Crop Pest

Aphids

Peach Aphid (*Myzus persicae*) Foxglove Aphid (*Aulacorthum solani*), Potato Aphid (*Macrosiphum euphorbiae*) Cotton/Melon Aphid (*Aphis gossypii*), Rice Root Aphid (*Rhopalosiphum abdominale*), plus more.

Description

Aphids are soft-bodied pests generally less that 1/8" long, with long legs, long antennae and a pair of tube-like structures called cornicles that project from their posterior end. They are often green, but can also be red, black, brown, yellow, or pink. Aphids use their piercing-sucking mouthparts to remove sap from plants resulting in distorted growth. Some aphids have wings, which are transparent with very few veins and are held vertically over the body when not in use. They produce a sugar-rich liquid called honeydew which attracts ants and promotes growth of black sooty mold. Aphids can also transmit viral plant diseases.

Target Crops

Aphids have a wide host plant range and are pests on numerous greenhouse crops. Aphids may occur in large colonies on new growth, at the base of buds, or on the undersides of mature leaves. Always consider your individual growing environment when determining which biocontrols to use. For instance, a favorite aphid control, *Aphidoletes*, pupates in the soil. Hydroponic growers would need more releases for this predator to be effective. Combining microbial pesticides along with biocontrol agents is an important part of protecting challenging crops, like hanging baskets with Calibrachoa and Fuchsia, and hydroponic lettuce.

Life Cycle

Aphids have many generations a year and reproduce asexually for much of the year. Adult females give birth to live young which in turn can reproduce in as little as 7-10 days. The young nymphs molt, shedding their skin on average four times before becoming adults. There is no pupal stage. Some species produce sexual forms that mate and lay eggs in fall, to overwinter.

Beneficial Insect Control

Fortunately, there are many natural enemies that help reduce aphid populations, and many of them are commercially available as biocontrol agents. Following are the most common aphid biocontrols.

Aphidoletes aphidimyza --is a small midge with a precise ability to seek out and find aphid populations at distances over a hundred feet. The predaceous larvae will attack more than 60 species of aphids. Aphids can be controlled with rates as low as .01/sq. ft. weekly until aphid pests are eliminated. If you have a history of aphids, continue this rate weekly for the duration of the crop. **Aphidoletes rates: .05-.1/ft2, 100-1,000 in hot spots, weekly or bi-weekly until established.**

Aphidius colemani*, *ervi, aphelinus and matricariae—are parasitic wasps that can be established in long term crop systems. *A. colemani* targets smaller aphids like Melon/Cotton Aphid (*Aphis gossipyi)* and Green Peach Aphid (*Myzus persicae*) while the others also target larger aphids like the potato aphid (*Macrosiphum euphorbiae*) and the foxglove aphid (*Aulacorthum solani*). *Aphidius* wasps adults

are very sensitive to pesticide sprays. In addition, hydroponic, herb, and leafy green growers may be concerned about the mummified aphids that will remain stuck to the plants. In truth, if the aphid populations are kept to a minimum, these parasitoid wasps should still be considered, as most customers will never notice the few and far between aphid mummies. Depending on severity of the aphid infestation, *Aphidius* spp. should be released at a rate of 1-25 wasps/100 sq. ft. For best results, apply every week for 3 weeks.
***Aphidius* rates: 1-5/100 ft² weekly or bi-weekly until established. 5-25/100 ft² for hot spots.**

The bird cherry oat aphid (*Rhopalosiphum padi)* is routinely used with banker plants as an alternative host for *A. colemani*. For more information about the pros and cons of using banker plants, and the correct species of *Aphidius* for you, please contact Sound Horticulture (360) 656-6680.

Chrysoperla rufilabris— Alligator-like green lacewing larvae are generalist predators that attack aphids and other prey. Each larva can devour up to 200 victims each week during their 2–3 week larval stage before they develop into adults which feed on pollen, nectar and honeydew. Depending on environmental conditions, adults will lay eggs and repeat the life cycle. Lacewings are nocturnal and quite evasive, making them difficult to scout. If the larvae are not released immediately, they will cannibalize each other so do not hold overnight. Use at the following rates for medium to heavy infestations.
Lacewing larvae 1-5 larvae/ft² on hot spots weekly until controlled.
Lacewing eggs – 5/ft2
Lacewing adults - .25/ft2

Insecticide Options

Mycoinsecticides and botanical insecticides are useful tools to use in rotation with beneficial insects. Products like Azaguard, Azatin O, Bioceres, Botanigard, Circadian Sunrise, Ecotec Plus, Grandevo, Long Shadow, M-Pede, Molt-X, Mycotrol, No Fly, Nuke Em, PFR-97, Protection Plus, Pyganic, Suffoil-X, Velifer and Venerate are all good options.

Cultural Control Tips

Sanitation is an important part of aphid control. To prevent the introduction of new aphid species into your greenhouse, carefully inspect all new plants before placing them in the growing areas. Eliminating all weeds in or near the greenhouse will help suppress potential reservoirs from which aphids might enter the crop. Winged aphids can easily move from the outdoors into greenhouses through open vents and establish on crop plants so exclusion with screening is a good option.

Aphids can be discouraged by avoiding soft, lush growth from excess nitrogen. Watch those N levels! The following crops are more likely to get aphids, so focus your attention on these. Peppers, Celosia, Pansy, Dracaena, Ipomoea, Salvia, Asparagus fern, Marigold, Fuchsia, Geraniums, Calibrachoa, Dahlia, Verbena and Hanging Baskets.

Further Considerations

Knowing the historical aphid pressure in each crop, as well as pesticide use, is paramount. Use this information to help you plan what to expect and to preventatively release biocontrols before the aphids are established. Preventative release of beneficials can be one of the hardest things for growers to accept, as it might seem wasteful and expensive. This tactic, however, combined with judicious and proactive treatments with microbial pesticides is especially effective.

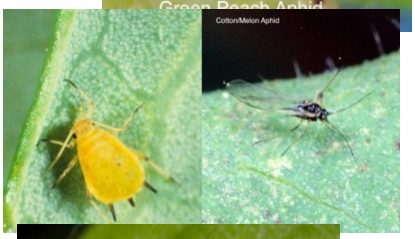
Monitoring with yellow sticky cards will only trap the flying adults and is not an effective means of assessing aphid pressure in the late winter or early spring. Regular, methodical scouting of the crop is

critical. Scout carefully in areas near doorways and vents, watch for leaf tip distortion, check the undersides of leaves and deep into the crowns of emerging new growth. Be aware of the nearby crops or trees that can host aphids in your vicinity. Know what your neighbors are growing.

As you monitor your greenhouse, keep a close eye out for natural predators and encourage them. There are over 1,000 species of syrphid, flower, or hover flies across North America. These predaceous dipteran flies feed on pollen and nectar and are often mistaken for bees. Blooming plants near your crops will invite these flies to seek aphids in your growing area and lay eggs near aphid colonies. Their 1mm larvae vary in color and pattern but can be found feeding on your plants. A single syrphid larvae can consume hundreds of aphid larvae each month!

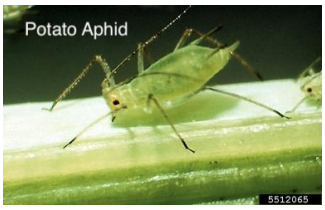
Common Aphids in the Greenhouse

Green peach aphid (*Myzus persicae*) Small .05-.08 inches. Color varies from light green to rose, antennae same length as body. Pronounced indentation between the base of antennae on front of head. Cornicles are half the length of body with swollen, dark tips.



Melon/cotton aphid (*Aphis gossypii*) Small .04-.07 inches. Color varies from light yellow to dark green, antennae ¾ of body length. Cornicles are short, always black, regardless of body color. The antennae are typically shorter than the body. Melon/cotton aphids do not have a distinct indentation at the base of the antennae like that of the green peach aphid.

Foxglove aphid (*Aulacorthum solani*)—Less common, larger .07 - .12 inches. Antennae are 1 ½ length of body. Like green peach aphid except body shiny and base of the cornicles have two distinctive dark spots. Legs are long with dark bands. Foxglove aphids tend to fall off plants when disturbed and they can cause severe leaf distortion, more so than the green peach and melon/cotton aphid.



Potato Aphid: (*Macrosiphum euphorbiae*)— larger, .07-.14 inches. Various colors of green, pink and red. Antennae are 1 ¼ the length of the body, clear to dark near tip, cornices are ½ length of body with a slight bend outward, light brown color, Legs are long and darker at the tips.

Root aphids such as the sugarbeet root aphid (*Pemphigus betae*) overwinter as eggs and infests plants in the spring and fall. Root aphids may be misidentified as mealybugs because they are covered with white wax although they are smaller than mealybugs. Root aphids have reduced cornicles that resemble rings, which are located on the end of the abdomen. These cornicles can be seen when magnified.

Sources

UMass Amherst Extension Greenhouse Crops and Floriculture Program
Pest Notes, UC IPM