

Managing Aphids in the Greenhouse

Introduction

Aphids can be serious and persistent pests in the greenhouse. They are difficult to control due to their high reproductive capability.

Aphids are sucking insects that can cause curling and distortion of tender young growth. The presence of aphids, their white shed skins and honeydew reduces the aesthetic quality of a wide range of greenhouse crops.



Figure 1: Shiny honeydew (left) and black sooty mold (center and aphids on hibiscus flower (right)). Photos by L. Pundt

Feeding Damage

Aphids feed by inserting their stylet-like, sucking mouthparts directly into the phloem and removing plant sap. When high aphid populations develop, plants become stunted with curling and twisting of the young leaves. As aphids feed, a sugary plant sap, known as “honeydew,” is excreted that promotes the growth of black sooty mold fungi. As aphid molt, whitish cast skins are left behind.



Figure 2: Aphids damaging terminal growth and leaving shed white skins. Photos by L. Pundt

Identification

Aphids are small (less than 1/8 of an inch long), soft-bodied, pear-shaped insects with long legs and antennae. Look for cornicles, or “tail pipe like” protrusions at the rear of their abdomen.

Proper identification is important to choose the most effective management option. Aphids vary in color depending upon the plants they are feeding on, so do not rely upon color to identify species.

Three of the most common species found in greenhouses include the **green peach aphid** (*Myzus persicae*), the **melon or cotton aphid** (*Aphis gossypii*) and the **foxglove aphid** (*Aulacorthum solani*).



Figure 3: Close-up of green peach aphid. Cornicles are approximately length of their body and are slightly darkened at their tip (left) and have pronounced indentation between the bases of their antennae with protrusions that aim toward each other. Photos by L. Pundt

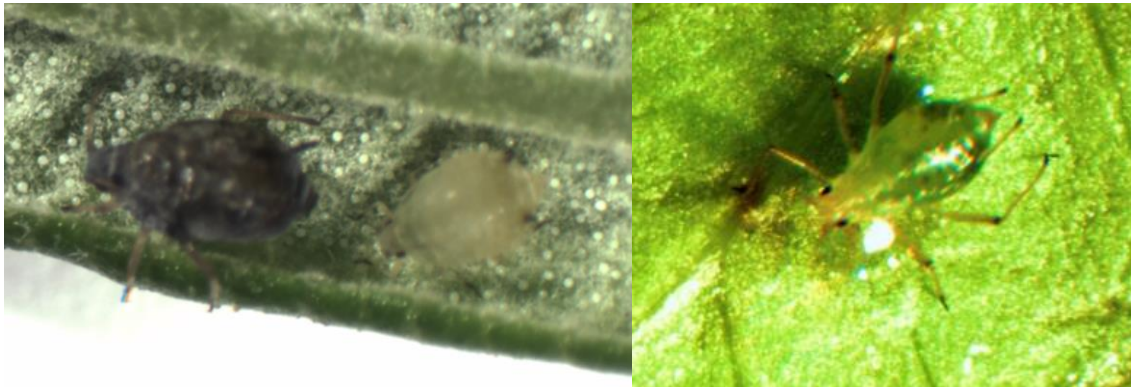


Figure 4: Melon aphids vary in color from yellow to black with distinctive white patches on their abdomen and short black cornicles (on left); pale green shiny foxglove aphid with large dark-green spots at the base of their cornicles and black markings on legs and antennae (on right). Photos by L. Pundt

Comparison of green peach aphid, melon/cotton aphid, and foxglove aphid




	Green Peach Aphid	Melon/ Cotton Aphid	Foxglove Aphid
Color	light green; occasionally pink to orange	variable from dark green to light green to yellow	pale green
Cornicles (tailpipes)	light green; slightly darker than the body, with black tips	black	green spot at base
Head (use hand lens to see profile of top of head)	 <p style="text-align: center;">indentation</p>	 <p style="text-align: center;">no indentation</p>	 <p style="text-align: center;">indentation</p>

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Life Cycle of Aphids

Most of the aphids found in greenhouses do not mate. All the aphids' present are females that can give birth to live nymphs. There is no egg stage (except for the cannabis aphid). An adult female may live for up to one month. During this time, she may give birth to 60 to 100 live nymphs. Migratory winged aphids may appear when the colony becomes overcrowded or when the food supply is depleted. Outdoors, aphids overwinter in the egg stage.

Cultural Controls

- Inspect incoming plant material for signs of aphids. Many aphid outbreaks occur when herbaceous perennials are introduced into the greenhouse from overwintering cold frames. Aphids may also be carried inside on worker's clothing or blown into the greenhouse through doors or vents.
- Aphid-infested weeds under the benches are frequently a source of recurring aphid problems. Inspect and remove weeds promptly. Use a weed mat barrier to prevent weed growth under the benches.
- The use of excessive nitrogen promotes lush growth that is favorable to aphid development.

Monitoring

Regular, weekly scouting is needed to detect aphids early before populations explode.

Focus on random plant inspections to detect wingless aphid nymphs. Look for whitish-cast skins and honeydew.

- **Green peach aphids** tend to be spread more evenly throughout the crop whereas melon aphids tend to be found in isolated hot spots.
- **Melon aphids** are also less likely to form winged adults and usually stay on the lower leaves and along the plant stem.
- **Foxglove aphids** inject toxic saliva as they feed leading to curled and distorted leaves, and early leaf drop. Foxglove aphids also tend to drop off the leaves so may be hard to find. Because foxglove aphids reproduce faster at 50° to 60° F than at 77° F they are more of a problem when spring crops are grown cool.

Look on the leaf undersides and buds of aphid-susceptible crops. Some key bedding plants prone to aphids include **ageratum, alyssum, celosia, chrysanthemum, dahlia, gerbera daisy, herbs (many types), fuchsia, hydrangea, garden impatiens, pansy, pepper, portulaca, primula, salvia, snapdragon, tomato, verbena** and **zinnia**. Some key pot plants prone to aphids include **aster, dahlia, Easter lilies, mandevilla, and snapdragon**. Some key aphid-susceptible herbaceous perennials include **bellis, chrysanthemum, heuchera, monarda, penstemon, phlox, salvia, and viola**.



Figure 5: Look on the underside of leaves for aphids. Leaf distortion develops from foxglove aphid feeding. Photos by L. Pundt

Yellow sticky cards will only attract winged aphids that have entered the greenhouse from outdoors, especially during the spring and early summer. They may also indicate an aphid infestation within the greenhouse that resulted in winged aphids.

Biological Controls

In outdoor production, natural enemies, including ladybird beetles, lacewings, syrphid or hover flies, small host specific parasitic wasps and fungal diseases, may provide a degree of control. Outdoor environmental conditions, such as wind, rain, and freezing temperatures, can also reduce aphid populations.

Commercially available biological control agents include **predators, host specific parasitoids** and **pathogens**. Repeated releases are needed to keep pace with the

aphids' high reproductive rate in the greenhouse. For more see *Biological Control of Aphids* on the UConn Greenhouse IPM webpage under publications and then biological controls.

Chemical Controls

Aphids are difficult to control with insecticides for several reasons. Control failures may be due to poor spray techniques, inadequate coverage, or high pH in the spray tank. If aphids are present on flowers, systemic insecticides will not be able to move into the flowers. Aphids may be difficult to reach if they are on the underside of the lowest leaves. Thorough coverage of the underside of leaves is needed for contact materials. Two applications of contact sprays may be more effective than one treatment.

Systemic materials may be more effective because aphids tend to ingest large quantities of plant sap, especially if applied before plants are in flower. Among green peach aphid populations, resistance to organophosphates, carbamates and pyrethroid insecticides has been reported. Limited options for aphid materials that are compatible with predatory mites released for thrips and spider mites make effective aphid rotations challenging for growers. See [New York and New England Management Guidelines for Greenhouse Floriculture and Herbaceous Ornamentals](#) for more specifics.

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