

# HEMLOCK WOOLLY ADELGID

*Adelges tsugae* (Hemiptera: Adelgidae)

## DESCRIPTION

The Hemlock Woolly Adelgid (HWA) is a tiny, piercing and sucking insect, unseen with the naked eye, that feeds on hemlock twigs at the bases of the needles. HWA is an invasive species from Asia which has infested the US East Coast hemlock forest from New Hampshire to Georgia, inhibiting twig growth throughout. It has also recently been found in Michigan and it is believed to be expanding its range due to changes in climate. HWA has a complex life cycle; its winter generation and spring generation overlap in the spring. It feeds and reproduces during the colder months, going dormant in the summer.

## SYMPTOMS

The earliest visible sign of HWA is the presence of white, cottony masses, usually located on the twigs and at the bases of the needles. Populations tend to be denser in the lower limbs, but can be anywhere on the tree. Symptoms will progress to fading, thinning and dying limbs, which begin at the base of the tree and move upwards. Left untreated, the death of the tree is certain.

## TREATMENT

Arborjet recommends a trunk injection of IMA-jet (active ingredient, imidacloprid) insecticide using the TREE I.V. system or using the QUIK-jet micro-injector. The TREE I.V. is designed to work effectively with the hemlock's primitive tracheid vascular system; it injects high volumes of product under low pressure, resulting in efficient uptake. The QUIK-jet works best with low volumes of applications in hemlock, and takes only minutes to apply. To give the tree a greater health benefit, a follow up application of ROOT-jet Iron or MIN-jet Iron is recommended, the specific formulation dependent upon soil type. When applied to the soil, ROOT-jet Iron supplies phosphorous, potassium, iron, manganese, and a low dose of nitrogen. MIN-jet Iron supplies both iron and manganese, micro-elements that may be sequestered in high pH soils, but are essential to healthy, green foliage.

## PHOTOS

A: Healthy hemlock tree.

B: Hemlock infested with Hemlock Woolly Adelgid.

Photo B taken by: John A. Weidhass, Virginia Polytechnic Institute and State University, Bugwood.org



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## WHEN TO TREAT

In hemlock, fall treatments coincide with HWA resumption of feeding. Applications of IMA-jet may be applied in hemlock from September through December, as long as soil temperatures are above 40°F. The second window for application is in the spring months, from March through June.

Generally, the best seasons for injection are fall and spring, as uptake occurs when trees are transpiring. The environmental conditions that favor uptake are adequate soil moisture and relatively high humidity. Soil temperature should be above 40°F for trunk injection. Hot weather or dry soil conditions will result in a reduced rate of uptake, so trees should be watered of applications are made when soil is extremely dry. If treating trees in the summer, inject in the morning for the quickest uptake. Tree health will also affect treatment efficacy, so assess tree health prior to treating. For example, a declining tree (>50% canopy dieback) is a poor candidate for treatment.

## WHAT TO EXPECT AFTER TREATMENT

Injection time varies depending on the environmental conditions, tree health and method of application. Uptake time is approximately 15 - 30 minutes for the high volume dosages applied by TREE I.V. Applications made at lower doses with the QUIK-jet may be applied in as little as 3 to 5 minutes per tree. Systemic activity of IMA-jet occurs when the active ingredient, Imidacloprid moves upward into the foliage from the injection sites. Adelgid mortality occurs after ingestion, generally within 14-28 days, and continues for up to 2 years. Cottony masses remain for some time, but will turn a distinctive gray color. Hemlocks respond positively to treatment with a resumption of twig growth.

## WORLD CLASS FORMULATIONS

For treatment of hemlock woolly adelgid use IMA-jet.

IMA-jet is the industry leading injectable imidacloprid. It is a broad spectrum, long residual insect control. IMA-jet is formulated to move and distribute well within a hemlock's specialized vascular system. It has been proven in numerous studies to be an effective, long lasting control of Hemlock Woolly Adelgid. One treatment will provide control for 2 years or more.

Our products can be purchased at your local Arborjet distributor. For a distributor near you visit [arborjet.com/distributor](http://arborjet.com/distributor)



## QUIK-JET INJECTION

## TREE I.V. INJECTION



## ARBORJET DELIVERY SYSTEMS

Arborjet's delivery systems are designed to be fast, affordable and effective. Contact us today to determine the right system for your needs. To find a distributor near you, go to [www.arborjet.com](http://www.arborjet.com).



QUIK-jet Kit



TREE I.V. 2-Pack Kit



QUIK-jet Pro Kit



Arborjet Deluxe Kit