

At ArborLawn, one of our primary goals is to further the knowledge of our customers. This information will give you a better understanding of the needs of your trees so you will be able to make more informed decisions regarding their care.

Cooley Spruce Gall Adelgid / Eastern Spruce Gall

The Cooley spruce gall adelgid, *Adelges cooleyi* (Gillette), is often called an aphid but it is actually a closely related group of insects. Adelgids have short antennae and no cornicles (pipe-like organs on the tip of the abdomen of aphids). This pest is found wherever its hosts are grown. It can be found across North America and now worldwide where its hosts have been imported. Plants Attacked: Colorado spruce and Douglas-fir are the two major hosts but this adelgid occasionally causes galls on Englemann and Sitka spruces. Eastern Spruce gall has been found on White and Norway Spruces.

Damage

On spruces, this pest forms pine cone shaped galls from the newly expanding buds. These galls eventually die, resulting in slowed growth of the spruce tree and sparsely filled in branches. Many people think that the galls are seed cones and a few galls may not warrant control. Heavily infested trees produce unsuitable growth and need periodic protection.

Description and Life Cycle

The Cooley spruce gall adelgid has four distinct forms which can be found on spruce. In nature, this pest also flies to Douglas-fir, its alternate host, where it lives on the needles. On spruce, the most important form of this insect is the one responsible for forming the spiny galls from the expanding buds.



On spruce, the adelgid overwinters as an immature female (the fundatrix) attached to branches at the base of new buds. In March and April, before the buds break, these fundatrices suck out the newly flowing sap and mature. As they mature, they secrete long waxy filaments over the body in which are laid 150 to 200 eggs. By this time the spruce buds have swollen and the bud sheaths have begun to loosen. Within seven to 10 days, the eggs hatch into yellow nymphs, called gallicolae migrans, which crawl to the bases of the needles of the new bud. These needle bases have already begun to swell from the fundatrices' feeding. Usually these affected bud bases are distinctly pink or yellow in color. The gallicolae begin to suck sap from the needle bases and produce a substance which causes the needle bases to continue to expand. Eventually the needle bases swell into interlocking chambers which protect the developing nymphs. The gallicolae shed their skin three times within the gall. By late-July to early-August, the galls turn brown and the walls of the chambers dry, leaving openings for the adelgids to escape. The mature nymphs crawl to nearby spruce needles and molt into dark brown, winged adults which can fly to Douglas-fir. There is good evidence that some of these winged forms can also produce another generation on the spruce without traveling to the Douglas-fir. In the fall, usually September, winged forms of the adelgid (sexuparae) return to the spruce from the Douglas-fir to lay eggs for the sexual generation (sexuales). The sexuales are wingless males and females which feed at the needle bases and then move to the center of the tree to mate, lay eggs and die. By October and early-November, these eggs hatch into the overwintering fundatrices which move to the bases of next year's buds.



Control Hints

In the past, people were encouraged to avoid growing spruce next to Douglas-fir because of the adelgids' life cycle. We now know that the adelgid can complete its life cycle on either host and winged forms can migrate several miles in search of their alternate host. A well timed spray schedule is the best control technique.

Spring Insecticide Sprays - Insecticides should be applied in early spring before the fundatrices lay eggs.

This information is provided by the Ohio State University Extension, Fact Sheet HYG-2552-95, Author David J. Shetlar.