



COOLEY SPRUCE GALL ADELGID

Adelges cooleyi (Gillette)

In northeastern United States the most common host plants of Cooley spruce gall adelgid are Colorado blue spruce, *Picea pungens*, and Douglas-fir, *Pseudotsuga menziesii*, that are grown as landscape ornamentals and Christmas trees. This pest will also attack Engelmann spruce, *Picea engelmannii*; Sitka spruce, *P. sitchensis*; and Oriental spruce, *P. orientalis*. In older literature this species is referred to as an aphid.

DESCRIPTION

This species is a small black soft-bodied insect. Females may be winged or wingless. On Douglas-fir a small white waxy ovisac may be observed on the needles. The gall it forms on spruce is an elongate, pineapple-shaped green growth that develops on the tip of the current year's twig (Fig. 1). In late summer these galls turn brown.

LIFE HISTORY

This species has a complicated life cycle that involves five biological forms of the insect, three of which occur on spruce and two on Douglas-fir. It requires at least two years to complete all five forms on both host plants. This pest can thrive on Douglas-fir alone by continuous reproduction of two forms with as many as five to six generations produced each year. However, it appears that those forms occurring on spruce cannot continue producing indefinitely and need to find the second host, Douglas-fir, to complete the entire life cycle.

On spruce this key pest overwinters as immature females at the bases of terminal buds. Females resume feeding in the spring, mature, and lay several hundred eggs on lateral twigs. Eggs hatch in 10-14 days into young nymphs that migrate to new growth and feed at the base of needles. Their feeding causes abnormal plant cell development forming a gall that soon surrounds them. These life stages remain in chambers inside gall tissue throughout the summer. By mid-summer galls brown, dry out, and adelgids emerge from the opened chambers. They migrate to Douglas-fir or remain on spruce.

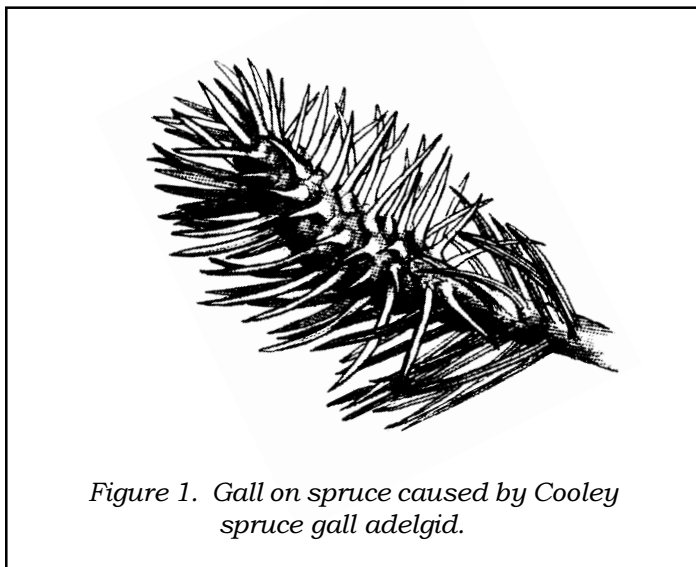


Figure 1. Gall on spruce caused by Cooley spruce gall adelgid.

On Douglas-fir, migrating females lay eggs on needles and one generation is produced. The following spring, adults mature and produce females. These winged females return to spruce to start the life cycle once again, while wingless females remain on Douglas-fir to reproduce.

DAMAGE

On spruce twigs, galls are formed in response to feeding by this pest. When infestations are heavy the resulting bud destruction may destroy the shape of the tree. On Douglas-fir heavily infested needles appear to be covered with snow. No galls are formed on Douglas fir, but feeding by this species on the underside of needles may cause needle discoloration, needle distortion, and premature needle drop.

MANAGEMENT

Nonchemical

When practical, remove green colored galls on spruce during June or July before adult adelgids emerge to manage infestations on a few small trees.

Chemical

Apply registered insecticides according to label directions to spruce from mid-September through early October to manage overwintering immature females.

A second alternative is to apply registered products in the spring before budbreak just before the females mature and lay eggs. Douglas-fir can be sprayed in April just prior to budbreak or during mid-September through early October to manage overwintering immature females.

There is the possibility that the application of Sevin may induce an outbreak of spruce spider mite, mainly because of its effect on mite predators. Thus, keep your eyes alert for this mite pest. Monitor host plants for increases in populations of this key pest of conifers.

WARNING

Pesticides are poisonous. Read and follow directions and safety precautions on labels. Handle carefully and store in original labeled containers out of the reach of children, pets, and livestock. Dispose of empty containers right away, in a safe manner and place. Do not contaminate forage, streams, or ponds.

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