



Hemlock woolly adelgid

Adelges tsugae,
Order Hemiptera, Family Adelgidae;
pine and spruce adelgids
Introduced pest

Host plants: Eastern and Carolina hemlock are preferred.

Description: Adult female adelgids are about 1.5 mm long, black, and are usually covered with a white, cottony wax mass about 3 mm in diameter. Eggs are covered with wax.

Life history: Adults and nymphs overwinter. Eggs are deposited in spring. Crawlers start feeding on needles and settling on twigs at the base of needles. There are two generations a year.

Overwintering: Adults and nymphs on twigs.

Damage symptom: White waxy masses on trees spoil their appearance. Heavy infestations lead to needle yellowing, loss of vitality, premature needle drop, defoliation, and tree death.

Monitoring: Look for the white cottony wax masses on twigs throughout the year. Look also for needle yellowing and premature drop.

Chemical control: A dormant oil spray may be effective against overwintering immatures. Horticultural oil or insecticidal soap sprays control immatures from July through October. Soil applications of imidacloprid by early summer can control populations.

Cultural control: Choose resistant varieties, such as Western, mountain, and Japanese hemlock.

Biological control: Biological control agents from areas of origin are being evaluated for introduction, such as lady beetles, *Scimnus ningshanensis*, *Pseudoscimnus tsugae*, and a derodontid beetle, *Laricobius nigrinus*.

Plant mortality risk: High

Biorational pesticides: insecticidal soap, horticultural oil

Conventional pesticides: chlorpyrifos (nursery only), deltamethrin, imidacloprid



Needle damage caused by hemlock woolly adelgid. Densities like this will eventually kill the tree or shrub. (140)
Photo: John Davidson



Chlorotic damage to needles is exposed by removal of hemlock woolly adelgid immatures and adults. (142)
Photo: John Davidson



Hemlock woolly adelgid eggs, immatures and adults are covered with a white, cottony wax about 3 mm in diameter. (141)
Photo: John Davidson



Hemlock woolly adelgid (continued)



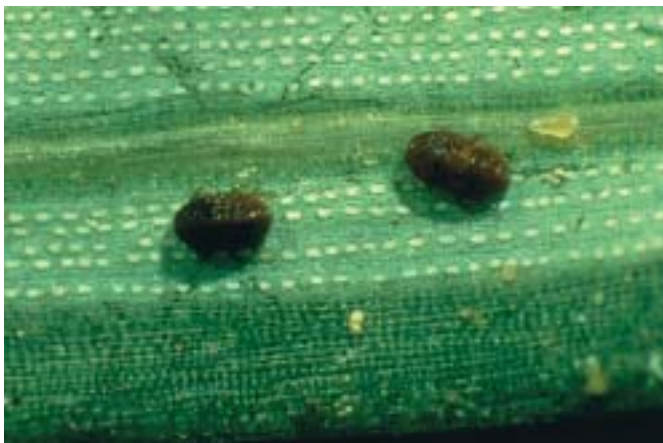
Close-up of hemlock woolly adelgid eggs and adults. Eggs are light brown and darken near hatch. (144)
Photo: John Davidson



Hemlock woolly adelgid nymphs in summer location. (143)
Photo: John Davidson



Hemlock woolly adelgid winged adult. (67)
Photo: John Davidson



Hemlock woolly adelgid immatures, newly hatched, before a waxy cover is made. Nymphs are almost black. (143)
Photo: John Davidson