



Garden pest control may not require **HEAVY ARTILLERY**

There are alternatives before reaching for a sprayer

Scott Schell

Many people find tending a garden a soothing, calming activity after a long day at work or during retirement; however, plant pests can raise the blood pressure of the calmest gardener.

People will often reach for their sprayer because that is often thought the most direct way to protect plants. In my opinion, most home garden pest problems can be prevented from becoming bad enough to require a “rescue” spray by using integrated pest management (IPM).

Get a Step Ahead of Problems

The first IPM step is scouting for plant problems. Every gardener enjoys getting out and watching their garden grow. While admiring plants, take a few minutes to look for insects. Look on the tops of plants, then flip their leaves over and look at the undersides and examine stems. Discovering pest problems early may reduce the need for spraying pesticides.

Identification of the insects is the second step. Gardeners readily recognize many common garden pests. There may be other insects in the garden you don’t recognize. Don’t spray first and ask questions later. An excellent reference book is “Garden Insects of North America” written by Colorado State University Professor

Whitney Cranshaw. The book is organized so non-entomologists can use it to identify insects and mites they may find in gardens. Additional identification resources for gardeners are local Master Gardeners, extension educators, weed and pest offices, and Professor Alex Latchininsky and myself here at the University of Wyoming.

Cosmetic versus Real Damage

Pest damage threshold is another important IPM consideration. Cosmetic damage to garden plants

or even their edible parts is not a good reason to spray pests in home gardens. If the yield, taste, storage, and/or preservation characteristics of garden produce are unaffected, then don’t treat the pests on those plants.

When pests are found, also look for the presence of predators of the pest. An example would be finding green peach aphids on a beet’s tops. If the infestation of aphids is low and lady beetles (adults and/or their larvae), lacewing predators, or tiny non-stinging wasp parasitoids are present on the plants, it’s best to let them



Figure 1. Here is one of the many species of rough stink bug (*Brochymena species*) – a generalist predator “friend” of the gardener that can be mistaken for a pest.



Figure 2. Here is the similar looking brown marmorated stink bug (*Halyomorpha halys*). It is a non-native, invasive, plant pest that has been documented in Colorado, Nebraska, Utah, and Idaho but hasn’t been found in Wyoming, yet.



Figure 3. Example of western flower thrips damage on tomato skins. They don't damage the flesh of the tomato or affect its taste. A safe pest to ignore on the developed fruit, but they can sometimes damage tomato flowers.

David Cappaert, Michigan State University, Bugwood.org.



Figure 4. Aphid parasitic wasp (parasitoid) and aphid mummies.

www.ipm.iastate.edu/ipm/icm/files/images/aphid_mummy_2.jpg



Figure 5. The empty exoskeleton of an aphid, called a mummy, that was consumed from the inside out by the parasitoid wasp that developed inside it.

be. The aphid damage to the beet crop yield will be minor. If a gardener did spray with an insecticide, most likely the aphid population will bounce back much faster than their predator's population (which will likely also be harmed by the insecticide) or there could be a flare up of a different pest.

Gardeners need to be aware they can't have zero tolerance for most pest insects without harming insect predator populations.

Control Methods besides Pesticides

When large-bodied garden pest populations warrant treatment, simple mechanical control may be a good option. One of my earliest gardening memories is helping relatives in Ohio check for tomato worms on their tomato plants in their very large

truck garden. When I would find one, I would holler like I just had discovered gold, grab it, and take it to a can of soapy water my uncle carried.

People may be reluctant to touch pest arthropods. I once had a pest consultation in which a person called and wanted an insecticide spray recommendation for tent caterpillars on their plum trees. I always try to learn as much as possible about a plant pest situation before giving any control recommendation. During the course of the subsequent conversation, it turned out that two, 6-foot tall flowering plum trees each had a single branch with a bunch of western tent caterpillars busily eating and producing silk. Instead of a spray, I suggested donning a pair of gardening gloves (the new, low-cost nitrile-coated type are great for pest

picking) and using a rag to wipe the tents and caterpillars off the affected branches. The client was alarmed at the thought of touching the "bugs" and said her neighbor had suggested pruning off the branches and burning them. I compared this to stubbing a toe and then amputating the foot as first aid and reassured her the infested branches would re-leaf before the summer was over.

Some gardeners use poultry for pest control. Chickens, ducks, and guinea fowl can be effective at removing pests such as grasshoppers, cutworms, and slugs from a garden; however, a flock of chickens left unsupervised in a garden may end up doing harm to smaller plants with their enthusiastic scratching. So supervise your feathered friends for limited time periods in the garden or use them as border guards in the area just outside your garden.

Mechanical, Cultural Techniques Important Elements

Cultural control techniques are a vital part of IPM and can help gardeners avoid spraying for pests in the garden. Cultural control includes the basic step of keeping plants unstressed and vigorous, which can enable them to outgrow pest damage. An example of this would be only planting corn and beans when soil temperatures will ensure rapid germination and growth. This can prevent pests like the seedcorn maggot from killing or stunting the sprouting seeds struggling to grow in cold soil.

Only using pest-free plant material can prevent introduction of pests into a garden. The greenhouse whitefly is an example of a pest that can be inadvertently introduced into a garden when buying transplants. Closely examining plant material for pests or signs of their damage before



Figure 6. The immature stage of a lacewing is a generalist predator of many plant pests that people may not recognize as a friend of their garden.



Figure 7. The larvae of a lady beetle investigating the pupal stage of one of its relatives. Gardeners sometimes don't recognize these two stages of these very beneficial predators of garden pests.



Figure 8. These maggots (the correct term for immature flies) have almost completely consumed this kernel of seed corn. When planted in soil too cold to rapidly germinate, the seed just sits there.

purchase is a good idea.

However, root feeding pests such as the black vine weevil and woolly root aphids are hard to detect without un-potting a plant and examining the contents. I know this sad fact through personal experience. Purchasing transplants from reputable dealers is usually a safe choice.

Choosing pest-resistant plant varieties, adapted to soil and local growing season, is also part of cultural control. If you have to make a choice between plant varieties resistant to plant diseases in your area or insect pests, then my advice is to choose disease resistance as arthropod problems are generally more easily managed than plant diseases.

Crop rotation, i.e., not planting the same plant species in the same ground season after season, is a vital part of IPM in commercial agriculture. Even in a small garden, rotation is still a good practice for pests like the western corn rootworm. The larvae of this beetle will starve if the eggs, deposited the previous summer in the soil, hatch more than a couple feet from the roots of corn plants. Rotation in the garden can also help prevent some soil-borne plant diseases.

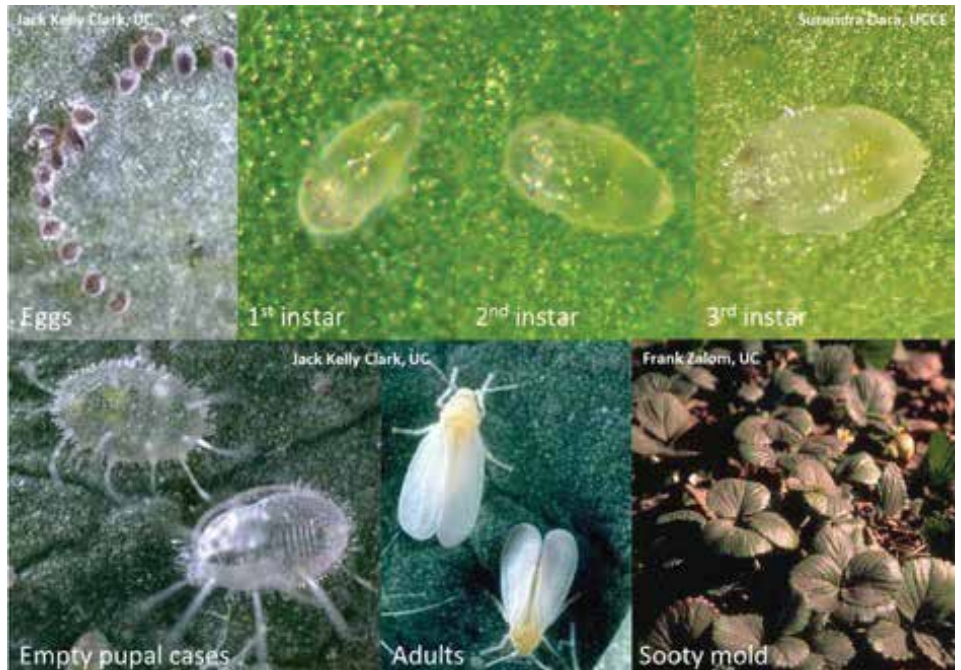


Figure 9. This figure shows the life stage of small insect with big pest potential – the whitefly. They are now classified as part of the Order Hemiptera in the family Aleyrodidae. The greenhouse whitefly (*Trialeurodes vaporariorum*) is a common species found on transplants and can vector many plant diseases.

Some gardens have space limitations, and within a garden plot only parts of it will be suitable for some crops. A possible way to get around space limitation and utilize crop rotation could be the use of containers. Potatoes and tomatoes are

well-suited to growth in containers, and gardeners frequently report fewer pest problems when using them.

Hopefully, some of this information will help you garden this coming growing season and avoid the use of broad spectrum foliage sprays of pesticides.

Scott Schell knows how to stop the Darth Vaders of the insect world. He is an entomologist with the University of Wyoming Extension and can be reached at (307) 766-2508 or sschell@uwyo.edu.