

Aphids in home gardens

Suzanne Wold-Burkness and Jeff Hahn

Aphids are one of the most common insects found on plants. There are over 300 species of aphids found in Minnesota; they can be common in home gardens on vegetables, annuals and perennials.

Identification

Common aphid species found in Minnesota include the green peach aphid, potato aphid, cabbage aphid, melon aphid, and brown ambrosia aphid. The green peach aphid feeds on 100s of different plants including potato, pepper, cabbage, spinach, asparagus, aster, dahlia, iris, and verbena. The potato aphid commonly infests potato, tomatoes and other solanaceous crops, such as (peppers, eggplant, and morning glory). The cabbage aphid feeds only on cruciferous plants, e.g. cabbage and mustard. The melon aphid feeds on a variety of plants, especially cucurbits, e.g. watermelons and cucumbers, as well as asparagus, pepper, eggplant, aster, hollyhock, and lily. The brown ambrosia aphid is common on *Rudbeckia*, coneflower, and sunflower.

Aphids are small (about 1/8 inch long), pear-shaped, soft-bodied insects that occur in many colors, including black, green, red, pink, yellow, brown, or gray. The best characteristic for identifying aphids is the two cornicles (“tail pipes”) found on the rear of their abdomen. The appearance of cornicles can vary with species, e.g. green peach aphids have long cornicles whereas cabbage aphids have short cornicles. As aphids increase in size, they shed their exoskeletons (cast skins). These white cast skins, often mistaken for adult whiteflies or another aphid species, can be found on leaves or stuck in honeydew excretions.

Nymphs appear as smaller versions of the wingless adults. Winged adults are similar in color, but slightly darker, primarily a result of their wings.



Whitney Cranshaw, Colorado State University, bugwood.org

Figure 1. Cabbage aphids



Figure 2. Potato aphids

Whitney Cranshaw, Colorado State University, bugwood.org



Figure 3. Green peach aphids

David Cappaert, Michigan State University, bugwood.org



Figure 4. Brown ambrosia aphids

Jeff Hahn, University of Minnesota

Biology

The life cycle of aphids is complex and varies with each species; the cabbage aphid is a good example of a “typical” life cycle. Adults produce both wingless and winged forms although wingless females producing live young (nymphs) are the most common. Because of their rapid development time (8-12 days from first-instar nymph to adult), asexual reproduction (males not needed), and extended reproductive life-span (30+ days at 5-6 nymphs/day) the cabbage aphid is able to complete up to 15 generations (often overlapping) during the growing season.

In response to crowding by other aphids or declining host plant quality, migratory (winged) forms are produced that move to new plant hosts.

Damage

Aphids suck plant sap from leaves and stems through a fine, needle-like stylet. Damage from feeding is quite variable, ranging from no apparent damage to off-color foliage, twisted and curled leaves, gall formation, poor plant growth, and plant dieback. Feeding aphids secrete excess sugars from their abdomen in the form of sticky “honeydew.” Honeydew supports the growth of black sooty mold (Figure 4), which reduces the photosynthetic area of the leaf, which can ultimately result in smaller fruit.

In addition, aphids are vectors of several different viruses. For example, aphids can transmit cucumber mosaic virus. This virus has a very wide host range and can infect many vegetables including cucurbits (squash, cucumber, pumpkin, and melon), beans, spinach, tomato, lettuce, and beets as well as annuals and perennials, such as impatiens, gladiolus, petunia, phox, and *Rudbeckia*. Viruses can cause mottling, yellowing, or curling of leaves and stunting of plant growth (Figure 5). In some cases the fruit can be misshapen (Figure 6).



Michelle Grabowski, University of Minnesota

Figure 5. Leaf mottling from a virus



Figure 6. Virus symptoms on zucchini

Michelle Grabowski, University of Minnesota



Figure 7. Lady beetle larva and aphids

E.C. Burkness, University of Minnesota



Figure 8. Aphid mummies next to cabbage aphids

Whitney Cranshaw, Colorado State University, bugwood.org

Management

Plants should be inspected for aphids regularly throughout the growing season. Because aphid populations can “explode” it is important to monitor plants as often as possible. Carefully check leaves and stems for the presence of aphids.

Cultural

Keeping your garden free of weeds can help to reduce potential aphid hosts. Weeds such as sowthistle and mustard can support large colonies of aphids.

Excessive nitrogen can favor aphid reproduction; therefore plants should be grown with appropriate soil fertility levels. Application of less soluble forms of nitrogen, in small portions throughout the season is less likely to promote aphid infestations.

Physical

Aphids can be physically knocked off of plants with a strong spray of water from a garden hose. In addition, this will also help wash off any honeydew or sooty mold that may be present.

Natural control

There are many natural enemies of aphids that are native to our area and commonly occur in our gardens. The best known natural enemy is the lady beetle. Both adults and larvae are voracious predators of aphids. Other predators include lacewing larvae, syrphid flies and aphid midges.

Several species of tiny stingless wasps parasitize aphids. A typical wasp that is parasitic on aphids is *Diaeretiella rapae*, a parasitoid of the cabbage aphid. It is dark brown and approximately 1/8 inch in length. The wasp deposits a single egg into each aphid nymph or adult. The wasp larva develops inside the aphid slowly killing it. The aphid eventually turns into an aphid mummy (light brown hardened shell of the host aphid) from which the wasp escapes by cutting an exit hole in the mummy. The wasp overwinters as a fully grown larva in the mummy.

Insecticides

If it is desirable to use an insecticide, choose a low impact insecticide when possible that is less toxic, and “easy” on natural enemies (i.e., paper wasps, parasitic flies and wasps) and pollinators such as bees and flies. Neem (azadirachtin) is a plant based insecticide that acts primarily as an anti-feedant. Although insects are not killed quickly, it causes them to stop feeding and they eventually die.

Insecticidal soap and horticultural oil are also good “knock down” options. It is important to get thorough coverage with these materials and target the underside of leaves as well as the top. It is also important to note that these materials will only kill aphids the insecticide directly contacts so applications may need to be repeated.

Conventional, or broad-spectrum insecticides, are generally longer lasting but kill a variety of insects, including natural enemies. Common examples of broad spectrum insecticides include permethrin, cyfluthrin, and lambda-cyhalothrin.

Common name	Type	Residual*
horticultural oil	low impact	none
insecticidal soap	low impact	none
pyrethrin	low impact	short
azadirachtin	low impact	short
lambda-cyhalothrin	conventional/broad spectrum	medium-long
permethrin	conventional/broad spectrum	medium-long
cyfluthrin	conventional/broad spectrum	medium-long

*Long residual can persist as long as four weeks. Medium-long residual can persist as long as 10-14 days.

CAUTION: Read all insecticide label directions very carefully before buying and again before using to ensure proper application. Be sure that the label specifies it can be used on the specific crop you wish to treat. The label is the final authority on how you may

legally use any pesticide. Whenever using any pesticide, including low impact, natural or organic insecticides, follow all label directions and use standard pesticide safety practices for transporting, storing, mixing, applying and disposing of pesticides to protect yourself, your neighbors and the environment.

UNIVERSITY OF MINNESOTA
EXTENSION

- © 2017 Regents of the University of Minnesota. All rights reserved.
- The University of Minnesota is an equal opportunity educator and employer.