

Aphids on Shade Trees and Ornamentals

Fact Sheet No. 5.511

Insect Series | Trees and Shrubs



by W.S. Cranshaw*

Aphids are the most common insects found on trees, shrubs, and garden ornamental plants. Over 350 different aphid species occur in the state but most can feed on only a few species of plants. However, with so many kinds of aphids, few plants grown in Colorado do not support at least one aphid. Most species rarely injure plants or even attract attention, but a few aphid species do cause problems (Table 1).

Aphids feed by sucking sap from plants. When the number of aphids on a plant are very high for an extended period, their feeding can cause wilting and sometimes even dieback of shoots and buds. Some aphids can cause leaf curling when the insect infests emerging leaves.

Sometimes problems with aphids do not primarily involve plant injury but instead their production of sticky honeydew. Honeydew is the waste material excreted by aphids and certain other phloem-sucking insects (e.g., soft scales, whiteflies, some leafhoppers). It may cover leaves, branches, sidewalks and anything that lies beneath a infested plant material. Gray sooty mold grows on the honeydew, further detracting from plant appearance. Ants, yellowjacket wasps, flies, and bees are usually attracted to plants that are covered with honeydew.

Life History and Habits

Aphids are small insects and few exceed 1/8-inch when full grown. They tend to have an oval body form and a pair of pipe-like cornicles usually can be seen protruding from the back of the body. Colors are widely variable among the different aphid species - ranging from very pale yellow to dark, nearly black. Most have shades of green or orange and a few species are even bright red. Upon close inspection, many aphids can be seen to have intricate body patterning.

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Figure 1: Adult aphids – winged and wingless.

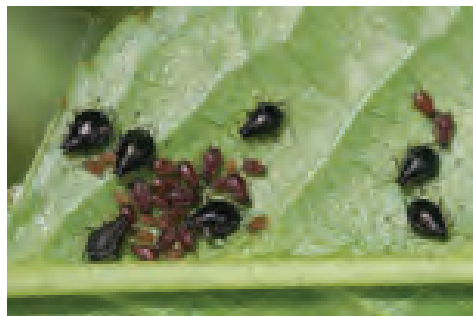


Figure 2: Black cherry aphid colony.

Some aphids obscure their body by covering themselves with waxy threads. These are known as “woolly aphids.” Woolly aphids are most commonly seen associated with pines or other conifers, lining the needles. However, the woolly apple aphid is a common woolly aphid that clusters on the limbs of apples and crabapples. Aphids that cluster within leaves that curl, such as the leafcurl ash aphid, are wax covered as are most aphids that live on plant roots.

Colonies of aphids often consist of a mixture of winged and wingless forms. The great majority of aphids usually develop into the wingless form to remain and reproduce on the plant. More winged forms tend to be produced when colonies get overcrowded, plants decline in quality, or environmental cues favor dispersal to new plants.

Essentially all aphids, regardless of their form, are females. Males, if they do occur, are

Quick Facts

- Aphids are found on almost all types of plants and a few species can cause plant injury.
- Some aphid species can curl the new leaves of some types of plant.
- Feeding aphids excrete honeydew, a sticky fluid that can cause nuisance problems.
- Natural enemies of aphids include lady beetles, flower fly larvae, lacewing larvae, and parasitic wasps.
- Exposed aphids can be controlled by insecticides, insecticidal soaps and sometimes with a strong jet of water.

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Table 1. Some common aphids associated with trees, shrubs and ornamentals in Colorado. Those marked with an * commonly cause leaf curling distortions in new growth.

Scientific name (Common name)	Host plant
<i>Acyrtosiphum pisum</i> (Pea aphid)	Sweet pea, other legumes
* <i>Aphis helianthi</i> (Sunflower aphid)	Red twig dogwood, many flowering plants in summer
<i>Aphis nerii</i> (Yellow milkweed aphid)	Milkweeds (<i>Asclepias</i>)
* <i>Aphis spiraeicola</i> (Spirea aphid)	Spirea
* <i>Aphis viburnicola</i> (Snowball aphid)	Snowball viburnum
* <i>Brachycaudus helichrysi</i> (Leafcurl plum aphid)	Plum
<i>Caveriella aegopodii</i> (Willow-carrot aphid)	European willows
<i>Chaitophorus populicola</i>	<i>Populus</i>
<i>Chaitophorus populifolii</i>	<i>Populus</i>
<i>Chaitophorus viminalis</i>	Willow
<i>Cindara</i> spp. (Giant conifer aphids)	Pines, juniper, spruce
* <i>Cryptomyzus ribis</i> (Currant aphid)	Currant
* <i>Dysaphis plantaginea</i> (Rosy apple aphid)	Apple
* <i>Dysaphis tulipae</i> (Tulip bulb aphid)	Dutch iris, tulip
<i>Eriosoma lanigerum</i> (Woolly apple aphid)	Elm, apple, crabapple
* <i>Eriosoma americanum</i> (Woolly elm aphid)	Elm, amelanchier
<i>Essigella</i> spp.	Pines
<i>Eulachnus</i> spp.	Pines
* <i>Hyadaphis tataricae</i> (honeysuckle witches' broom aphid)	Tatarian honeysuckle
<i>Hyalopterus pruni</i> (Mealy plum aphid)	<i>Prunus</i>
<i>Macrosiphum rosae</i> (Rose aphid)	Rose
<i>Macrosiphum euphorbiae</i> (Potato aphid)	Rose, many flowers
<i>Macrosiphum albifrons</i> (Lupine aphid)	Lupine
<i>Monellia caryae</i> (American walnut aphid)	Walnut
<i>Myzocallis tiliae</i> (Linden aphid)	Linden
<i>Myzocallis alhambra</i> (Western dusky-winged oak aphid)	Bur oak
<i>Myzocallis ulmifolii</i> (Elm leaf aphid)	Elm
* <i>Myzus ceraki</i> (Black cherry aphid)	Tart Cherry
* <i>Myzus persicae</i> (Green peach aphid)	Peach, apricot, other <i>Prunus</i>
* <i>Nasonovia aquilegiae</i> (Columbine aphid)	Columbine
* <i>Nearctaphis bakeri</i> (Shortbeaked clover aphid)	Hawthorn
<i>Periphyllus lyropictus</i> (Norway maple aphid)	Norway maple
* <i>Prociphilus franxinifolii</i> (Leafcurl ash aphid)	Green ash
<i>Pterocomma bicolor</i>	<i>Populus</i>
<i>Pterocomma smithiae</i> (Black willow aphid)	Willow
<i>Rhopalosiphum cerasifoliae</i> (Chokecherry aphid)	Chokecherry, pin cherry
<i>Rhopalosiphum nymphaeae</i> (Water lily aphid)	<i>Prunus</i> , various aquatic plants
<i>Tuberolachnus salignus</i> (Giant willow aphid)	Willow
<i>Uroleucon</i> sp.	Many flowers

present in late summer during only one of the many generations that are produced during a growing season. The normal habit of aphids is for a female to give live birth to a genetically identical daughter aphid through asexual reproduction (parthenogenesis). The newly born aphid can develop rapidly, typically becoming full-grown in about 10 to 14 days. Adults usually can produce three to five young per day over the course of their lifetime, which may extend to about a month but is usually shortened by natural enemy activities.

There is a shift in the life cycle of aphids to handle the challenge of winter, when plants are not active and cold temperatures would be lethal. At the end of the summer, different forms of aphids are produced, including special sexual form males and females. After mating, a special egg-producing aphid is produced that lays egg in protected crevices, often around buds. This egg is the stage that the aphid normally survives winter during outdoor conditions in Colorado. Eggs hatch the following spring, shortly after bud break, and the normal life cycle resumes.

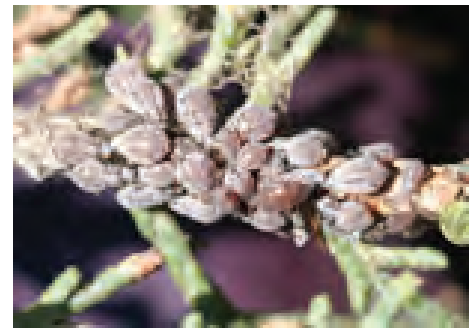


Figure 3: Giant conifer aphids on juniper.

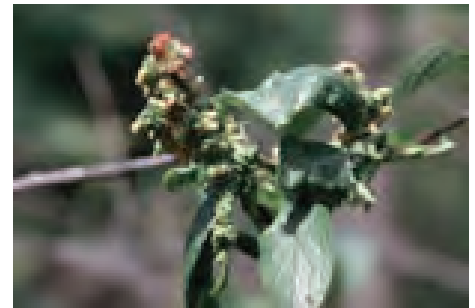


Figure 4: Leafcurl plum aphid injury.



Figure 5: Leafcurling produced by green peach aphid.



Figure 6: Spirea aphid colony.



Figure 7: Overwintering eggs of rose aphid.

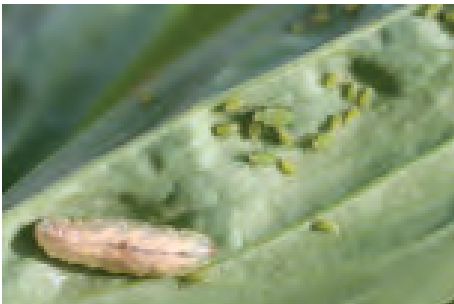


Figure 8: Pea aphid colony with a syrphid fly larvae (lower left).



Figure 9: Winged aphids giving birth on aspen stem.

Table 2. Some common Colorado aphids that alternate between woody and herbaceous hosts.

Aphid	Overwintering host	Summer host
Black cherry aphid	Cherry, plum	Wild mustards
Currant aphid	Currant	Motherwort, marsh betony
Green peach aphid	Peach, plum, apricot	Peppers, cabbage, potato, many garden plants
Leafcurl plum aphid	Plum	Various aster-family plants, clover, vinca, thistle
Mealy plum aphid	Plum	Cattail, reeds
Potato aphid	Rose	Potatoes, tomatoes and many other garden plants
Rosy apple aphid	Apple, pear, mountain-ash	Plantain
Shortbeaked clover aphid	Hawthorn	Legumes
Sunflower aphid	Dogwood	Sunflower, yucca, parsley, cilantro, pigweed, many other herbaceous plants
Water lily aphid	Plum, other <i>Prunus</i>	Water lily and many other aquatic plants
Willow-carrot aphid	Willow	Carrot, parsley, dill
Woolly elm aphid	American elm	Amelanchier (roots)

Some aphids have even more complicated life cycles that involve alternating among host plants. With these species, eggs are laid on a tree or shrub in the fall and they develop on the plant in a normal manner the following spring. However, in late spring they all leave their winter host and establish colonies on entirely different plants. Some common Colorado aphids that alternate hosts are listed in Table 2.

Management

Natural Enemies

Aphids are quite defenseless and there are numerous insects that feed on them (Fact sheet 5.550, Beneficial Insects and other Arthropods). The best known of these natural enemies are lady beetles, with lady beetle larvae being particularly voracious predators of aphids. Other common aphid predators include the larvae of green lacewings and flower (syrphid) flies.

Several species of minute stingless wasps parasitize aphids. These wasps insert their eggs into the body of the aphid and the larvae consume it internally. Aphids that have been killed by parasitic wasps have a conspicuous appearance, turning light brown or black and becoming bloated. Aphids killed by parasitic wasps are known as “aphid mummies.”

Physical and Cultural Controls

On shrubs and garden plants, aphids can sometimes be managed by simply washing them off of plants with a forceful jet of water. Hosing plants can lethally injure aphids and very few surviving aphids that are knocked to the ground can successfully find their way back onto their host plant.

Some flowers that are perennial but dieback to the ground in fall, have problems with aphids in the spring. Columbine, lupines and perennial asters are examples. With these plants the eggs of the aphids are laid on the stems in fall, near the point where new shoots will emerge the following spring. Spring problems with these aphids can be prevented by removing the old top growth that contains the eggs before plants emerge in spring.

Chemical Controls

Insecticides are a useful means for controlling aphids when natural enemies are not sufficient (Table 3). Some insecticides act by contact action and these must contact the body of the aphid to work. This includes insecticidal soaps (Fact sheet 5.547, Insect Control: Soaps and Detergents), a popular option for aphid control but one that requires sprays to cover the aphid during application. Other insecticides have some persistence on the foliage and may be able to kill aphids for

a day or two if they contact the aphid. Contact insecticides can be effective against exposed aphids but are ineffective against species that develop within the protection of leaf curls.

A few insecticides have the ability to move within a plant, spreading in the sap. These are known as systemic insecticides and they can control aphids that occur within leaf curls. Some formulations of systemic insecticides are designed to be applied as sprays and these are absorbed by leaves and then move in the plant. Others can be applied to the soil where they are taken up by the roots and translocate to leaves, particularly young leaves.

Horticultural oils (Fact sheet 5.569, Insect Control: Horticultural Oils) have a special place in aphid control. These act largely by smothering insects and are particularly effective for control of aphids that spend the winter as eggs on the tree or shrub, then curl leaves the following spring. They are most widely used for aphid control on stone fruits (*Prunus* spp.), such as peach, apricot, and plum. Horticultural oils are applied before bud break, during the dormant season.



Figure 10: Tulip bulb aphids. (Parasitic mummy is lower left.)



Figure 11: Woolly apple aphid colony on crabapple twig.

Table 3. Insecticides for control of aphids on shade trees and ornamentals.

Contact Insecticides without Residual Activity: insectical soaps, pyrethrins

Contact Insecticides with Residual Activity: acephate, bifenthrin, beta-cyfluthrin, estenvalerate, permethrin, lambda-cyhalothrin

Systemic Insecticides: acephate, imidacloprid, dinotefuran