



Aphids in the Greenhouse



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It is the time of year when greenhouse managers will be eagerly anticipating having to deal with aphids (jokingly, of course). Aphids can be one of the most difficult insect pests to control in greenhouse production systems and are a problem on many floriculture crops including bedding plants and chrysanthemum. As a result, greenhouse managers must be aware of their presence and take appropriate action when necessary before aphid populations get out-of-hand.

Aphids cause direct plant injury by removing plant fluids with their piercing-sucking mouthparts. This causes deformity of new growth and plant stunting. Aphids also have the potential to transmit viruses. The presence of white cast skins (due to molting) can reduce the aesthetic quality of plants.

Aphids are soft-bodied insects that possess tubes (cornicles) on the end of their abdomens. Male aphids are usually absent from the greenhouse. Females do not need to mate to reproduce; this process is called parthenogenesis. Females can give birth to live female offspring that can start producing their own young (nymphs) in 7 to 10 days. Each of these females in turn can give birth to 60 to 100 live young per day for a period of 20 to 30 days. This rapid reproductive ability can create tremendous population explosions within a short period of time. Aphid reproduction depends on plant quality and nutrition. Aphids in greenhouses are normally wingless; however, winged forms will develop when the plant host gets crowded, which allows aphids to move throughout a greenhouse.

There are a number of different aphid species that attack floriculture crops including green peach aphid, (*Myzus persicae*), melon/cotton aphid (*Aphis gossypii*), foxglove aphid (*Acyrtosiphon solani*), chrysanthemum aphid (*Macrosiphoniella sanborni*), rose aphid (*Macrosiphum rosae*), and potato aphid (*Macrosiphum euphorbiae*). Aphid color will vary

with the particular host plant fed upon and should not be used for identification.

In general, aphids feed on new terminal growth and on the underside of leaves. However, aphid distribution on a plant varies with the species. For example, green peach aphid is commonly located on the upper leaves and stems whereas melon aphid is distributed throughout the plant canopy.

Improper cultural plant practices and weeds may enhance problems with aphids. For example, aphids are highly attracted to and feed on plants with excess



Photo: Dr. Jim Baker

nitrogen. In addition, aphid reproductive capacity increases when plants are overfertilized with nitrogen. Weeds inside and outside greenhouses serve as a reservoir for aphids. Many broadleaf and grassy weed species commonly found in and around greenhouses are fed upon by aphids.

Plants and plant cultivars vary in their susceptibility to different aphid species. In my experience visiting growers this last growing season, I found that the variegated sweet potato vine to be highly susceptible

(much more so than the green sweet potato vine) to green peach and melon/cotton aphid.

It is important to identify a particular aphid species because there is variation in insecticide sensitivity and acceptance by natural enemies. Pest control materials registered for managing aphids are presented in Table 1. Most of the pest control materials listed have contact activity so thorough plant coverage is essential. When using systemic insecticides (granules or drenches), be sure to make applications to every plant container because those that are missed may serve as an aphid reservoir.

Winged aphids may migrate into unscreened greenhouses especially after field crops (i.e. corn, cotton, and soybean) or vegetables have been harvested. These aphid populations that move into greenhouses may have already been exposed to insecticides, which mean they potentially have the genes for insecticide resistance. Remember that the active ingredient of many pest control materials used in greenhouses are registered and utilized first in agricultural crop production systems. Many natural parasitoids may also move into unscreened greenhouses and attack aphid populations. They may provide sufficient control of aphids. Look under leaves for brown-gray, mummified aphids, as this is evidence of parasitoid activity.

The use of biological control or natural enemies is another management option. Natural enemies that are commercially available are presented in Table 2. Be sure to consult a reliable biological control supplier prior to implementing any biological control program. A more detailed discussion on the use of biological control in greenhouses will be addressed in a future article. If you are using insecticides or biological control it is imperative to have a scouting program established or you will not know what is working.

Table 1. Pest control materials registered for managing aphids in greenhouse production systems.

Common Name (Trade Name)
Acephate (Orthene)
Azadirachtin (Azatin/Ornazin)
Bifenthrin (Talstar)
Chlorpyrifos (Duraguard)
Chlorpyrifos + Cyfluthrin (Duraplex)
Cinnamaldehyde (Cinnamite)
Cyfluthrin (Decathlon)
Endosulfan (Thiodan)
Fenpropathrin (Tame)
Fluvalinate (Mavrik)
Imidacloprid (Marathon)
Kinoprene (Enstar II)
Methiocarb (Mesurol)
Neem oil (Triact 70)
Nicotine (Fulex Nicotine)
Paraffinic oil (Ultra-Fine Oil)
Permethrin (Astro)
Potassium salts of fatty acids (Insecticidal Soap)
Pymetrozine (Endeavor)
Sulfotepp (Plantfume 103)



Table 2. Commercially available biological control agents for aphid management in greenhouse production systems.

Biological Control Agent		Target Aphid Species
Parasitoids	<i>Aphelinus abdominalis</i>	Potato Aphid
	<i>Aphidius colemani</i>	Green Peach and Melon Aphid
	<i>Aphidius ervi</i>	Potato Aphid
	<i>Aphidius matricariae</i>	Melon Aphid
Predators	<i>Aphidoletes aphidomyza</i>	Many Aphid Species
	<i>Chrysoperla</i> spp. (Green Lacewing)	Many Aphid Species
	<i>Hippodamia convergens</i> (Ladybird Beetle)	Many Aphid Species
Pathogens	<i>Beauveria bassiana</i> (Botanigard/Naturalis)	Many Aphid Species