DO GREENHOUSE PESTICIDES ALWAYS WORK?

Carl A. Salsedo
Cooperative Extension Horticultural Agent

Growers have said that they have tried pesticide recommendations that have not worked for some reason. It is not by chance that an insecticide becomes ineffective. There is always a reason for it.

What are the causes for insecticides being ineffective? Lack of effectiveness can be due to the breakdown of materials in the tank, adverse environmental conditions (too hot or cold or wet or dry), resistance of the pest, poor application technique and using outdated materials. Resistance of insects such as aphids is often caused through the repeated use of the same pesticide. It is a good idea to alternate pesticides to avoid a build up of resistant insects, mites or diseases. Alternating materials may reduce the chance that resistance will occur but is no guarantee.

Poor spray coverage can also result in ineffective control. Thorough spray coverage is essential, especially under the leaves. Wetting agents should be used whenever necessary to disperse spray materials. The use of systemic insecticides such as aldicarb or oxamyl has reduced dependency on spray coverage.

An often overlooked problem is the pH of the water that is used to mix pesticides. Many materials are affected by low or high pH values. As the pH varies away from neutral, the half life of the material can vary from days to hours, especially with organophosphate and carbamate pesticides. It is a good idea to test the pH of your water source occasionally to determine if buffering agents are required.

Do not mix more spray than will be needed. Settling of wettable powders and breakdown of active ingredients may result when pesticides are held in the tank. For instance, Dylox has a half life of 63 minutes at pH 8 while Sevin's half life is 2 to 3 days.

Another factor to consider is excessive temperature. Most pesticide activity increases with high temperatures. During winter months, conditions may have been too cold to get maximum control. Effectiveness of materials such as the

pyrethroids (permethrin, resmethrin, Mavrik, etc.) decreases as the temperatures increase above 75°. Some growers have found materials used in the winter and spring give good control and then do not work as well in the summer. This may be due to the high temperatures in the summer and the activity of the pyrethroids becoming less effective as the temperature increases. Therefore, lack of control may not be due to resistance but to these reasons.

Best control is usually obtained when pesticides are applied in the early morning. For example, spider mites are more susceptible to control in the early morning or later in the evening. It is thought that enzyme systems in the mites somehow make the mites harder to control in daylight hours (verbal communication - Dr. Milt Savos). Additionally, early morning use of pesticides reduces phytotoxic effects when temperatures are lower. As the day progresses, temperatures increase and it's more likely pesticides will cause damage to plant tissue. Growers should try to use more wettable powders or flowables rather than emulsifiable concentrates to keep phytotoxic effects to a minimum. Finally, pesticides will remain active for a longer period of time on the foliage in the early part of the day.

Controlling pests in the greenhouse is a serious concern. Sanitation will reduce problems. Factors such as good spray coverage, proper pesticide usage, water pH and other factors may help to make your pesticide program more effective.