

FOREST Pest LEAFLET

Pacific Forestry Centre



Galls on spruce

COOLEY SPRUCE GALL APHID

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Adelges cooleyi is a common pest of spruce and Douglas-fir trees in most areas of British Columbia.

foliage, which can be of economic importance.

throughout most of the range of its hosts: Douglas-fir; Engelmann, Sitka and white spruce.

On spruce, the typical damage is the unsightly, cone-like galls formed on the tips of the new growth.

HOSTS AND DISTRIBUTION

The pest is native to western North America, and is found across Canada wherever its hosts are present.

DAMAGE AND DETECTION

On Spruce, the typical damage is the large cone-like galls formed on the tips of the new growth by the swelling of infested stem and needles.

On Douglas-fir, the aphids cause discoloration and distortion of the new

In British Columbia, it occurs



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Aphids on Douglas-fir needles

New galls, formed in June and July, are green, shaded with pink or purple.

Old galls are brown, dry and hard, and many persist for many years.

Young aphids covered in white wool may be seen during the winter at the needles' bases, near the branch tips.

On Douglas-fir, the most noticeable signs of attack are the white woolly aphids on the undersides of needles during the summer. When an infestation is heavy, needles are discolored and dis-

torted which can result in needle drop.

Some species of the woolly aphid genus Pineus form galls on spruce which can be confused with Adelges galls. However, the Pineus galls are generally slimmer; more flexible, with needles more flattened along the gall; the gall may not be terminal; the gall chambers are inter-connecting, whereas Adelges cooleyi chambers are characteristically non-connecting.

LIFE HISTORY

The complex life cycle has six forms of aphids, two of which cause damage.

On Spruce

The gall forming aphids emerge in late May or early June and feed on the new growth producing the typical galls in which they feed for about two months. In late August or September the galls dry and open and winged females disperse to Douglas-fir to lay eggs.

The aphid must complete part of its life cycle on Douglas-fir to produce the galls on spruce. However certain wingless generations live on spruce year round, but do not produce galls.

On Douglas-fir

The aphids which cause foliage discoloration and distortion start feeding in spring and continue through the summer.

After feeding, a winged form migrates to spruce to complete the cycle of the gall-producing aphid.

Other wingless generations continue to live year round on Douglas-fir.

DESCRIPTION

On Spruce

Egg: oval, light brown, about 0.5 mm (1/64 inch) long.

Nymph: oval, yellow-brown to reddish or dark brown, covered with white woolly wax.

Adult: oval, dark to red-brown, about 1 mm (1/32 inch) long.

On Douglas-fir

Egg: same as on spruce.

Nymph: oval, light or dark greenish brown, darkening to black as it develops, with a white wax fringe.

Adult: oval, light to dark brown, covered with white woolly wax, about 1 mm (1/32 inch) long.

PREVENTION AND CONTROL

NATURAL

Some degree of natural control occurs with predation by ladybirds, hoverfly and lacewing larvae, spiders and mites.

SILVICULTURAL

Control is not usually warranted under forestry conditions.

Damage can be prevented or minimized by not planting Douglas-fir adjacent to spruce, particularly outside the range of Douglas-fir.

MECHANICAL

On ornamental spruce, some measure of control can be achieved by removing and burning the fresh green galls in the summer, before the aphids emerge from the galls. The old brown galls, which are common in areas of old attack, have been abandoned by the insects.



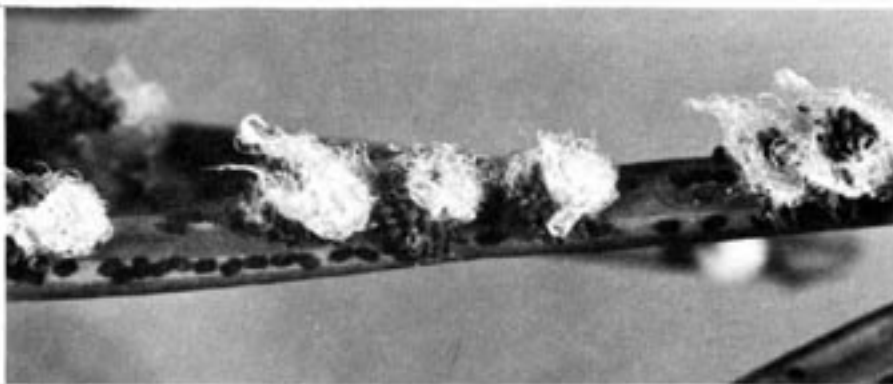
Cross section of gall



Infected spruce tip



Aphids on Douglas-fir needles



Nymphs and egg masses covered with wool, on Douglas-fir needle.

CHEMICAL

When artificial control is needed, use of an insecticide registered and recommended for aphids is effective when applied correctly.

On Douglas-fir in Christmas-tree production areas, nurseries and ornamental plantings, spray when the aphid is noticed.

On spruce, spray in early spring before galls begin to form.

References

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Additional Information

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