

The Pitch & Needle



March 2007

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About this newsletter

The Pitch & Needle is a semi-annual publication of the Oregon Department of Agriculture and is intended as an aid to anyone involved in the growing and shipping of Christmas trees. Through this bulletin, we hope to provide you with the most current shipping information as well as other topical information related to the Christmas tree industry. If you have any suggestions for topics or articles for the next issue, contact Gary McAninch at 503-986-4644 or e-mail <gmcaninc@oda.state.or.us>.

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Plan ahead for Christmas tree exports

Dennis Magnello, horticulturist

Most Christmas tree shipments to foreign countries or to U.S. territories overseas require an inspection, and certification in the form of a federal or state phytosanitary certificate. For some destinations an import permit, issued by the importing country, is also required.

Oregon Department of Agriculture (ODA) horticulturists can provide the necessary inspections and certification. Adhering to the following guidelines can help exporters receive these services in a timely and efficient manner:

1. Determine the export requirements to the destination country or territory. If you are uncertain about the requirements, contact the ODA Plant Division at 503-986-4644. The September issue of the ODA Christmas tree newsletter, "The Pitch and Needle," will contain some information about certification requirements for foreign and domestic shipments of Christmas trees.
2. Provide the ODA horticulturist in your area (your Nursery and Christmas tree inspector) with a map of the plantations from which Christmas trees for export will be cut. The trees may then be inspected in the field to determine whether they meet the export requirements for freedom from insects and diseases. The preferred time to inspect trees is during the months of September and October. In November, much of the inspectors' time is taken issuing certificates, and little time is available for field inspections. Waiting until November to request field inspections will lead to delays in inspecting and certifying your shipments. In some cases, trees may also be inspected in the shipping yard prior to loading.
3. Obtain any necessary import permits and fax legible copies of them to your inspector, along with your request for phytosanitary certificates. Requests should be made at least several days, but preferably a week or more in advance and should include, for each destination, information such as the number of certificates needed, the date needed, the exporter's name and address, the importer's name and address, the type and quantity of trees being shipped, the method of transportation, the origin of the trees and, if needed, the import permit number associated with each shipment. The inspector can then make an appointment to meet you at your office or shipping yard to issue the certificates. The fax number for the Plant Division in Salem is 503-986-4786.

Christmas tree growers who are not exporting trees to foreign destinations may also request field inspections if they are experiencing problems with their trees, or just as a precautionary procedure to determine whether any significant insect or disease problems are present.

ODA Christmas tree exports for 2004, 2005 and 2006 (phytosanitary certificates)

Country	2004	2005	2006
Aruba	2	3	-
Canada	1	52	18
Costa Rica	11	6	-
El Salvador	-	2	-
Guam	9	14	12
Guatemala	2	1	2
Hong Kong	19	24	21
Iraq	1	-	1
Hawaii	201	237	242
Japan	16	9	8
Korea	3	1	1
Mexico	1,340	1,501	1,766
Northern Mariana Islands	2	1	1
Pago Pago American Samoa	1	2	-
Palau	2	2	2
Panama	9	3	1
Peoples Republic of China	2	-	3
Philippines	2	-	1
Puerto Rico	18	66	75
Republic of Korea	7	1	1
Singapore	8	10	11
Taiwan	-	-	1
Thailand	-	-	1
Venezuela	-	-	1
Yearly total	1,656	1,935	2,170

Export concerns

This past year was challenging for growers shipping to both Mexico and Hawaii. Mexican authorities at selected border inspection stations, including Nuevo Laredo, conducted enhanced inspections of Christmas trees for pests and disease. This resulted in the rejection of 41 truck loads of Christmas trees due to the presence of Douglas fir twig weevil, *Cylindrocopturus furnissi*. All 41 loads (approximately 25,000 trees) were returned to the United States. In order to avoid this situation in the future, program personnel are developing an enhanced inspection process for Douglas fir twig weevil for use during the 2007 shipping season. In addition, Hawaii officials rejected 15 loads of trees because of Douglas-fir needle midge, *Contarinia* spp. Four of the rejected loads were returned to the Oregon. After consultation with our entomology staff, Hawaii officials determined that this insect did not pose a threat to the islands and released the remaining 11 loads. Hawaiian officials are scheduled to visit Oregon in 2007 to meet with ODA staff and Christmas tree growers to discuss next year's shipping season. The following articles may be helpful.

Douglas fir twig weevil

by Randy Vial, Oregon Department of Agriculture
Jack DeAngelis, OSU Extension
David Overhulser, Oregon Department of Forestry

Douglas fir twig weevil, *Cylindrocopturus furnissi* Buchanan (G.) is found throughout the native range of Douglas fir in coastal British Columbia and western Washington, western Oregon and western California (Furniss 1942.)

The adult is a tiny brown weevil with light colored mottling on legs and body. Adults are approximately 3.0 mm in length. White to yellowish colored larvae are up to 4.0 mm in length (white when young becoming more yellowish as the larvae mature). Adults emerge from Douglas fir twigs beginning in early to mid-June and continuing through early August. Adults feed on tender twigs for about a month before preparing small punctures in the bark of 1-3 year-old twigs in which eggs are deposited. Eggs hatch after a few days and larvae bore through the outer bark into the underlying inner bark and cambial region. Larvae form feeding galleries in the cambial region between the bark and wood of the branch. Feeding continues from late summer through the following spring. Maturing larvae may tunnel through the wood into the pith region. Larvae of all sizes overwinter in infested branches. After a period of spring feeding, larvae pupate during May and June. Some adults may overwinter on the tree and resume egg laying in the spring. One generation occurs each year.

Damage may be severe on seedlings and may cause economic loss by deforming and retarding seedling growth. On older trees, damage is usually inconspicuous. In Christmas trees most of the infested branches are removed if shearing occurs during late summer (August or early September). Damage is greatest in drought years and on dry sites. Christmas trees that are growing under stress conditions (dry or water-logged soils, nutrient deficits, air pollution, etc.) may be more susceptible to attack.

When looking for the presence of Douglas fir twig weevil in Douglas fir Christmas trees concentrate on dead or dying twigs near the top of the tree, especially the larger diameter branch stubs left after pruning. On the lower part of the tree it is necessary to look for branch stubs among the foliage. Look for 1 mm diameter adult weevil exit holes.

Stems suspected of current or previous weevil infestation should be cut lengthwise and opened. Look in the area between the inner bark and the wood for evidence of larval feeding, frass, tunnels, exit holes etc. Some tunnels may extend into the pith. Look carefully for whitish larvae feeding in bark and pith.

Preliminary field scouting indicates Christmas trees subject to environmental stress are more likely hosts for Douglas fir twig weevil than are healthy trees.

Mexico treats Douglas fir twig weevil as a quarantine actionable pest and has established a low tolerance level for it. Christmas trees found to be infested with weevil larvae during inspection by Mexican officials at the Ports of Entry

are subject to on site judgment as to the pest risk level. Excessive levels will be rejected or subject to treatment at grower's expense. The Oregon Department of Agriculture Christmas tree program staff will notify each grower whether or not Douglas fir twig weevil was detected, after inspecting Christmas tree fields. Fields with pest levels exceeding allowable certification levels will NOT be eligible for certification.

2006 *P. ramorum* survey

Sherree Lewis, horticulturist

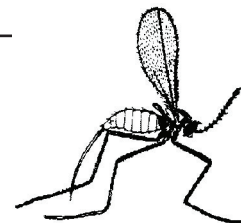
During May of 2006, the Oregon Department of Agriculture (ODA) surveyed a sampling of Christmas tree plantations from several counties for *P. ramorum*. The number of fields surveyed in each county varied depending upon the total acreage of Christmas trees grown in that county. The goal of the survey was to maintain the *P. ramorum* free status for Oregon-grown Christmas trees. A total of 117 fields were visually inspected with 4,630 samples collected for testing (about 40 samples per field.) *P. ramorum* was not detected at any of the growing areas, but another *Phytophthora* spp. was detected in two fields. This is the fifth year in a row no *P. ramorum* has been found in Oregon Christmas tree plantations. Based on these results, all 21 counties surveyed were officially declared free of *P. ramorum* for 2006. Because Oregon Christmas tree plantations have tested free of *P. ramorum* for five consecutive years, there are currently no plans to survey for the disease in 2007. Instead, the department may opt for surveying every other or every three years to maintain free-from status.

Personnel

Melissa Boschee is the newest horticulturist at the ODA. She is the *P. ramorum* Survey Coordinator for the nursery program. She graduated in June, 2003 from Western Oregon University (Monmouth) with a Bachelors degree in Biology and a minor in Earth Science. She started with the Department of Agriculture in May of 2003 in the Plant Health Lab. Melissa moved to the Nursery Program in March of 2004 and has worked as an Assistant Horticulturist until November, 2006, when she began her current assignment. Melissa previously worked on the Polk County Flora Project (Monmouth, Oregon), including web page creation, herbarium curation, surveys and obtaining voucher specimens. She is currently volunteering two weekends a month on the flora project. Before that she was a student research assistant/GIS specialist for the Red Layer Microbial Observatory Project, an undergrad research project studying bacterial mats in Yellowstone National Park.

Biology and Control of Douglas-fir Needle Midge in Christmas Trees

J.D. DeAngelis



The Douglas-fir needle midge can be a very destructive pest of Douglas-fir. Infestation of new needles can be as high as 100 percent. Severe infestations can cause intolerable needle loss, and trees may take several years to recover. Needle loss is an especially serious problem in Christmas trees because of the aesthetic value of these trees.

Life cycle

Needle midge adults emerge in the spring and live only a couple of days, just long enough to mate and lay eggs. The eggs are deposited in groups on newly expanding buds. Midge eggs hatch in a couple of days, and the larvae immediately bore into young needles.

Larvae feed in the needles throughout the summer. A single needle may harbor many larvae.

When they are full grown in the fall, the larvae drop from the needles and spend the winter in the soil beneath infested trees.

Larvae pupate during March and April. Adults begin to emerge sometime between early April and early May, depending on location and weather. In cool years, emergence is delayed; in warm years, it may be as early as March. Males emerge slightly earlier than females, and emergence generally is complete 7 to 10 days after it begins in a particular locality.

Adults immediately mate and lay eggs on opening buds and new needles. Eggs hatch, and the cycle begins again; there is only one generation per year (Figure 1).

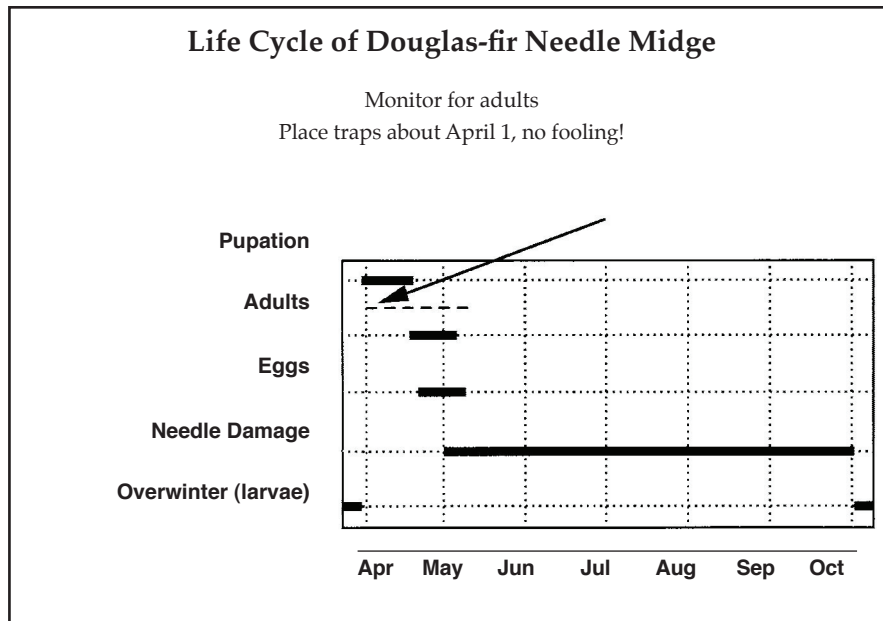


Figure 1.—Life cycle in western Oregon. Exact dates will vary year to year.

We don't know yet what causes midge outbreaks. Outbreaks occur in cycles that may "sweep" south to north. Some natural biological control does occur, as tiny parasitic wasps help regulate midge populations. These chalcid wasps attack midge larvae. The wasps emerge shortly after the adult midges and may show up in emergence traps.

Identification

Adults are small, fragile flies about 1/8 inch long. Female flies have a long ovipositor (Figure 2), which they use to insert eggs into expanding buds. The males are slightly smaller and lack an ovipositor.

Look for clouds of mating and egg laying adult midges during warm April days (60°F or warmer), when emergence and egg-laying



Figure 2.—Adult female midge.

Jack D. DeAngelis, Extension entomologist, Oregon State University.

activity peak. If you observe adults, use a hand lens to look for groups of orange eggs on young needles or between bud scales in swollen buds.

Check trees for signs of infestation in August. Infested needles usually are bent and distorted (Figure 3). They also become discolored—first yellow, and then purple to brown during the fall.

When the larvae are full grown in the fall, they are about $\frac{1}{8}$ inch long; they may be white or orange.

Cultural control

Needle midge damage is most severe on trees whose bud-break coincides with midge emergence. These are early-breaking trees in most years. Later-breaking varieties may therefore reduce midge damage, but their benefits must be balanced against other concerns; for example, late-breaking trees produce less growth during drought periods.

Chemical control

Note: The timing of applications is critical. Adult midges must encounter treated foliage before they lay eggs. You *must* use emergence traps to ensure appropriate timing. Late application of chemicals results in little or no control and can worsen midge problems by killing later-emerging parasites.

To monitor the presence of adult midges, begin placing traps by April 1. Midges begin emerging during early April in western Oregon, but emergence can vary by as many as 10 days depending on weather and exposure. *Heavy rain and cool weather will reduce or stop trap catches.* The farther north or higher in elevation you go, the later emergence occurs.

You can easily construct a trap from a cardboard box and jar (Figure 4). Use a box that is about 12 to 15 inches wide and high. Wax-coated produce boxes are ideal; however, you can use any weather-resistant material, including sheet metal or plywood.

Turn the box upside down. Cut a hole slightly smaller than the lid of a canning jar in one of the sides near the bottom surface, which is facing up. Place a small piece of crumpled paper towel in the jar to absorb moisture. Screw the jar into the hole and secure it. Midges that emerge beneath the box fly to the light in the jar and collect there.

Place traps under the north side of an infested tree by April 1. Place at least three traps per field. Check the traps every other day until midges appear in the collecting jar.

Within a week of your first trap catch, depending on the weather, apply a control treatment if needed.

There is no threshold trap catch. Make your decision on the basis of damage during the previous year. If the weather is cold and rainy, as it often is in mid-April, delay applications until better weather arrives.

A single application at the start of emergence usually will control the midge during the current year. You might consider a second application, 2 weeks after the first, if the infestation has been severe on trees *that you plan to harvest or if the first application is closely followed by heavy rain.*

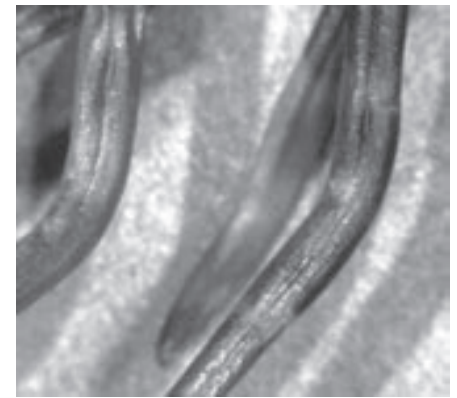


Figure 3.—Needle damage.

Use pesticides safely!

- **Wear** protective clothing and safety devices as recommended on the label. **Bathe or shower** after each use.
 - **Read** the pesticide label—even if you've used the pesticide before. **Follow closely** the instructions on the label (and any other directions you have).
 - **Be cautious** when you apply pesticides. **Know** your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.
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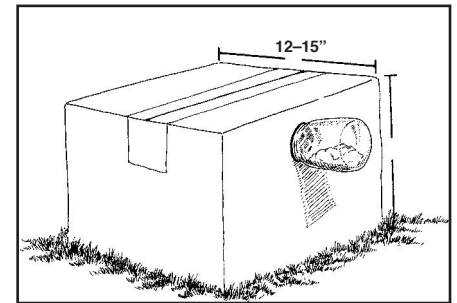


Figure 4.—Homemade midge trap. Box is 12–15 inches on a side.

Since pesticide registrations change frequently, resulting in more or fewer available pesticides and changes in permissible pesticide practices, this publication doesn't make specific pesticide recommendations. For current recommendations, refer to the *Pacific Northwest Insect Management Handbook*, published and revised annually by the Extension Services of Oregon State University, Washington State University, and the University of Idaho. In addition, detailed instructions for pesticide use are provided on pesticide container labels and in other literature provided by pesticide manufacturers.

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Oregon Section 24c)s

Special Local Need (SLN) registrations for Christmas trees

Issued to	Product	EPA #	SLN #	Pest
Bayer CropScience	Axiom DF (Flufenacet and Metribuzin)	264-766	OR-040017	rat tail fescue and other grasses
Dow AgroSciences	Kerb 50W (proamide)	62719-397	OR-040029 (allows for aerial application)	grassy and other weeds
Syngenta Crop Protection	Subdue MAXX (mefenoxam)	100-796	OR-050004	<i>Phytophthora ramorum</i>
FMC	Capture 2E (bifenthrin)	279-3069	OR-940041	spruce mites and root weevils
AMVAC	Discipline @EC (bifenthrin)	5481-517	OR-050005	spruce mites and root weevils
Crompton Manufacturing	Omite 6E (propargite)	400-89	OR-030022	spider mites
Makhteshim-Agan	Thionex 50W (endosulfan) Will most likely become a restricted-use pesticide	66222-62	OR-030012 (includes aerial and some ground application methods)	eriophyid needle mite, Douglas fir need midge, and certain adelgids and aphids.
Makhteshim-Agan	Thionex 3EC (endosulfan) Will most likely become a restricted-use pesticide	66222-63	OR-030013 (includes aerial and some ground application methods)	same as OR-030012
Dow AgroSciences	Lorsban 4E (chlorpyrifos)	62719-220	OR-050015	aerial application

Recently canceled by registrant

Dow AgroSciences	Kelthane MF (dicofol)	62719-405	OR-020031 Canceled	spider mites
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What to look for now—Spring (March-May)

Insects	Life stage	Host	Symptoms
Balsam woolly adelgid	Adults	True fir (esp. Fraser)	White woolly masses on bark, swelling of branch nodes
Balsam twig aphid	Adults	True fir (esp. Grand)	Small greenish aphids in tops or along branches, twisting of new growth
Douglas fir needle midge	Adults	Douglas fir	Place adult midge traps around April 1 and treat before bud break
Douglas fir twig weevil	Larvae	Douglas fir and Noble fir	White grubs under bark of branches or into pith
Cooley spruce gall adelgid	Crawlers	Douglas fir	Cottony masses develop as new growth elongates

Diseases	Host	Symptoms
Swiss needle cast	Douglas fir	Rows of small, black fruiting bodies on undersides of needles
Needle rusts	True fir, esp. Grand	White, tube-like fruiting bodies on undersides of needles

What to look for now—Summer (June—September)



Insects	Life stage	Host	Symptoms
Root aphids	Adults and immatures	Noble fir	Tree decline, presence of ants in new plantings, clustering white aphids on roots
Root weevils	Adults	Douglas fir and True fir	Poor growth and discoloration esp. in new plantings, notches in needles and trunk girdling
Spider mites	Adults and immatures	Douglas fir and True fir	Yellowing and stippling of the foliage
Eriophyid mites	Adults	Douglas fir and True fir	Olive-green or bronze foliage beginning on interior needles
Yellow jackets	Adults	Douglas fir and True fir	Presence of ground or aerial nests. Control of aphids important

Diseases	Host	Symptoms
Grovesiella canker	True fir, esp. Grand and Concolor	Large cankers with overgrowth at base of limbs resulting in death of branches
Phytophthora root rot	True fir, esp. Noble	Brown stem cankers with branch flagging resulting in death of trees

Growth evaluation of Nordmann and Turkish fir

By Chal Landgren, OSU Extension

In a market dominated by the ‘big 3’ of Noble, Grand and Douglas fir in the Pacific northwest, some growers have sought other types of fir trees to add to their inventory. Some recent and interesting varieties of Nordmann and Turkish firs may be of interest.

This past fall, we evaluated a series of 6 genetic trials planted in 1999. The effort was funded by the PNW Christmas Tree Association, trees were grown at Brooks Nursery and measurements were done by myself, Rick Fletcher, Mike Bondi and Brad Withrow-Robinson. The plots, all on experienced grower farms, stretched from near Aberdeen, WA. to Springfield, OR. We measured height, looked for damages and evaluated grade. We used the grade and height data to compile tree value based on assumed values/foot. We then averaged these across the six plots to arrive at the general ranking/values shown below.

Source	Code	Value	Bud break
Turkish-Peavy Arboretum, OSU	TP	\$18.9	3.5
Turkish- Bolu-Koke	TB	\$16.2	2.6
Turkish- Kintigh Seed Orchard	TK	\$16.1	3.1
Nordmann Ambrolauri	NA	\$15.0	1.1
Nordmann Borshomi	NB	\$13.6	1.5
Nordmann Savsat Yayla	NSY	\$10.7	1.5
Nordmann Savsat-Meydancik	NSM	\$9.4	1.9
Nordmann Savsat-Velikoy	NSV	\$8.8	1.6

In mid May (in prior years) we looked at bud break on each tree on three plots. Our early findings are summarized in the tables below.

Let’s first consider value. With the sources in our test, the Turkish fir had higher average tree values than the Nordmann fir. Largely, this is a result of more rapid growth and “better” branch density. Each plot was in somewhat different stages of harvest maturity (despite being planted in the same year) yet

Useful Web sites

- **Oregon Department of Agriculture**
<http://oregon.gov/ODA>
- <http://oregon.gov/ODA/PLANT/NURSERY>
- **Oregon State University Extension Service**
<http://extension.oregonstate.edu/index.php>
- **Washington State Univ. Extension – Christmas trees**
<http://smallfarms.wsu.edu/crops/ChristmasTrees.html>
- **Pacific Northwest Christmas Tree Association**
<http://nwtrees.com>
- **Pacific Northwest Insect Management Handbook**
<http://pnwpest.org/pnw/insects>
- **Pacific Northwest Plant Disease Control Handbook**
<http://plant-disease.ippc.orst.edu/intro.cfm>
- **Pacific Northwest Weed Management Handbook**
<http://weeds.ippc.orst.edu/pnw/weeds>

the Turkish fir on all the plots was, on average, taller and had good fill.

Next consider bud break timing. To evaluate timing, we gave each tree in the experiment a numerical rating in mid- May based on the Bud Break Key below. These were averaged across the three plots for all trees to arrive at the bud break value in the table. For example, the TP source in mid-May had new growth on average around 2 inches in length. On the NSV source on the other hand, buds were just breaking. We had been told that the Ambrolauri source was a late bud-breaking source and this trial confirmed that observation as it showed the latest bud break timing.

Bud break key

- 0=Tight bud
- 1=Bud ready to break
- 2=New growth—0-1 inch
- 3=New growth—1-2 inches
- 4=New growth—2-3 inches
- 5=New growth—3 plus inches

What should you make of these observations? First, be aware that, with the exception of the TP and TK sources, the original collections were made by various seed dealers and it is hard to vouch for how widely collections were made within the various regions of Georgia and Turkey. We trust they did an honest job. Within each source you could also find both outstanding (and horrible) looking individual trees.

Yet speaking generally, if you have a site with frost common into May, you should be leery about planting the Turkish fir sources we had in our trial. If frost is not a problem, then certainly, the Turkish fir shows lots of promise.

EPA says Dimethoate not for Christmas tree plantations

The use of dimethoate on Christmas tree plantations came into question during an investigation conducted by ODA Pesticides Division and resulted in consultations with EPA regarding labeling of dimethoate products for use on Christmas tree plantations. Most labels clearly prohibit the use on Christmas tree plantations, however the listing of “Christmas Tree” remains under the “ornamental” or “nurseries” use headings.

EPA clarified that outdoor ornamentals grown in nurseries are considered to be those plants that are grown with the intent to sell for future transplanting. Generally, these plants are sold as seedlings or in the early growth stages, where they are then transplanted to a new location for any of various different purposes. This distinguishes the use from the use in Christmas tree plantations, where the intent is to grow the tree to the point where the tree is harvested and then sold as a cut tree. Currently, the use of dimethoate on “Christmas trees” is restricted to those trees that are grown as ornamentals in outdoor nurseries for purposes of future transplanting. At this time, dimethoate does not have a federal registration for use in Christmas tree plantations containing trees intended for harvest, and this use is therefore prohibited.

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