



Forest Health Note

Cooley Spruce Gall Adelgid (*Adelges cooleyi*)

Hosts:

Douglas-fir, Sitka spruce, Engelmann spruce, Colorado blue spruce, and white spruce.

Importance:

The conspicuous presence of woolly adelgids on Douglas-fir foliage and the galls produced by this same insect on branch tips of spruce generate more public inquiries than any other forest insect. In natural stands the presence of the Cooley spruce gall adelgid is of little consequence, but severe infestations on ornamental trees, nursery stock, or Christmas trees may justify control. The damage caused by this insect affects only aesthetics and does not threaten tree survival.



Figure 1: White woolly tufts on the underside of Douglas-fir needles are a sign of Cooley spruce gall adelgid.

Look For:

On the lower surfaces of Douglas-fir needles, look for white woolly tufts (a waxy secretion) that contain a single adelgid (Figure 1); these can be found on either current or last year's foliage. Severe infestations cause distorted, bent needles, and yellow spots at the point of adelgid feeding. Damaged needles may shed prematurely.

On spruce, cone-like galls form at the tips of branches during June and July (Figure 2). Initially galls are a green or a purplish color and have needles projecting from the surface. Galls gradually enlarge and split open, releasing the developing adelgids. Older galls are a brown color and may persist on trees for years (Figure 3).

Infestation

Characteristics:

This adelgid has a very complicated life cycle as well as two distinct hosts. There are forms of this insect that appear only on spruce, only on Douglas-fir, or on both hosts. The galls produced by this adelgid on spruce do not occur on Douglas-fir.

A common infestation pattern on both Douglas-fir and spruce is that newly hatched adelgids (crawlers) migrate from older foliage to new flushes of growth in the spring.

In May and June, recently hatched adelgids appear as tiny black spots on the new flushes of Douglas-fir foliage (Figure 4). A hand lens is required to see any details of the crawler stage. On spruce, adelgids migrate to new flushes



Figure 2: On spruce, cone-like galls located on the branch tip are a sign of adelgid infestations.



Figure 3: Spruce galls dry out and turn brown in late summer and can persist on trees for years.

of foliage and feed near the base of the needles. A gall, stimulated by adelgid feeding, starts to form by June or July.

Control:

Chemical control of this insect is not warranted in forest stands and only rarely in ornamental situations. Damage to Douglas-fir needles from adelgid feeding is only apparent after close examination of foliage. Spruce galls are more conspicuous and kill branch-growing tips that can affect tree symmetry. However, galls are easily clipped from small trees making the damage much less noticeable.



Figure 4: The crawler stage of the Cooley spruce gall adelgid appear as tiny dark spots on the under-side of new Douglas-fir foliage. It is the crawler stage that is most susceptible to control with contact insecticides.

The timing of insecticide applications to control Cooley spruce gall adelgid is critical. Mature adelgids, surrounded by a white waxy secretion are protected from contact insecticides. The crawler stage, which migrates to the new foliage in the spring (Figure 4), is extremely vulnerable to insecticides. To control damage and reduce adelgid populations it is necessary to apply insecticides when new foliage is unfolding and adelgid crawlers are present.

The following formulations are registered for use on ornamental spruce and Douglas-fir to control Cooley spruce gall adelgid infestations:

- Endosulfan
- Imidacloprid

Remember, when using pesticides, always read and follow the label.

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