Ornamental insect control

Pest invasions are symptoms of plant stress. Reduce stress, and ornamental insect problems will decrease.

by David J. Shetlar, Ph. D., Ohio State University

■ The extremes in temperatures and precipitation we have seen over the last several years push ornamental plants to their limits.

In 1991, many plants died or were killed by borers simply because they couldn't withstand the drought after having their roots rotted off in the wet soils of 1989 and 1990.

In 1992, you can expect to see additional trees and shrubs die from previous years' stresses. Many insects, especially borers, take advantage of these stressed plants. Remember that these pests are a *symptom* of plant stress, *not the cause* of the stress. Eliminate the plant stress and the pest problem will be greatly reduced or eliminated.

Cool, wet years see an increase in Japanese beetle populations and "cool-season" pests such as the spruce spider mite. On the other hand, hot and dry seasons seem to give the advantage to soft scales, borers, lace bugs and "warm-season" mites.

Remember: cool seasons cause pest activity to be delayed and spread out over a longer time; warm seasons cause pests to be active sooner in the season, and often they are present for a shorter period.

Bronze birch borers emerged in Ohio in mid-June in 1990 (a cool year) and in late May in 1991 (a warm year). If you had followed a "spray calendar" of June 5-10, you would have been okay in 1990—but too late in 1991.

Two ways of dealing with changes in insect and mite activity is to use pest monitoring tools and degree-days. Many ornamental pests can be monitored using pheromone traps, light traps and visual inspection. The activity of others can be predicted using the degree-days.

Pheromone traps are readily available for many of the clearwing moth borers.

Scale control—Most of the scales are difficult to control because we have always relied on a calendar to predict when the crawlers will be active. If pine needle scales, euonymus scales or soft scales are a problem, locate an infestation nearby your operation. Observe the infestation two to three times a week to determine when the crawlers are emerging. You usually have two to three weeks after the crawlers are first noticed to apply a control product and still get good results.

Almost all of the soft scales—pine tortoise, magnolia, European fruit lecanium, terrapin, cottony maple—enter the fall as an immature female. Recent evaluations have indicated that these females are very susceptible to insecticidal soaps and horticultural oils or these materials mixed with standard scale insecticides.

Predators are beneficial—Spider mites and aphids seem to be perennial pest problems in urban landscapes. These pests easily rebound from pesticide applications. In fact, the two-spotted spider mite is often a more severe problem *after* being sprayed.

Pest Resurgence Prevention

Pesticides/Insect Targets	
Bacillus thuringiensis (microbial toxins, "Bt") 'Kurstaki' strains 'Tenebrio' strains	leaf beetles/foliage feeding caterpillars
Oils (mineral/botanical) Dormant (4-6%) Horticultural (1-2%)	insect and mite eggs; some scales; soft scales; scale crawlers; some aphids; mites
Citrus (d-limonene) usually with soap	soft-bodied insects and mites
Fatty acid salts soaps with insecticidal properties	soft-bodied insects (aphids, scales, caterpillars,lace bugs, mealy bugs, etc.) and mites
Sodium aluminofluoride a mineral which destroys insect gut linings (=kryocide, cryolite)	gypsy moth caterpillar, flea weevil, fuller rose weevil
Pyrethrins botanical insecticide (usually with piperonyl butoxide synergist)	aphids; caterpillars; white flies; thrips; etc.
Azadiractin-neem extract botanical insecticide with feeding inhibitor and growth regulator effects (= Margosan -O)	whiteflies, thrips, mealybugs, leafminers and caterpillars

Charts courtesy of: Dr. Shetlar

Lilac borer adult.

The major reason for these "pest resurgences" is that the pesticides also kill the beneficial predators and parasites (the biological controls). By using the "softer" pesticides and targeted applications, these biological controls can be conserved and many of the resurgent pests will no longer be a problem.

Many entomologists now say that Integrated Pest Management (IPM) should be renamed Integrated Plant Management, with more emphasis on plant health and less on the pests. As an example, most pine trees do not get bark beetles unless they are under water stress. When their vascular system is not strong, bark beetle females are able to chew through the bark and lay eggs without being gummed up in the pitch. Therefore, the first method for control of bark beetles should be restoring the vascular system, not the spraying or injection of a pesticide. This may mean watering or mulching.

Of course, if the infestation has already occurred, a rescue treatment may be required before reverting to plant health care tactics.

—Dr. Shetlar is an assistant professor of entomology at Ohio State University.

Pheromones for Ornamental Insect Control

Common name/Scientific name

Bagworm (*Thyridoptreyx ephemeraeformis*)

Clearing moth borers:
Banded ash borer (*Podosesia aureocincta*)
Lesser peach tree borer (*Synanthedon pictipes*)
Lilac/ash borer (*Podosesia syringae*)
Oak borer (*Paranthrene simulans*)
Peach tree borer (*Synanthedon exitiosa*)
Rhododendron borer (Synanthedon rhododendri)

Elm bark beetle (Scolytus multistriatus)
European pine shoot moth (*Rhyacionia buoliana*)
Gypsy moth (*Lymantria dispar*)
Nantucket pine tip moth (*Rhyacionia frustrana*)
San Jose scale (*Quadraspidiotus perniciosus*)