



PENNSYLVANIA'S CHRISTMAS TREE SCOUTING REPORT

THURSDAY, APRIL 30, 2015

Weekly newsletter compiled by Sarah Pickel, PA Department of Agriculture. This week's scouting data contributors: Jim Fogarty (Halabura Tree Farm), Karen Najda (PDA), Sarah Pickel, Brian Schildt (PDA), and Cathy Thomas (PDA).

GROWING DEGREE DAY TOTALS, 4/29/15:

LOCATION	GDD TOTAL
Indiana, Indiana Co.*	99
Montoursville, Lycoming Co.*	86
Mount Joy Twp, Elizabethtown (NE), Lancaster Co.	142.5
New Cumberland, York Co.	133
New Ringgold, Schuylkill Co.	143

* Figure courtesy of www.weather.com.

DOUGLAS-FIR NEEDLE MIDGE

This week, adults of Douglas-fir needle midge were found in traps in Northampton and York Counties.



Figures 1 & 2: Top - Douglas-fir needle midge adult [S. Gardosik, PDA], Bottom - Damage from DFNM [T. Olson, PDA]

As the name suggests, the only host of this pest is the Douglas-fir. These are very small flying insects that resemble a gnat. Their orange color can be seen if observed closely. The adult midges emerge from the soil beneath a tree that was infested last season. This is why emergence traps are placed underneath trees where damage was seen last season. These traps are simply constructed of a cardboard box or plastic bucket with a clear jar mounted into the side of the box/bucket. (See photo.) The midge head toward the light and can

be easily seen in the clear jar. Growers should be monitoring traps daily to see the first midges in the trap. The adult emergence seen this week in

Northampton and York County is actually a little earlier than the expected growing degree day range of 200-400 GDD, so this shows why it is valuable to place traps out in fields with previous damage.

Very soon after adult midges emerge to fly around newly opening buds, they will begin mating. Egg laying will quickly follow. Female midges have a long thin ovipositor that allows them to deposit eggs within the new buds when only a tiny opening is visible. Once the eggs have been laid in the buds, they will be protected from insecticide sprays. The eggs will hatch in a few days and larvae then bore into the needles, where they will live and feed for the rest of the growing season. A gall forms in the needle as a result of this feeding, damage which is irreversible.

To prevent damage from occurring, control sprays must be targeted toward the adults. The insecticide product should be on the buds before they lay their eggs. Insecticide applications should be made as soon as possible after adult emergence has begun. Because emergence can be staggered, it is recommended to make an application at the first sign of adult emergence (or at the beginning of bud break) and a second application a week to 10 days later. (Consult labels for application intervals).

BUD BREAK

Douglas-fir bud break has increased this past week and can be seen in Cumberland, Dauphin, Lancaster, Lebanon and York Counties. In Schuylkill and northern Lebanon Counties, the buds have swollen and changed color, but have not begun opening yet.

The buds of some Norway spruces have started breaking in several areas of York County. Buds of Colorado blue spruce in York County are swelling, but only a very few buds have started to open.

As for pines, the candles of Eastern white pine in York County were beginning to elongate, but in

northern Dauphin County the candles were still tight.

Growers who have issues with needle diseases such as Rhabdocline or Swiss needle casts on Douglas-fir or Rhizosphaera or Stigmina needle casts or spruce needle rust on Colorado blue spruce or Serbian spruce should be watching the progress of bud break on their own farms to determine when to begin their fungicide sprays.

NEEDLE CASTS OF DOUGLAS-FIR

Last year's wet cool spring was very favorable for the spread of two very significant needle diseases on Douglas-fir. These are Rhabdocline needle cast and Swiss needle cast. Last year's needles were infected and will soon release infectious spores to infect this season's new needles. These diseases infect the tender new needles as they emerge from the buds. Once last year's needles have finished releasing their spores through the beginning of summer, they will be cast from the branches (although some Swiss infected needles will hold on for the following season).



Figure 3 & 4: Top - Rhabdocline needle cast, Bottom - Swiss needle cast [S. Pickel, PDA]

The diseases behave similarly but have different symptoms. Rhabdocline causes rusty orange lesions to occur on the needles which resemble paint splotches. These lesions swell as bud break approaches and will rupture to release infectious spores. In Dauphin and York Counties, Rhabdocline lesions have begun to swell and will be able to infect new growth as soon as there are wet conditions. Swiss needle cast causes the ends of infected needles to brown. On the undersides of these infected needles, tiny black fruiting will be seen pushing through the rows of stomates. These fruiting bodies will release spores when wet conditions are present.

To prevent the spread of these diseases, it is important to protect the new needles with multiple applications of a fungicide. The standard recommendations are as follows:

- 1st application at the early signs of bud break
- 2nd application made a week later
- 3rd application made 2 weeks after the 2nd
- 4th application made 3 weeks after the 3rd

Last year, retired Penn State extension agent and Christmas tree grower Paul Shealer suggested a modified spray program to deal with the increased occurrence of Swiss needle cast, which has a more prolonged infection period. See this article at the end of the report for more details.

SPRUCE SPIDER MITES

Spruce spider mites continued to emerge in Schuylkill and York Counties this week. These mites



Figure 5: Spruce spider mites [S. Pickel, PDA]

can be found on true firs, spruce and arborvitae. They are most likely to hatch within a GDD range of 50-121. Eggs were still present in both counties, but in York the majority of overwintering eggs had hatched on Fraser fir. They can be found on the underside of twigs

showing yellow or brown stippling close to the stems. Spruce spider mites will be orange and brown and will be covered with setae (hair-like structures).

If 10 or more mites are found per branch, growers should consider making a control application of either a horticultural oil or miticide. This should be applied after the overwintering eggs have hatched, but before bud break to prevent the mites from damaging the newly developing buds. It should also be noted that new needles are sensitive and more likely to exhibit phytotoxic damage from horticultural oil.

BALSAM TWIG APHID

This week, balsam twig aphids continued to be found on Fraser and Canaan firs in York County. These plump, pale green aphids will be found on the undersides of needles on true firs. If these aphids are able to enter the new buds, their

feeding will cause the needles to twist and bend. If growers have difficulty finding aphids, it may be helpful to use the paper plate technique suggested for spruce spider mite scouting. If this pest has caused damage for growers in previous years and several aphids per tree have been observed this spring, growers will likely want to make a control application. A horticultural oil or insecticide should be applied after most of the eggs have hatched, but before the buds have opened.

ON-GOING

Active Eriophyid mites continue to be found active in a number of counties across the mid-state. In tree blocks where these tiny mites have been observed, growers may want to consider making a horticultural oil or miticide application to prevent the rusted or washed out damage that these mites can cause to the foliage. (Warning: an oil product applied to Colorado blue spruce can remove the blue color from foliage.) They can be found on hemlocks, pines, spruces and true firs. The wedge shaped mites will be moving along the needles and will only be visible with a hand lens. (20x magnification will work better to view these mites.)

On some farms in PA that have already applied insecticide sprays to the blocks where weevil traps were being monitored, weevil trapping may have slowed or completely stopped. Meanwhile some other farms that have applied their insecticide products continue to catch both white pine and Pales weevils. If the farms that continue to catch weevils have only made one application, they may want to consider making a second application. The appropriate application method for white pine weevil is to apply an insecticide to the top 1/3 of the tree.

ADDITIONAL RESOURCE

For a list of control options for insect and mite pests, the most recently updated list of Insecticides & Miticides for PA Christmas Tree Pests can be found at the following link:
<http://ento.psu.edu/extension/christmas-trees/publications/2013%20Christmas%20Tree%20Insecticides-Miticides.pdf>.

The next scouting report will be available Thursday, May 7, 2015.

Swiss Needle cast is without a doubt the most insidious disease to attack Douglas fir. In comparison to Rhabdochloa needle cast, Rhabdochloa is child's play! Without proper management, Douglas fir will be a tree of the past. Now do I have your attention?!

With all this said, yes, it can be successfully managed, but it will take commitment, additional cost with increased sprays, and equipment that will expedite timely applications. Management strategy:

1. Going against all you've ever learned about IPM, don't wait until you find your first infected needle/tree to begin control measures. By that time, it may already be too late! All Douglas fir from seedlings planted this year up to market size trees need to be treated. I have been very successful controlling Swiss with "5" applications of Chlorothalonil beginning at first bud break and continuing until mid-June at 7-10 day spray intervals. (*Sarah's note: Growers in southern regions who are experiencing bud break now may actually be finished with a 5th spray in early June, not mid-June.*)
2. Applications have to be made to new elongating shoots prior to wetting (i.e. rain or dew). If these sprays cannot be made in a timely fashion, you've already lost the war! Having the proper operation is essential! The days of dragging hoses and backpack sprayers is over if you cannot treat all your trees in a day or so, or at least prior to a wet period. Through coverage on all sides and from top to bottom is critical to keep this disease in check.

Growers that "stump plant" have to be ever more vigilant as to good coverage. Very often a large tree will block the spray pattern from smaller trees on the back side. All trees, all sizes, need to be treated! Just a side note: good weed control will aid in good lower tree coverage.

The question of economics comes up when I talk about 5 applications. If you are producing a high quality tree that is demanding a premium price, then it is economical to treat 5 times a season. However, if you are blowing trees out at \$12-\$15 a tree, you better look at a cost analysis!

3. Later sprays, late May thru mid-June, seem to be the most important for controlling Swiss. People are used to making 2-3 applications to control Rhabdochloa and don't make the last 2 applications. They get caught with brown trees the next spring. Follow through with the later sprays.

The question comes up, "Can I save already infested trees?" My answer, "That depends." Heavily infested trees will have their growth greatly reduced. In some cases, I have seen less than 1" of side growth; in which case it may take 2, 3, or even 4 years to cover up damage and return growth to normal length. And that's only if you continue to

treat and keep the trees clean of infection. If your trees are already large, do you have that much time?

Being a grower and no longer working as a Penn State Extension Educator, I don't have to be concerned with product endorsement. So here it goes! I recommend Bravo Weather Stik® to control Swiss and Rhabdocline needle cast. The reason is simple. The Weather Stik formula stays in place, even after several rains, if given time to thoroughly dry. Generic brands of Chlorothalonil will work but lack the "wash off resistance" of the Bravo brand. Remember – product has to be in place prior to a wet period. The last thing I need is a product that will wash off when I need its effectiveness the most.

Good Luck!

Paul Shealer, Evergreen Acres Christmas Tree Farm

Swiss Needle Cast Images – Top Left: Underside of Swiss-infected needles; Top Right: Close up of fruiting bodies on underside of Swiss-infected needles; Bottom Left: Brown tip symptom of Swiss needle cast infection; Bottom Right: Field of trees severely infected with Swiss needle cast.

