

Aphids (order Homoptera)

Host/Site

Almost all plants have an aphid species that may occasionally feed on them. Many aphid species attack several plants rather than having only one host. Trees (esp. birch, beech, maple, apple, peach, plum, cherry, spruce, dogwood, willow); annuals (esp. nasturtium, snapdragon); perennials (esp. lupine, roses, lilies, begonias, columbine); vegetables (esp. peas, beans, brassicas, lettuce, spinach); fruit (esp. apple, peach, cherry).

Identification/appearance

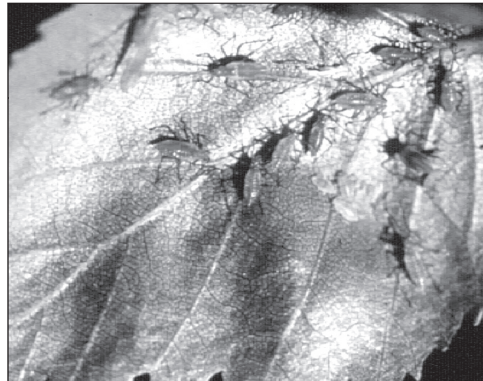
Small (2 mm long), pear-shaped, soft-bodied insects in a range of colors (green, brown, red, yellow, black). Most are wingless, but winged aphids appear at certain times, especially when populations are high or during spring or fall. A few species appear waxy or woolly. A magnifying glass will reveal the long, slender mouth parts used to suck plant fluids. Aphids are usually found in clusters, especially on new growth. Signs of aphid infestations include sticky honeydew on leaves or under plants, distortion of leaves, stunting of shoots, or large numbers of ants on the plant.

Life Cycle

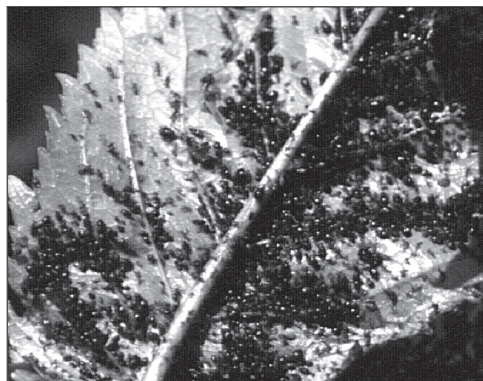
Overwintered eggs of some common garden species hatch in spring. These wingless females reproduce asexually, bearing live young (up to 80 per week) that already have the next generation developing inside. Young aphids, called nymphs, molt four times before becoming adults. There is no pupal stage. This simple, rapid reproduction allows for very large population increases in a short time. Late in fall, males and females are produced, mate, and the females subsequently lay eggs. Winged aphids may appear at certain times, allowing the colony to move to other locations. Not all aphid types have this reproductive pattern, but many do.

Natural Enemies

Aphids have many natural enemies, including birds, spiders, ladybird beetles, lacewings, syrphid fly larvae, and braconid wasps. A naturally



Aphids



Aphids on cherry leaf

occurring fungal disease can also kill aphids when conditions are right. Ants have a symbiotic relationship with aphids: ants milk the aphids for honeydew while protecting the aphids from natural enemies.

Monitoring

Check plants often, since aphid populations can rise rapidly. Inspect growing tips and undersides of leaves. On trees, clip off leaves from several parts of tree to look for aphids. If you see large numbers of ants on tree trunks, check for aphids on limbs and leaves. Look also for associated signs, such as yellowed leaves, stunted or distorted growth, or dripping honeydew. Sticky traps can be used to monitor for winged aphids. Check for signs of predators (named under Natural Enemies above), aphids that have been parasitized (look for a small exit hole on a dead, brown aphid body), or that have been killed by disease. Substantial numbers of any of these natural control factors can mean that population numbers will fall

rapidly without the need for treatment. Because of the rapid changes that can occur in aphid populations, it is important to record monitoring data to detect changes due to predators or treatments.

Action Threshold

Due to the incredibly high numbers that may be present, counting individual aphids is usually not practical. Action thresholds can be based on general descriptions of aphid density, plant damage such as stunted or distorted growth, or unacceptable amounts of honeydew beneath trees. Treatment should be triggered by rapidly rising numbers, unacceptable plant damage, or by honeydew falling on structures and people. Aphids seldom kill a plant, but they can cause defoliation. They also carry diseases from one plant to another. It is usually not necessary or even desirable to treat at the first sign of aphids, since low populations are needed to sustain predators.

(continued/over)



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Cultural/Physical Controls

Plant selection: If possible, avoid or consider replacing varieties such as birch that have ongoing, serious aphid problems. Check transplants for aphids and remove them before planting.

Water spray: A strong blast of water knocks aphids from the plant, and most will not return. Water also helps rinse off the honeydew. Do this early in the day to allow leaves to dry and minimize fungal diseases.

Pruning: Where high aphid populations are localized on a few curled leaves or new shoots, prune these areas out and drop in soapy water to kill the aphids.

Fertilization control: High nitrogen levels favor aphid reproduction. Avoid over-fertilization and use slow-release rather than highly soluble fertilizers.

Sticky or teflon barriers: If you see ants crawling up the trunk of trees or other woody plants, place a band of sticky material (such as *Tanglefoot* or *Stik-Em*) around the trunk. Place a protective band of fabric tree wrap or duct tape underneath the barrier first. Teflon tape barriers may also be effective. Prune out branches touching the ground, buildings, or other plants.

Biological Controls

Since aphids have many natural enemies, biological control usually means protecting these enemies from ants and avoiding broad-spectrum pesticides that kill beneficial insects. Recognize that predator populations usually lag aphid populations in time.

A number of aphid enemies can be purchased for introduction into landscapes. Ladybird beetles, lacewings, and parasitic wasps and flies are all available. Although such introduced predators may not

remain where released, some benefit is likely, especially if releases are staggered in time.

Many of an aphid's natural predators are especially attracted to a garden with plants in the *Umbelliferae* family, such as angelica, sweet cicely, dill, and Queen Anne's lace. The flowers of these plants provide a good food source for insects, especially parasitic wasps, who may stay to prey on some aphids as well.

Chemical Controls

Insecticidal soap is widely recognized as the least-toxic chemical aphid control. Although its effect is temporary, it can help to bring aphid numbers down so that natural enemies can take care of them. Repeat applications within a few days may be necessary. Soap works only by direct contact with the insects. Be sure to cover both sides of the leaves. Although readily biodegradable, soaps are highly toxic to fish, so avoid runoff or direct application to water. Avoid using when temperature exceeds 90 degrees F.

Oil sprays: Supreme or superior-type oils will help to kill overwintering aphid eggs on fruit trees if applied as a delayed dormant application in early spring. Although perhaps not justified for aphid control alone, oils can also control other overwintering fruit pests. Oils may, however, kill some beneficial species. Summer weight oils are also available, but they can burn tender leaves when applied in hot sun. Conventional chemical control: Foliar applied insecticides (malathion, diazinon, carbaryl, pyrethrin) are broad spectrum and will kill beneficial insects. They should be avoided, especially in home gardens and landscapes. Remember that allowing some aphid population in the garden helps to keep predators available.
