

# Michigan Department of Agricultural and Rural Development

## Hemlock Woolly Adelgid Nursery Program

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### Introduction

The Michigan Department of Agriculture and Rural Development (MDARD) developed the Hemlock Woolly Adelgid (HWA) Nursery Program to facilitate shipment of hemlock nursery stock within the state of Michigan. Facilities (growers, landscapers and nursery stock dealers) located in counties regulated under Michigan's Interior HWA Quarantine may ship hemlock to destinations in non-regulated counties as well as within the regulated counties when enrolled in this Program. The Program is a systems approach program that relies on pest scouting, pesticide treatments, employee training and recordkeeping. Similar programs are utilized in other states and in Canada to assure that hemlock nursery stock is free of this insect pest.

### Background

The hemlock woolly adelgid, *Adelges tsugae* Annand, (HWA) is a tiny sap-feeding insect that causes damage to hemlock trees by sucking nutrients from the shoots. HWA feeding can kill needles, shoots and branches. Their feeding slows the growth of the tree and reduces its vigor. Infested hemlocks are often killed when other stress factors such as drought affect the trees. HWA has two generations per year. Adelgids insert their stylets near the base of a hemlock needle, where the HWA remain permanently attached. Newly hatched crawlers, the only mobile form of HWA, seldom move long distances, but they can be transported on birds or be wind-blown to new trees. Human assisted movement through transport of cut, infested branches and infested nursery stock are the primary means that this pest moves any substantial distance.

### Section 1. General Program Requirements

#### 1.1 HWA Pest Management Program

Enrolled facilities must have a pest management program in place that includes inspection of incoming hemlock, scouting of the hemlock production and holding areas, a documented treatment program that incorporates pesticides known to be effective against HWA, a process to notify MDARD of any suspect detection of HWA and inspection of the hemlock prior to shipment. The facility will have an adequate recordkeeping system documenting pest scouting results, incoming and outgoing shipments of hemlock, employee training and pesticide treatments. The details of the required type and content of what constitutes an adequate recordkeeping system are provided in Section 1.9 Recordkeeping and Audits.

**1.2 Inspection of Incoming Hemlock** – All incoming hemlock nursery stock must be held in a receiving area that is physically separated from any hemlock production area or hemlock holding area for existing trees until the incoming hemlock nursery stock is inspected and found free of all life stages of HWA. The receiving area must be physically separated from production and holding areas by a distance of at least 20

yards or alternatively contained within an enclosed building. The incoming hemlock nursery stock must be inspected by facility personnel that have been trained in the identification of HWA.

**1.3 Documentation of Management and Inspection Processes** – Enrolled facilities will document and describe management practices and inspection processes which will be performed during the processes of receiving, holding, growing and preparing hemlock for shipment.

#### **1.4 Enrollment in Program; Compliance Agreement and Facility Map**

Production blocks, receiving areas and holding areas will be managed under an active pest management program from the beginning of the compliance agreement period. Records are subject to verification by MDARD. The facility must maintain a map of the facility indicating the location of each production block, receiving area and holding area. The facility must submit a copy of the facility map to MDARD with the compliance agreement form. This process will serve to identify production blocks and areas registered for approval by MDARD. Holding and production areas must be at least 150 feet from any hemlock trees in the landscape; or, alternatively any hemlock trees within 150 feet of holding and production areas must be treated with one of the systemic insecticides approved by MDARD for treatment of HWA.

#### **1.5 Staff Training**

The facility will train staff who work within the designated hemlock receiving areas, holding areas, loading areas and/or production blocks. The training will include: how to identify hemlock woolly adelgid and how to report suspects to the facility management and to MDARD. The trainees' names and the date at which the training occurred shall be recorded. Training must be repeated (and recorded) annually for each staff member trained and also whenever new employees are assigned to areas where hemlock is located. Records are subject to verification by MDARD. A training video is available online at <https://youtu.be/XtIUbDRdYGA> .

#### **1.6 Scouting Program**

The facility will have a system in place which incorporates documented scouting of hemlock in each receiving, holding and/or production area. Hemlock trees located within 100 yards of these areas must be included in the area scouted. Scouting will be performed on a biweekly basis during the shipping season (March 1 through October 31). The facility will maintain pest scouting records which document the results. The scouting reports will be provided to MDARD upon request. Scouting records must be legible and completely filled out showing:

- a. the date of the scouting of the hemlock;
- b. the person carrying out the scouting;
- c. areas scouted i.e. production, receiving, holding and/or adjacent areas;
- d. if any presumptive (suspect) HWA were found; and,
- e. all documentation of reporting the presumptive HWA to MDARD.

## 1.7 Treatment Program – General Requirements

The facility must maintain a treatment program that specifically targets HWA. Facilities may only utilize compounds approved by MDARD for HWA control. The specific compound must be registered for use in Michigan and labeled for the application site i.e. nursery, containerized stock, or balled and burlapped stock. The compound must also be labeled for the method of application i.e. soil injection, soil drench, media drench, basal trunk spray, etc.

All initial treatments will be witnessed by MDARD staff. The facility will notify MDARD of any planned pesticide applications for initial program treatments at least 5 business days prior to the application. MDARD may opt to waive witnessing of treatments for subsequent treatments on a case-by-case basis contingent upon the ability of the facility to adhere to the requirements of the program.

It is the facility’s responsibility to ensure that all insecticidal treatment products utilized under this program are registered for use in the State of Michigan.

**Table 1. Treatment schedule for hemlock nursery stock**

Active Ingredient	Minimum Interval between Treatment and Shipment	Effective Period of Treatment
Dinotefuran	15 days	12 months
Imidacloprid	6 months	3 years

**Table 2. Approved treatment application methods**

Dinotefuran	Imidacloprid
Basal trunk spray	Soil drench
Media drench	Soil injection
Soil drench	Trunk injection
Soil injection	
Broadcast spray to soil of plant beds	

(See treatment requirements in Sections 2 & 3 for each facility/shipping category)

## 1.8 HWA Detection

The facility will notify MDARD immediately of any detection of HWA within their operation or on any hemlock obtained from outside sources. In the event of a detection of a suspect HWA, the facility must notify MDARD of the detection by the end of the next business day. Notification will be done by email or telephone utilizing the contact information provided by MDARD. The MDARD District Inspector will collect a sample of the suspect HWA and submit it to an MDARD-approved identifier to obtain positive identification. A detection of presumptive HWA will result in suspending all hemlock shipments from the facility until the identity of the sample has been confirmed by

MDARD and any corrective actions identified by MDARD have been completed to the satisfaction of MDARD. Hemlock nursery stock found to be infested with HWA life stages will be subject to a Control Order issued by MDARD and will not be eligible for shipment. A Control Order will identify treatments and/or destruction and disposal methods and a specific time period for carrying out the requirements of the Control Order to assure that the HWA infestation is eradicated and therefore the risk of re-infesting nearby hemlock is mitigated.

A facility may voluntarily destroy any hemlock nursery stock that has symptoms of HWA infestation in lieu of receiving an official MDARD Control Order. In those instances, MDARD must still be notified of the scouting results and MDARD will be consulted regarding acceptable methods for destroying the suspect HWA-infested hemlock nursery stock and insecticide treatments of nearby hemlock production blocks. For all practical purposes, hemlock nursery stock that has visible life stages of HWA on the plants, such as the white cottony masses, whether the HWA is alive or dead, would not be marketable based on the visible symptoms.

### **1.9 Recordkeeping and Audits**

HWA Nursery Program records must be available and provided upon request to MDARD staff. Records must be completely filled out and any handwritten entries must be legible. Records may be kept in hardcopy or electronic format. All records concerning hemlock regulated under the program must be maintained on file by the nursery for a minimum of 36 months.

Scouting records must show the date of the examination of the hemlock, the person carrying out the examination, the production block scouted, and documentation of any HWA presumptive reports to MDARD.

The facility must have an inventory control system in place to trace hemlock materials forward and backward from the facility. All inventory control records must show type of hemlock nursery stock (i.e. liners, seedlings, B&B, containerized) and the quantity. In addition, incoming inventory control records must show date of receipt, sources and any certificates accompanying the incoming hemlock. Outgoing inventory control records must show date of the outgoing shipment, the consignee (recipient or purchaser), a copy of the CQC accompanying the shipment and the destination address.

Pest control application records, including the required program treatments, must include the pesticide compound used, EPA registration number, concentration, application rate, date of application, name of applicator, location (production block) of treatment, and method of application (soil drench, soil injection, media drench, etc.) and any follow up required.

Employee HWA Nursery Program training records must be documented by an employee sign-in sheet. The training record must also show the date of training and source. Training sources include MDARD, MSU and MSU Extension staff recognized by MDARD as being proficient in the program requirements.

Outgoing inspection records must contain the date of inspection of the hemlock, the name(s) of person(s) carrying out the inspection, as well as the type and the quantity of hemlock inspected.

The facility will be audited by MDARD for compliance to the program a minimum of two times per year. MDARD will conduct HWA pest surveillance at the facility and in the environs adjoining to nursery. The facility will be charged for all inspections and related activities conducted by MDARD at the current fee schedule as approved by the Michigan Commission of Agriculture and Rural Development.

### 1.10 Outgoing Shipment Inspection

All shipments of hemlock nursery stock made to destinations within and outside of the regulated counties in Michigan will be inspected according to the “Inspection and Sampling Procedures” table below. All outgoing hemlock shipments must be examined by trained facility personnel no more than 2 days prior to shipping. Any detection of live Hemlock Woolly Adelgid will disqualify the shipment of this material.

**Table 3. Inspection and sampling procedures sampling table for inspection**

Lot Size	Sample Size to Inspect
1-10	All
11-100	10
101-500	10% of the total lot in the shipment
501-800	75
801 - 1,300	110
1,301 - 3,200	150
3,201 - 8,000	225
8,001 - 22,000	300
22,001 - 110,000	450
110,001 - 555,000	750
555,001 and over	1,500

A Certificate of Quarantine Compliance (CQC) must accompany each shipment and must show the compliance agreement number, county of origin of the hemlock and date inspected. Pre-shipment pesticide treatment information must be recorded on the CQC and must indicate the compound, concentration and date of application.

### 1.11 Exports to Canada

This program is designed to fulfill the majority of requirements for hemlock shipped into Canada under Canadian Directive D-07-05: “Phytosanitary requirements to prevent the introduction and spread of the Hemlock Woolly Adelgid (*Adelges tsugae* Annand) from the United States and within Canada”. However, hemlock nursery stock exported to Canada from infested areas of the United States must also receive an additional pesticide treatment within two days of shipment during the high risk period of March 1-

June 30 and within seven days the remainder of the year. Exporters should consult with MDARD in advance when considering export of hemlock nursery stock to Canada.

## **Section 2. Specific Requirements for Facilities that Grow or Hold Over Stock**

Hemlock grown within the regulated counties is considered to be potentially exposed to HWA throughout much of the growing season and therefore extra precautions are necessary to assure that hemlock produced under this program is completely free of HWA. For the purposes of this program, growing includes long term production in the ground or in containers OR holding stock for any length of time during the period when HWA are mobile, i.e. March 1 through October 31. For hemlock grown within the regulated counties, treatment is required if the hemlock is going to be shipped to any destination within or outside of the regulated counties.

## **Section 3. Specific Requirements for Facilities with Short-Term Seasonal Reshipment**

Hemlock grown in the non-regulated counties in Michigan and non-regulated counties in other states is considered to be free of HWA up to the point where it is shipped into a regulated county. Once the hemlock is shipped into the regulated area, treatment may be required to assure that the hemlock continues to be free of HWA if it is to be re-shipped.

Incoming hemlock that is safeguarded from exposure to HWA may be eligible for reshipment without treatment. Safeguarding criteria include holding the hemlock in an enclosed shipping container or in a storage room and subsequently reshipping the stock in an enclosed truck or trailer. Hemlock received during the period of November through February from non-regulated counties and reshipped during the same time period are exempt from the safeguarding and treatment requirements.

Facilities in the regulated area that receive hemlock from non-regulated counties during the period of March 1 through October 31 and do not safeguard the hemlock must apply pesticide treatment before the hemlock is eligible for reshipment to any destination within or outside of the regulated area.

## **Section 4 – Additional Information**

Facilities are encouraged to contact the MDARD-PPPM District Inspector that services their county for additional information regarding the HWA Nursery Program, available training materials, compliance agreement details and especially the application of pesticide treatments for hemlock woolly adelgid. Copies of Michigan's plant pest quarantines are available on the MDARD website at [www.michigan.gov/pestquarantines](http://www.michigan.gov/pestquarantines) or may be obtained upon request by contacting District Inspectors or by calling MDARD at 800-292-3939.