



# PENNSYLVANIA'S CHRISTMAS TREE SCOUTING REPORT

## FRIDAY, APRIL 22, 2016

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 and Cathy Thomas (PDA).

### GROWING DEGREE DAY TOTALS, 4/20/16:

LOCATION	GDD TOTAL
Indiana, Indiana Co.	140.5
Montoursville, Lycoming Co.	115.5
Elizabethtown, Lancaster Co.	163.5
New Cumberland, York Co.	174.5
New Ringgold, Schuylkill Co.	126

\* Figures courtesy of [www.weather.com](http://www.weather.com).

### BUD BREAK

This week in Cumberland, Dauphin, Lancaster, and York, Douglas-fir buds were beginning to break. This occurrence is happening at varying rates. In northern Dauphin County, very few of the trees were showing just the beginning tips of the new green buds. Some of the buds of Douglas-fir in Schuylkill County are swollen and showing white at the tips. The buds in York and Lancaster Counties are farther along, but are still in the early stage of breaking.



Douglas-fir bud break [Brian Schildt]

While the buds of Colorado blue spruce are only swelling in Schuylkill County, in Dauphin, Lancaster and York Counties, these buds have also begun to break, although it is less than 5% bud break. The buds of Serbian spruce in York County are still fairly tight.

In Lancaster County, the new growth tips, or candles, of Eastern white pine are beginning to elongate.

### DOUGLAS-FIR NEEDLE MIDGE

Douglas-fir needle midge traps being monitored in two parts of York County still did not have midge in them as of Wednesday. Since the Douglas-fir buds have begun to break on these farms, however, so they are vulnerable to midge infestation at this point. The tiny, yellow-orange, fly-like pests overwinter as pupae in the soil, but emerge from the soil as flying adults around the time of bud break or within a GDD range of 200-400. The emergence traps being monitored are constructed from a cardboard box with a clear jar on the side. When set underneath a previously infested tree, any midges that overwintered under that space will fly to the light and be trapped in the container.



Douglas-fir needle midge adult [S. Gardosik, PDA]

After emergence, the midges will mate and, after a few days, will lay eggs inside the freshly opening buds of Douglas-fir. The bud tips only need to be opened just a crack. The eggs laid inside the buds will hatch into larvae and will burrow into the developing needles. The feeding larvae inside the maturing needles form yellow galls within the needles. Infested needles bend or kink



Douglas-fir needle midge damage [Ward Strong, BC Ministry of Forests, Bugwood.org]

at the gall and will eventually brown. Around middle or late December, the larvae will drop from the needles and move into the soil to overwinter and pupate. The damaged needles will be cast from the tree at this point, resulting in noticeable bare areas on the tree.

To prevent damage from occurring, growers should be ready to apply an insecticide as soon as midges are found in emergence traps, which could occur prior to bud break. If growers are not using emergence traps, they should be ready to make an insecticide application at the first sign of bud break.

**NEEDLE CASTS OF DOUGLAS-FIR**

As bud break is beginning, growers should be planning for when they will apply fungicides against Swiss Needle Cast and Rhabdocline needle cast.



*Rhabdocline lesions [S. Pickel, PDA]*

These two needle cast diseases are ready to infect the new emerging needles with infection-spreading spores. The rusty-orange lesions of Rhabdocline needle cast (resembling paint splatches on last season's needles) were ruptured on trees in northern Dauphin County this week.

Look on the underside of the needles to see the lesions breaking open. This signals the start of sporulation or spore release.

Trees infected with Swiss needle cast may resemble trees with winter burn. Last year's growth will brown from the tips of the needles down. To determine if Swiss needle cast is present, look at the underside of the needles with a hand lens for the presence of black fruiting bodies lined up, pushing through the needle stomates.

The spores are released into the air in moist conditions. Fungicides act as a protectant to coat the new needles and prevent the spores from penetrating the needles. It is important that growers be ready to apply their fungicide product (chlorothalonil) when the buds begin to open.

The traditionally accepted control regimen for needle cast is to make the 1<sup>st</sup> application at the start of bud break, make the 2<sup>nd</sup> application 1 week after the 1<sup>st</sup>, apply the 3<sup>rd</sup> 2 weeks after the 2<sup>nd</sup> and then follow with a 4<sup>th</sup> application 3 weeks after the 3<sup>rd</sup>. More recently, a control series of 5 applications

each with 7-10 days between has been suggested by former PSU extension agent and Christmas tree farm owner Paul Shealer as a solution to getting the more aggressive Swiss needle cast under control.

**SPRUCE NEEDLE RUST**

The fungal disease affecting needles of Colorado blue spruce and Serbian spruce, Spruce needle



*Spruce needle rust [T. Olson, PDA]*

rust, is actively sporulating in York County and on some trees (about 50% of lesions are ruptured) in Schuylkill County. The symptom of this disease is a yellow and orange banding around the most recent season's needles. As bud break approaches, these fruiting bodies

will swell and orange spore structure will break the surface of the needle to sporulate (releasing spores). Growers should begin fungicide applications to the spruce foliage when the new buds have begun to break in order to prevent the disease from infecting those new needles. The time for this is approaching in York County, as the first buds have begun to open on blue spruce. After the first fungicide application, additional applications can be made weekly and should continue until the new needles harden off or the old infected needles are cast.

Needle cast diseases of spruce (Rhizosphaera and Stigmina needle casts) should also begin to be treated for at the same time as spruce needle rust. Rhizosphaera affects Colorado blue spruce and Engelmann spruce and Stigmina infects Colorado blue spruce, black spruce and Serbian spruce. Symptoms for these



*Rhizosphaera [Paul Bachi, Univ. of KT Research and Ed. Center, Bugwood.org]*

two diseases are very similar. Beginning on the lower branches of the trees, infected needles are

often, but not always, brown and exhibit tiny, black fruiting bodies on the undersides of the needles, pushed out through the stomates. Needle infecting spores will be released from the fruiting bodies during moist conditions. Fungicide application for both diseases should begin at bud break and continue at 2-3 week intervals (or a shorter time span if the season is rainy) for at least 3 applications.

**PINE BARK ADELGID**

This week in Lancaster County, when examining newly expanding Eastern white pine buds or candles, the black nymphs of pine bark adelgid were found to have hatched and were moving along the new growth. The nymphs hatch from eggs found in clusters and covered by a white woolly wax at the bases of pine buds. After hatching, adelgid nymphs make their way up the expanding candles and find a place to settle and build up a protective, white, waxy covering.



*Pine bark adelgid nymphs [S. Pickel, PDA]*

In severe infestations, these adelgids may also be clustered along the main trunk of hosts. For growers who have a problem with this pest, an insecticide may be applied when the majority of eggs have hatched.

**ELONGATE HEMLOCK SCALE**

Growers may want to soon begin scouting for elongate hemlock populations. This week in Schuylkill County, white male scales were increasing their waxy coverings near the brown female scales. When male activity begins, female scales will soon be laying eggs within their coverings.



*EHS male [S. Gardosik, PDA]*

Crawler emergence can begin about 2 weeks after that, which signals the time for taking control

action. Since other pest have become active earlier than usual this season, it follows that scale crawler activity could begin earlier than normal, which is usually at the end of May – beginning of June.

**BALSAM TWIG APHIDS**

Balsam twig aphids are increasing in size this week on Fraser fir trees in York County. However, trees scouted in Schuylkill County, which show last seasons twisted needle damage, have still shown no signs of aphid activity. The tiny, pale green-gray insects, which infest true firs only, will be found on the needles of the most recent year’s growth. The paper plate scouting technique described in previous reports can be used when scouting for balsam twig aphid. If aphids are being found on nearly every branch or tap, control applications of horticultural oil, insecticidal soap or insecticide should be made prior to bud break.



*Balsam twig aphid [S. Pickel, PDA]*

**SPRUCE SPIDER MITES**

In Schuylkill County this week, spider mites were nearly 80% hatched on Fraser fir and about 50% hatched on Colorado blue spruce. In Lancaster and York Counties, they were nearly 100% hatched on Canaan and Fraser firs. The preferred hosts of these orange and brown mites are spruces; Fraser, Canaan and Balsam firs; juniper and arborvitae. Look for mites on the



*Spruce spider mite [S. Pickel, PDA]*

undersides of twigs with needle browning or yellowing close to the stems. If 10 or more mites are found per branch, growers should definitely consider making an application of miticide, insecticide or horticultural oil after the majority of eggs have hatched. (Warning - Horticultural oil

could remove the blue bloom from Colorado blue spruce.)

***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, April 28, 2016.