

42. Aphids

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Revised from chapter by Michael D. Connor and William M. Hoffard, 1989.

Hosts

Seedlings of all tree species are subject to attack by one or more species of aphids. Species of the genus *Cinara*, which attack conifers, are probably the most important of the seedling-infesting aphids.

Distribution

Aphids occur throughout North America. There are approximately 1,380 species in 277 genera.

Damage

Aphids feed on plant sap, causing a general weakening in the area of feeding. Heavy feeding may result in branch dieback or the death of seedlings. Aphids may also spread pathogenic viruses during feeding. When this occurs, damage to plants can be substantial.

Diagnosis

Aphids attack all types of seedling tissues (roots, stems, and foliage). Look for symptoms such as yellowing of foliage, curling of leaves, branch deformities, and galls. Aphids excrete a sugary substance called honeydew. A fungus, called sooty mold, often grows on the honeydew and makes the foliage appear black. Ants are often found together with aphids; they protect the aphids and feed on the honeydew. The combination of ants and black foliage is a good indication that aphids may be a problem. Aphids are soft-bodied, globe- or pear-shaped insects, about 0.8 to 6.4 mm long (fig. 42.1). They may be white, pink, yellow, green, blue, brown, gray, or black. The adults may be winged or wingless. When wings are

present, two pairs fold in a roof-like fashion over the body (fig. 42.2) Aphids have three pairs of thoracic legs. The mouth is a piercing-sucking beak, which appears to arise between the front legs. Most species have a pair of tube-like structures located on the back of the abdomen. Aphids are usually exposed while feeding, but some cover themselves with a waxy material (fig. 42.3), and others feed inside galls.

Biology

Since there are so many species of aphids, only a general description can be given of their life cycles. Winged females lay eggs. The eggs hatch, and nymphs mature into wingless adults. These wingless



Figure 42.1—*Cinara* species aphids feeding on stem of conifer seedling. Photo courtesy of Washington State University.



Figure 42.2—Winged aphid with offspring. Photo by Ken Gray. Image courtesy of Oregon State University.



Figure 42.3—Root aphids on conifer roots. Note white, waxy bodies. Photo by Art Antonelli, Washington State University.

forms reproduce without mating, and the females usually bear live young. After several generations, winged females are produced. These winged females migrate to a new host, and wingless females are again produced. After several more generations, males and females are produced. They mate, the females lay eggs, and the cycle is repeated. Some species of aphids have a more complicated life cycle and migrate between a primary and secondary host. Environmental conditions strongly affect aphid populations. Fungus-caused diseases; parasitic wasps; and predators like lady beetles, lacewings, nabid bugs, and syrphid fly larvae provide some natural control. When environmental conditions are favorable for the aphid population, however, biological agents cannot keep populations in check. This is especially true in nurseries, where susceptible host plants are concentrated in a small area.

Control

Cultural

Maintain seedling vigor through proper fertilization and irrigation to increase tolerance to aphids.

Chemical

Use registered insecticides to effectively control aphids. Apply sprays to the point of runoff on all foliage and stem surfaces. Read and follow label directions carefully to prevent seedling injury.

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