

# Why insecticides and miticides fail

BY BAL RAO, PH.D.

Several factors may be responsible for poor insect and mite control on ornamental trees and shrubs in the landscape. Some of the following factors may be involved in a specific pest control failure situation. By following label specifications and by process of elimination one should be able to narrow down or identify the cause(s) of failure. Generally, it is not the insecticides or miticides which fail; instead it is the conditions to which these pesticides are exposed and people expecting the unreasonable:

**A. Failures related to label: not reading and/or following label specifications**

**B. Failures related to identification: not knowing the pest or plants well**

- Improper plant, insect and /or mite identification
- Pest is difficult to manage due to its morphology and/ or high reproductive potential
- Insect and/or mite resistance from repeated use of a specific pesticide-resistant biotypes
- Sensitive plants
- Pest is known to be very difficult to manage - people may not be aware of this
- Pests blown or moved from near by untreated areas after treatment
- The pest is managed but the damage remains- concern for failure from uninformed person
- Life cycle of insects and number of generation

— Rao is with The Davey Tree Expert Company. See his column, "Ask the Expert," in next month's issue of this magazine for more details on ornamental insecticides.

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damage that can be tolerated before taking action. They're based on many variables including pest species, abundance and life stage; species and cultivar, vigor and value of the plant or turfgrass; relative effectiveness and cost of control measures; and time of year. The site's location and function will also impact the damage threshold. Low maintenance sites such as cemeteries, school grounds and parks can usually tolerate much higher levels of insect infestation than turf areas associated with banks, insurance buildings and theme parks. Threshold guidelines for specific insects on a variety of landscape plants and turfgrasses are available from many sources, including your local cooperative extension office.

**Perception vs. reality**

You may have heard the phrase, "For the uninformed, perception is reality." It means that if you don't know the significance of what you're looking at, you may jump to false or irrelevant conclusions.

The first aspect of this phenomenon to consider is misdiagnosis. Did the insecticide application actually fail, or did other factors injure the turf? For example, many stressors such as drought stress, summer patch disease and soil compaction can adversely impact the health and appearance of a turf stand. In many cases, these factors are more responsible for turf damage than the number of insects present.

Dealing with multiple stressors is difficult, and what makes things more difficult is that most clients tend to be one dimensional in their understanding of turf problems. To them, their crummy lawn just has to be the fault of an insecticide failure and/or their lawn care company. They don't consider the traffic stress on their lawn, or that they're trying to grow Kentucky bluegrass on a hot, dry, sloped, wind exposed site.

Another component of misdiagnosis is misdiagnosis. An example of misdiagnosis is when the lawn care technician or grounds manager identifies a problem as grub damage when it's really billbug damage. For more information on this subject, read "Controlling Turfgrass Pests (2nd Ed.)" by T.W. Fermanian, M.C. Shurtleff, R. Randell, H.T. Wilkinson and P.L. Nixon, and "Integrated Turfgrass Management for the Northern Great Plains" edited by F.P. Baxendale and R.E. Gaussoin.

**Other reasons why insecticides fail**

Assuming the insect has been properly identified, that there are many of them feeding on the turf and that no other site-related or customer-related factors (dumping ice cream freezer salt on the lawn, etc.) seem to be causing the turf to decline, consider the following factors that can affect insecticide performance:

► **Photodegradation** — This occurs when the insecticide formulation is exposed to light. Photodegradation occurs primarily when surface feeding insects (aphids, sod webworms) are the targets. The botanical insecticides, older pyrethroids, *Bacillus thuringiensis* and entomopathogenic (beneficial) nematodes are particularly susceptible.

► **Microbial degradation** — This occurs when tiny soil-inhabiting organ-

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