



Hemlock Woolly Adelgid

Adelges tsuga

The hemlock woolly adelgid (HWA) is a serious pest of Canadian or Eastern hemlock, *Tsuga canadensis*, in the northeastern states. This insect was discovered in Connecticut in 1985 and has spread rapidly to both cultivated and forest hemlocks.

Adelgids are small, soft-bodied insects that are closely related to aphids. They have piercing-sucking mouthparts, which are inserted to remove plant sap for food. The HWA feeds primarily on young branches causing cessation of tree growth, discoloration and premature drop of needles, dieback of branches and possible death of the tree in as little as one year.



Life Cycle

The females are oval, blackish-gray, about 2mm in length and serve as the over-wintering stage. The brownish orange, very small, oblong eggs are laid in cottony white egg sacs (about 50 eggs per sac) on young twigs from late March to May. The presence of the egg sacs offers the most visible diagnostic evidence of a HWA infection. The eggs hatch into reddish-brown crawlers (nymphs) from early April through early June and begin feeding on the sap of young twigs, maturing into adults in a few weeks. Some of the adults are wingless and remain on hemlock for a second generation, while the winged forms may fly to nearby hemlocks or spruces.

None of the common native and exotic spruces appear to be suitable for the winged HWA to complete its life cycle. Second generation crawlers initially feed on new twigs during July but become dormant in late summer through early autumn. Crawlers resume feeding in mid-October and develop into the over-wintering adults. They feed all winter and mature by spring.

Pest Management and Control Chemical

Infestations of the HWA can be detected early by periodically examining young twigs for the presence of the egg sacs. They are readily observed in the spring before the eggs have hatched. Keep in mind that remnants of old egg sacs may remain on twigs long after the eggs have hatched and the insect has been controlled. Early detection is very important because injury to hemlock may develop quickly. That is why periodic examinations are an important practice in the control of the HWA.

Several insecticides are available that will provide excellent HWA control; however, insecticides should not be applied on a preventive basis. Many of the hemlocks in Connecticut will not be infested and will not need treating. Controls should be applied only when HWA infestations are observed.

An excellent time to control HWA infestation is from July through September after the eggs have hatched and the young adelgids are relatively unprotected. Summer oil and insecticidal soap have been found to provide excellent control with one application, provided complete coverage is made in this time period. Both insecticides kill only by direct control. Thorough coverage with a drenching spray is essential for control. Dormant oil is effective for HWA control when applied in April to mid-May. It will also control scale insects and mites at the same time.

Biological

Sasajiscymnus tsugae is a predatory ladybird beetle that is native to Japan and is available commercially in the US. A federal permit for the release of *S. tsugae* for biological control of the hemlock woolly adelgid in Connecticut was issued in April 1995 and the first release of *S. tsugae* occurred in a town park in Windsor, Connecticut that spring. The life cycle of *S. tsugae* is very close to the hemlock woolly adelgid's cycle. Both insects have two generations each year, adult beetles overwinter, and spring egg laying by the adult *S. tsugae* normally coincides with peak egg laying and hatching of overwintering adelgids. A second generation of beetles occurs in June around the time that the second generation of adelgids appears. Adult ladybugs can survive by feeding on dormant young adelgids. *S. tsugae* larvae and adults will feed on all stages of hemlock woolly adelgid available.

Despite good cultural practices, pests and diseases at times may appear. Chemical control should be used only after all other methods have failed.

For pesticide information please call UConn Home and Garden Education Center weekdays, in Connecticut call toll free 877-486-6271. Out of state call 860-486-6271.

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