

Aphids

Myzus persicae, *Aphis gossypii*, and *Macrosiphum euphorbiae*

BIOLOGICAL CONTROL

Aphidius spp.
Aphidoletes aphidimyza
Hippodamia convergens
Chrysoperla spp.

OVERVIEW

Several species of aphids are troublesome pests of greenhouse crops, orchards, gardens and indoor plantscapes. Green peach aphid (*Myzus persicae*) is common in greenhouses, while melon aphid (*Aphis gossypii*), potato aphid (*Macrosiphum euphorbiae*), and others also occur.

DAMAGE

Aphids suck plant sap which causes distortion of enlarging leaves and shoots, and reduces the vigor of plants. As they feed, aphids produce sticky honeydew which drips onto leaves and fruit below. The honeydew is colonized by sooty molds, which reduces the quality of greenhouse vegetables and ornamentals. Some species of aphids also transmit plant viruses.

DESCRIPTION

Aphids are soft-bodied, pear-shaped insects about 1/16 - 1/18 in. long. Most are wingless, but some do have wings, which are transparent and held roof-like over their backs. Immature aphids look like smaller versions of wingless adults. Aphids generally develop in crowded colonies on the undersides of leaves and along stems. They occur most often in the oldest (lowest) leaves, and on the young shoots of plants.

LIFE CYCLE

Aphids reproduce very quickly because for most of the year, the colony is entirely made up of females. During the growing season, aphids continuously give birth to live young, without mating.

On outdoor plants in the fall (due to short day-length), male aphids develop in colonies and mate with females, which produce eggs. The eggs will overwinter and hatch in the spring. In greenhouses, aphids may continue to reproduce all winter without laying eggs. Winged aphids develop when aphid colonies become crowded. These fly to new plants and can be transported long distances in air currents to quickly infest a crop.

MONITORING TIPS

Use a 10-15x hand lens to inspect plants weekly for developing aphid colonies. They are first found on the older, lower leaves; moving up to new growth later. Honeydew on leaves is a sign of aphids (or other sucking insects) on the

leaves above. In greenhouses with poly floors, the floors will also become sticky with honeydew. Use yellow sticky traps at a rate of 1 card per 500-1,000 square feet to trap winged aphids. Traps can help identify when the winged aphids are present outdoors as well as where they may be entering greenhouses.

Weekly plant inspections instead of traps should be used to locate infestations inside greenhouses. By the time winged aphids are produced from colonies inside of a greenhouse, overcrowded aphid colonies are already present on plants.

BIOLOGICAL CONTROLS

Several biological controls are available for control of aphids. They differ in their effectiveness at certain times of the year or at various levels of aphid populations. Aphids reproduce so quickly that it is often advisable to use two or more biological controls together to suppress the aphid population. It may be necessary to control ants in greenhouses, conservatories, and around outdoor trees because they can protect aphid colonies by removing predators.

Aphidius species (*A. matricariae*, *A. colemani*, *A. ervi*):

Aphidius spp. are a group of parasitic wasps that parasitize many common species of aphids in greenhouses and outdoor crops. It is efficient at finding aphids and is most effective when applied preventatively before aphids are detected or when aphid populations are very low. *Aphidius* alone will not provide control when populations are high. During spring and summer, aphid populations grow too fast to be controlled by the parasite alone, therefore should be used with other aphid predators such as *Aphidoletes*. *Aphidius* does not diapause in response to short days, so it can be used year-round. Effectiveness may be reduced in late summer when *Aphidius* itself may be attacked by naturally occurring hyperparasitic wasps. For more information, see the *Aphidius* species technical sheet.



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Aphidoletes aphidimyza: Aphidoletes larvae are predators of over 60 species of aphids and can be used on both indoor and outdoor plants. It is efficient at finding aphid colonies and effective against low and high populations. Aphidoletes diapause in short day conditions, unless supplemental lighting is used. Read the Aphidoletes aphidimyza technical sheet for more information.

Ladybugs: Both adult and larval ladybugs feed on a variety of aphid species. It is effective against high aphid populations, however field collected ladybugs enter diapause and are not effective indoors in winter months. Ladybugs will not survive in the absence of prey, therefore should be released after aphids are detected. For more information, please see the ladybug (*Hippodamia convergens*) technical sheet.

Lacewings (*Chrysoperla spp.*): The larvae of lacewings are predators of aphids and other soft-bodied insects, including other beneficial insects and even cannibalize their own species. Lacewings do not reproduce well in most greenhouse situations, therefore the eggs and larvae are generally used as a one-time control, rather than the expectation they will become established.

CHEMICAL CONTROLS

Insecticidal soap can be used as a clean-up for aphids before releasing biological controls, as it has no residual effect. It can be used in aphid hot spots without harming pupal stages of *Aphidius* and ladybugs, but it will affect other stages. Nicotine fumigant (PlantFume®) can also be used before release of biological controls as it has a 1-day residual effect. Pirimicarb (e.g. Pirliss®) can be used to reduce aphid numbers in hot spots without harming the pupal stage of *Aphidius*. It is also only slightly toxic to Aphidoletes, but the repellent effect of the pesticide disperses the aphids. It also has been found to repel Aphidoletes females from laying eggs on leaves with Pirimicarb residues, so avoid frequent use. Kinoprene (Enstar®) may be used in aphid hot spots without harming biological controls, but it is only registered for use on ornamentals.

OTHER MEASURES

In gardens and some indoor plants, wash high populations of aphids from plants with a strong spray of water before introducing biological controls. Keep the greenhouse weed-free before to remove alternate hosts for aphids, and maintain a 10 foot-wide weed-free border around the greenhouse. To prevent aphids entering greenhouses from outdoors, screen all entry points. Closely inspect all new plant material before bringing it into the greenhouse.



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COMPARISON OF APHID PREDATORS

Characteristics	Aphidoletes	Aphidius	Ladybugs	Lacewings
Attacks most aphid species	X		X	X
Attacks some aphid species		X		
Release in high aphid density	X		X	X
Release at low aphid density		X		
Diapause in short-day conditions	X		X	X

Source: Applied Bio-nomics Ltd.



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