LivingWithBugs Guide

Christmas Tree Plantation Pests

February 15, 2005

Annual Christmas tree plantation pest update for growers in Oregon.

Conifers grown for Christmas trees in Oregon have relatively few serious insect and mite pests. However, a few pests can cause significant damage if not managed carefully. The pests that generally pose the most problems are spider mites, aphids and adelgids (five, or more, distinct but related species), and Douglas-fir needle midge. Other pests cause damage but spider mites, aphids and midges are the ones that most growers deal with year after year.

Spider mites The spruce spider mite (*Oligonychus ununguis*) is the only spider mite species you'll find on conifers in damaging numbers. The mite injures needles by piercing and removing cell sap and can even kill trees. Mites begin feeding in late spring and populations build through several generations during the summer. (see our spruce spider mite Guide for additional information).

Spider mites and their damage are generally worse during dry, hot summers. Red-orange "winter" eggs are laid in the fall. Eggs are the stage that survives winter. This mite is generally kept in check by another mite, a predatory phytoseiid called, *Typhlodro-*

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Table 1. Miticides for spruce spider mite

Trade Name	Manufacturer	Uses
horticultural oil	various	treat winter eggs
insecticidal soap	various	spot treat spring/summer
Floramite SC	Compton (Uniroyal)	quick knockdown, long residual activity, soft on predator mites
Omite/Ornamite	Compton (Uniroyal)	adult and immature mites
Hexygon/Savey	Gowan	eggs and immature mites, use prior to adult build-up
Apollo SC	Makhteshim Agan NA	ovicide, not active against adult mites, soft on beneficials
Avid EC	Syngenta	adult and immature mites

mus americanus.

Scout for winter eggs in late winter/early spring. No egg thresholds are available but be cautious of more than a few eggs per short length of stem. Treat individual infested trees with horticultural oil. If this application is missed treat these areas in late spring with an ovicide/miticide (Table 1).

Hexygon/ Savey and **Apollo SC** are primarily active against eggs and should be used before large numbers of adults are present.

Treat early summer high populations of mites. **Insecticidal soap** (various labels) can best be used to treat individual trees using a backpack sprayer. **Avid EC**, **Floramite SC**, or one of the propargite-containing miticides (**Ornamite**/**Omite**) can be used to treat high, early season mite populations. Floramite is the newest of the materials that target immature and adult mites. Individual or small groups of infested trees can be spot treated or culled. Heavily infested trees are very difficult to manage, and a "rescue treatment" may be needed. If the entire field is to be harvested this year, Kelthane can be used (but this is the only suggested use for Kelthane because it is so hard on predator mites).

The good news is that the newer materials, if used carefully, will help protect predator mite populations and will therefore lead to fewer problems with tree-damaging spider mites down the road. The bad news is the materials are pretty expensive. So use them carefully and only when most needed.

When making decisions about what tactics to use for the other Christmas tree pests, one of the most important considerations is how they might impact spruce spider mite management. In fact, problems with the mite are usually linked to some practice that negatively impacted the spider mite predators (see our PestNote

Spruce Spider Mite Management

- *scout for "winter" eggs late winter/early spring*
- *treat areas with oil where eggs are found*
- *or, treat high egg populations with ovicide, late spring*
- *treat high mite populations, early summer, with adulticide*
- *allow predator mites (T. americanus) to do their job*

Table 2. Insecticides for aphids and adelgids

Trade Name	Manufacturer	Uses
insecticidal soap	various	spot treat early season
horticultural oil	various	treat early season
Provado 1.6 F	Bayer CropScience	contact insecticide, good coverage is essential, early season, two applications may be necessary.
endosulfan	various	most formulations are Restricted Use because of acute toxicity

about spruce spider mite).

Aphids & Adelgids. Aphids are small, soft-bodied insects that tap into stems and needles and feed on plant sap. While tapped into the plant's vascular system aphids may inject toxins, growth regulators or disease-causing organisms. They can severely impact tree growth by these various routes. Adelgids are a special type of aphid that feed primarily on conifers, many produce a white, waxy covering. See our aphid and adelgid identification guidelines at www.livingwithbugs.com/com_note.html.

Immature aphids are easily controlled with insecticidal soap and oils. The trick is to detect them early. Commercial growers will probably use one of the materials in Table 2.

Douglas-fir needle midge (Fig. 1). The larva, or maggot, of this tiny fly burrows in and destroys Douglas-fir needles. Adults emerge from pupae buried in the soil under trees. Eggs are laid on buds prior to opening. Hatching larvae enter needles where they burrow, destroying interior tissue.

A scouting program (traps) should be established in fields with a history of needle midge damage. Trapping should begin by April 1 and continue until adult emergence has stopped. Treatments for needle midge (Table 3) should coincide with adult emergence. Emergence can vary with elevation and field exposure. Soil temperature determines when emergence will occur.

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There are no natural controls that effectively manage needle midge. Also, be cautious not to cause a spider mite outbreak by overzealous treatment of this pest. Endosulfan is often suggested for needle midge control despite its high toxicity and Restricted Use label because it is relatively easy on predator mite populations.

Contact us if you need assistance setting up a monitoring program for any of these pests.

Figure 1. Douglas-fir needle midge (arrow) laying eggs in a bud.

Table 3. Insecticides for Douglas-fir needle midge

Trade Name	Manufacturer	Uses
acephate	various	apply prior to bud break
endosulfan	various	most formulations are Restricted Use because of acute toxicity

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