

All nurserymen and greenhouse growers are concerned with insect pests. Many insects are hard to detect until it is too late, their population increasing quickly and causing problems for growers and their crops.

There are pesticides available to help prevent or kill almost every insect pest. However, as these critters build immunity to pesticides, it is important to consider other methods to control damaging insects. We must also consider the effect on the environment from these chemical deterrents. Current pesticide use is over seven pounds per year for every person living in the United States.

Beneficial or predator insects are an alternative that should be seriously considered by today's growers. Predators can be used in the greenhouse or outdoors where there is a concentration or seasonal outbreak of pests.

Predator insects should be selected to control a specific pest. The whitefly parasite, for instance will lay eggs in whitefly pupae. They do not harm the plant and generally reach a balance or disappear when the food source is depleted.

Many beneficial insects are commonly seen in the garden. Lady beetles, praying mantis and green lacewings are predators familiar to most gardeners. But there are many other choices that are less familiar but just as useful. Here are some common predators and the pests they control.

Green lacewing larvae (*Chrysopa ssp.*) are voracious eaters that resemble tiny 'alligators'. They will feed on aphids, whitefly eggs, mealybugs and other persistent pests. They develop over a 2-3 week period, growing to about 1/2" and eating up to 200 bugs or eggs. We have noticed lacewing adults in the greenhouse all year, and whenever the whitefly population spikes, the alligators appear.

Spider mites can be a difficult problem to control. After years of using pyrethrum sprays, we have had success with predator mites. These tiny mites feed on spider mites and their eggs. Several types are available, multiply quickly, and can control infestations in just a few weeks. We have used *Phytoseiulus persimilis* for a very warm greenhouse. Several other species are available for use in different environmental conditions.

Whitefly parasites (*Encarsia formosa*) are tiny wasps that lay their eggs in whitefly pupae. You will never actually see these guys, as they are tiny. These parasites are best used in a greenhouse or enclosed space. They are shipped in egg form, which will hatch in about two weeks. The adults live about one week, eating a few whitefly nymphs and laying their eggs into many more. It is helpful to use sticky traps to monitor the whitefly population so predators can be introduced before a large infestation. Good control can be achieved in two to three months.

Ladybugs (*Hippodamia convergais*) are helpful predators of aphids and can live up to one year. Aphids reproduce quickly, can reach adulthood and reproduce in one week and are host to other plant diseases. Ladybugs and their larvae are both popular controls. Aphid predators and parasites (*Aphidolets ssp*) are also effective controls.

There are many other beneficial insects to fill out an arsenal against pests. Sticky traps can be used to monitor insect populations and to diagnose which predator is required.

Predator insects are susceptible to pesticides. Spraying at any time will kill beneficials as well as the pests. Encapsulated or time-release pesticides can also be harmful to predators long after initial application. It is important to avoid all pesticide use during introduction of predators.

Predators can be used at various times of the year. Some are more effective at certain temperature ranges, so they should be chosen to match the microclimate of infestation.

Insects are almost always introduced from an outside source. Even a single egg can result in future problem. By isolating new plants, one can keep an eye on any potential problems before they infect an entire collection.

For someone starting to seriously collect any plant, a quarantine room should be established. New plants can be held and observed before being introduced to a common growing area. Some nurseries even have "hospital" rooms -- isolated areas to house new introductions and keep an eye on ailing plants.

We have ordered beneficials from A.G.S., Inc. (800-444-2837), with fast and satisfactory results.

As our workload increases around the nursery, let's employ some help for . The beneficial insects are just that – little workers who do their jobs while allowing us to concentrate on more important tasks.