone*—commonly applied as a dust for short-term control of many leaf-eating caterpillars and beetles; *sabadilla*—both a contact and stomach poison, effective against many true bugs, leaf-eating caterpillars, and thrips; and *neem*—which repels some pests and interrupts the life cycle of many plant-eating caterpillars and beetles.

■ **Insecticidal soaps** are derived from fatty acids and potassium salts and are applied as a dilute spray directly on pests; they damage cell membranes of soft-bodied pests such as aphids, leafhoppers, and spider mites.

■ **Horticultural oils** are refined petroleum products and are commonly used on dormant plants to smother over-wintering insects and mites. Newer formulations are available that can be applied to many plants during the growing season for controlling scales, whiteflies, and certain diseases.

■ **Mined materials** used to control pests include *diatomaceous earth*—fossilized single-celled aquatic organisms—which is sprinkled around plants to provide a physical barrier against soft-bodied slugs and snails. *Copper- and sulfur-based sprays and dusts* have been used to control fungal diseases such as powdery mildew and botrytis.

When planning to use any pesticide, read the label and follow the directions carefully. Applying the right material at the wrong time, to the wrong plant, or at an inappropriate dilution can negate its effect—or, even worse—cause more damage than the pest itself.

**Next issue: *Biological Controls***

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