

PENNSYLVANIA'S CHRISTMAS TREE SCOUTING REPORT

2011, Report 6: April 27, 2011

Weekly newsletter compiled by Sarah Pickel, PA
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This week's report includes data from Jim Fogarty (Halabura Tree Farm), Susan Newhart (Acadia Tree Farm), Brian Schildt (PDA), and Cathy Thomas (PDA). The links included in several paragraphs lead to fact sheets from the new PA IPM Program publication, *Integrated Pest Management for Christmas Tree Production*.

As of Monday, April 25th, growing degree day (GDD) totals were 137.5 in Elizabethtown, Lancaster County, 128 in New Cumberland, Cumberland County, and 23 in Montrose, Susquehanna County. As of Tuesday, April 26th, there were 41.5 GDD in New Ringgold, Schuylkill County, and ground temperatures were 47 - 49° F this week.

Last Thursday in Loganville, York County, spruce spider mites were moving around on the foliage of Fraser fir and were beginning to feed. The majority of eggs had



Figure 1: Spruce spider mite damage [E.R. Day, VA Tech, Bugwood.org #0717020]

not hatched yet, but the warm temperatures that much of Pennsylvania has been experiencing this week should speed up the hatching rate. In Schuylkill County today, spruce spider mites were 95% hatched from overwintering eggs. These spider mites damage the tree by removing fluids from the needles, causing a yellow, or tan stippling on the surface of the needles. [Fig. 1] This gives the tree an unhealthy appearance and in heavier cases may even result in needle loss. To avoid this kind of damage, growers should apply a miticide or horticultural oil while populations are low. Applications should be made after the red overwintering eggs have hatched, as they are not susceptible to miticides or oil. If growers decide to use horticultural oil, they should read the label carefully to avoid making applications in inappropriate weather conditions. Also, oil should not be used on Colorado blue spruce, as the

oil will remove the blue bloom from the needles. For more info, visit:

<http://extension.psu.edu/ipm/program/christmas-tree/pest-fact-sheets/needle-discoloration-and-injury/spruce-spider-mite.pdf/view>

This week, bud break has begun for a number of tree species in several counties. In York, Lancaster and Schuylkill Counties, Douglas-fir have begun to break



Figure 2: Douglas-fir bud break [S. Pickel, PDA]

bud and may be at 10% already. [Fig. 2] In Schuylkill County, the Douglas-fir are beginning to break, but are less than 10%. Hemlocks are just starting to break in Bucks County. Norway spruce is breaking in York and Bucks Counties. In York and Lancaster Counties, Colorado blue spruce

have begun to break bud. The majority of blue spruce buds have not yet begun to open, but again, the warm spring temperatures should continue to push out these and buds of other tree varieties. For many diseases and insects, bud break is a critical time for treatment, so it's important for growers to be aware of how far along trees are on their own farms.

On Douglas-fir samples collected in New Cumberland, Cumberland County on Tuesday, eggs of Douglas-fir



Figure 3: Douglas-fir needle midge [S. Gardosik, PDA]

Needle Midge were found in the expanding buds. This orange, fly-like insect emerges as Douglas-fir buds are breaking. [Fig. 3] They can mate and begin laying eggs in three days. Once eggs are laid, chemical controls will not prevent the larvae from entering the needle and causing damage. Larvae leave the eggs, mine into the new needles and feed inside the needles throughout the summer and fall. This feeding causes a gall, or swollen area, to form in

the needle and will also cause the needle to kink. In late fall when the larva has matured, it will tunnel out of the needle, drop to the ground and pupate in the soil under the tree throughout the winter. At that point, the needle will typically break or cast off. The key to controlling this pest is to apply an insecticide when the buds just begin to break. If the population was high last year, growers may want to make a second application a week to 10 days later. To simplify the application process, growers will often mix their insecticide for the midge with the first fungicide application for Rhabdocline. Please read labels carefully! For more info, visit:

<http://extension.psu.edu/ipm/program/christmas-tree/pest-fact-sheets/needle-discoloration-and-injury/Douglas-fir.pdf/view>

Because Douglas-fir buds are breaking, Rhabdocline needle cast will be sporulating. This fungal disease spreads to the new needle tissue via spores which are



Figure 4: Rhabdocline-infected Douglas-fir twig [T. Olson, PDA]

released from swollen fruiting bodies (rust-orange splotches) on last season's needles. [Fig. 4] When conditions are wet or humid, needle cast spores can infect the new growth. Swiss needle cast, also a disease of Douglas-fir, acts similarly. A series of 3 – 4 fungicide applications should begin when Douglas fir are beginning to break bud.

For more information on these diseases, see the fact sheet written by PDA plant pathologist, Tracey Olson, which is attached at the end of this document. Or visit the following links:

Rhabdocline –

<http://extension.psu.edu/ipm/program/christmas-tree/pest-fact-sheets/needle-discoloration-and-injury/rhabdocline-needle-cast.pdf/view>

Swiss -

<http://extension.psu.edu/ipm/program/christmas-tree/pest-fact-sheets/needle-discoloration-and-injury/swiss-needle-cast.pdf/view>

When the buds of Colorado blue spruce or Serbian spruce are beginning to break, the fruiting bodies of Spruce Needle Rust will open and release spores that

will infect the new growth. Needles infected with spruce needle rust will have a band of yellow and orange across the needles. [Fig. 5] When ready to sporulate, the orange center of the band, the telia, will swell and rupture the surface



Figure 5: Spruce needle rust [T. Olson, PDA]

of the needle. To protect new growth from infection, growers should make several applications of a fungicide to new growth, with a week between each application, until needles have hardened off or last year's infected needles have dropped. (Maybe 3-5 applications.) For more info, visit:

<http://extension.psu.edu/ipm/program/christmasopenandrelease-tree/pest-fact-sheets/needle-discoloration-and-injury/spruce-needle-rust.pdf/view>

Lastly, white pine weevils were found in traps this week in Schuylkill and Lancaster counties this week, and



Figure 6: White pine weevils mating [C. Thomas, PDA]

were also found mating on the leaders in York County. [Fig. 6] Although weevils have been active for several weeks, this rise in activity this week could mean that the rain and cold weather had delayed the weevils' egg laying. If growers are finding weevils in traps or on leaders and had not yet made a second application, it might be

wise to make their second application this week.

A list of insecticides and miticides registered for use Pennsylvania, prepared by PA IPM Program scouting consultant, Brian Schildt, can be found on the Penn State Christmas tree website (<http://ento.psu.edu/extension/christmas-trees>).

The next scouting report will be available May 4, 2011.

Rhabdocline and Swiss needle casts of Douglas fir

Now is a great time to inspect and scout for these two diseases. Douglas fir needle casts are common in PA, even in the landscape. Inspecting or scouting a large nursery can be a daunting task and looking for these, as well as other conifer pests can be time consuming. Trees that tend to remain wet for longer periods (shaded sites, densely planted, larger trees, northern slope, along a windbreak row, etc.) are most likely the first trees in a nursery to become infected and show symptoms of needle cast. Therefore, concentrate your scouting efforts for these diseases in these areas.

Distinguishing these two needle casts is somewhat easy. Rhabdocline and Swiss needle cast (SNC) can, and frequently do, occur in the same plantation, on the same tree, and even on the same needle. Determining which needle cast is present, or if both are present, is key to controlling these diseases.

Rhabdocline Needle cast

A Rhabdocline infected tree in March looks scorched. Current year needles are noticeably spotted, or mottled. The lesions are a brown-red-orange color. Examining the undersides of these infected needles will reveal nothing at this time (March). At budbreak, which typically occurs around the end of April through the first weeks of May, the lesions will be a bright orange color. The fruiting structures on the undersides will then be noticeably swollen like a blister, and split open. It is at this point that the fungicide regimen should start.

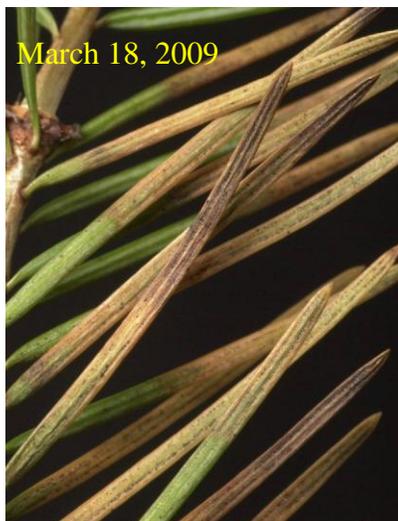


Swiss Needle cast

A Swiss needle cast infected tree looks as if it is suffering from drought or heat stress. Typically, current year needles look healthy except in severe cases of infection. Second and third year needles are most likely to exhibit symptoms of dieback of needle tips. Examining the undersides of these needles in March with a hand lens should reveal rows of small black fruiting structures on either side of the midrib giving it a “dirty” look as if soil or dust has accumulated on the needle.



These structures may occur on all ages of needles, even on needles that appear healthy, so it is important to examine many needles on a tree, not just current year symptomatic needles. Fruiting structures found on older needles that are attached to the tree are still capable of releasing spores.



Management

Fungicides used to control needle casts are protectants, and in order to be effective they need to be in place to protect the newly expanding foliage during the active period of spore release. It is not difficult to determine when *Rhabdocline* fruiting structures are mature and when spores are being released. During budbreak the structure will swell and the epidermis of the needle will split, exposing an orange mass of spores. The timing of spore release for SNC is not as easy to determine because there is no obvious visible change to the fruiting bodies. The most current spray recommendations for the control of SNC are based on those given for *Rhabdocline*. Sprays for SNC should begin between the second and third sprays for *Rhabdocline* or when new shoots are 1 ½ inches long. It is recommended that an additional fourth spray (applied three weeks after the third spray) be added to this program if SNC is present. Effectiveness of this program for control of *Rhabdocline* can be determined the following winter by scouting for

symptomatic current year needles. However, determining efficacy for SNC is not as easy since infected needles may remain attached, appear healthy, and serve as a source of spores for subsequent years. It should be assumed that fruiting structures on any needle of a tree might indicate a potential disease situation.

Recommendations for Rhabdocline and Swiss Needle Cast:

- All fungicides are protectants.
- Timing of first application is critical. Carefully scout symptomatic trees in spring for budbreak and fungus sporulation.
- Four fungicide applications * (Bravo - the most commonly used)
 - #1 - when 1st trees in plantation break bud.
 - #2 - one week after first application.
 - #3 - two weeks after second application.

(4th application necessary only if spring is prolonged by cool, wet weather, or Swiss needle cast is detected.)

#4 - three weeks after the third application.

Rhabdocline needle cast on left and center.

Swiss needle cast on right.

Photo taken on March 18, 2009 in Dauphin County, PA.

