



PENNSYLVANIA'S CHRISTMAS TREE SCOUTING REPORT

FRIDAY, MAY 6, 2016

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

GROWING DEGREE DAY TOTALS, 5/5/16:

LOCATION	GDD TOTAL
Indiana, Indiana Co.	238.5
Montoursville, Lycoming Co.	188.5
Elizabethtown, Lancaster Co.	259
New Cumberland, York Co.	287
New Ringgold, Schuylkill Co.	237

* Figures courtesy of www.weather.com.

BUD BREAK

Across much of PA, bud break of Douglas-fir has certainly progressed. In Dauphin, Lancaster, Schuylkill, and York Counties, 90% or more of Douglas-fir trees have opened buds.

The progress has been slower for spruce species. While 80% or more of the Colorado blue spruce have broken bud in Lancaster and York Counties, less than 50% of blue spruce in northern Dauphin are broken and less than 10% of blue spruce in Schuylkill County are broken. As for Serbian spruce, in northern Dauphin, about 10% are breaking, whereas in Schuylkill County, less than 10% are showing signs of breaking.

Fraser and Canaan Fir are also in early stages of bud break. In York County, a little more than 10% of Fraser firs have started to show signs of bud break. In northern Dauphin and Schuylkill County, less than 10% of Frasers and Canaans are breaking.

DOUGLAS-FIR NEEDLE MIDGE

While just a few Douglas-fir needle midges were found in emergence traps in York County last week, a much larger amount was found in these traps this week. These tiny orange flies emerge from the ground underneath previously infested Douglas-fir trees as adults within the range of 200-400 GDD.

The midges mate soon after emergence and just a few days later, lay eggs inside the newly opened Douglas-fir buds. The larvae which hatch out of those eggs burrow directly into the developing needles. The larvae feed inside the maturing needles and grow, which causes the needles to form yellow, swollen galls. Where the gall forms, the needle also kinks. In this way, it could resemble the damage caused by Cooley spruce gall adelgid on the upper surface, but midge-infested needles will not have the white cotton ball on the underside of the needle. At the end of the year, after the midge larvae have bored their way out of



Above: Midges caught in emergence trap [S. Pickel, PDA]; Below: adult midge [Oregon Dept. of Agriculture]

the needles to drop to their overwintering sites in the ground, the damaged needles will be cast from the tree, resulting in noticeable bare areas on the tree.

Where previous midge infestations have been found, an insecticide should be applied as soon as midges are found in emergence traps, or at the first sign of bud break. Where infestations have been severe, growers may want to make a second insecticide application 7-10 days after the first.

NEEDLE CASTS OF DOUGLAS-FIR

In most parts of PA, growers should have begun applying a fungicide to their Douglas-fir foliage for the prevention of Rhabdocline and Swiss needle casts (two needle casts which only infect Douglas-

fir). By covering the needles with a thin layer of fungicide, the newly exposed needles should be protected from the spores (infection causing particles) of these diseases, which were released from fruiting bodies on last season's infected needles. If needles are not protected with fungicide, when conditions are moist, the fungi will grow from the spores and penetrate the tender new needle surfaces.

Rhabdocline needle cast causes rust colored splotchy lesions on the needles, which rupture on the underside of the needles when they are ready to release spores in the spring.



Douglas-fir with both Rhabdocline and Swiss needle cast [T. Olson, PDA]

Swiss needle cast, causes infected needles to brown from the tip down. The fruiting bodies of this disease are visible as tiny, black specks lined up along and pushing through the needle stomates. While each disease has different symptoms, the fungicide regimen for

both begins the same way. Growers should make the 1st application of chlorothalonil at the start of bud break. A 2nd application should follow 1 week after the 1st. Traditionally, the 3rd application would be made 2 weeks after the 2nd and then a 4th application could be made 3 weeks after the 3rd. Because Swiss needle cast is believed to sporulate a little longer than Rhabdocline, a newer suggestion for those struggling to control Swiss needle cast is to make the 3rd, 4th and even a 5th application with only 7-10 days between each application.

SPRUCE DISEASES

Since bud break for Colorado blue, Serbian and other spruces is beginning in PA, growers should be ready to make their fungicide applications for the various diseases affecting these spruce species. Spruce needle rust, which affects Colorado blue spruce and Serbian spruce, is actively sporulating in York and Schuylkill County. The symptom of this disease is yellow and orange banding around the most recent season's needles, and on the

underside of these needles, orange spore releasing structures (telia) will push through the needle surfaces to sporulate (release spores). The needle cast diseases of spruce, *Rhizosphaera* and *Stigmina*, will also be ready to release spores to infect the newly emerging buds. *Rhizosphaera* affects Colorado blue spruce and Engelmann spruce and *Stigmina* infects Colorado blue spruce, black spruce and Serbian spruce. The signifying symptoms of these diseases are



Rhizosphaera needle cast [Paul Bachi, Univ. of KT Research and Education Ctr., Bugwood.org]

brown or discolored needles on the lower branches which exhibit tiny, black fruiting bodies pushed out through the stomates on the undersides of the needles.

Growers dealing with rust should begin fungicide applications to the spruce foliage when the new buds have begun to break. Additional applications can be made weekly and should continue until the new needles harden off or the old infected needles are cast. This should also be followed if both rust and needle cast diseases are present. The recommendations for needle cast suggest a 2-3 week interval between applications, although if the season is rainy, that interval can be shortened.

PINE NEEDLE SCALE

This week, pine needle scale crawlers were found moving along the needles of Eastern white pine in



Cumberland County, as well as under the female scale covers. Approximately 25-50% of the eggs underneath the covers had hatched into crawlers, or 1st stage nymphs. The eggs will continue to hatch

and the crawlers will continue to move out from under the adult coverings to spread out along the

needles. These crawlers will also move to new areas of the tree limbs. This scale can be identified by the bright white, oblong female scale covers.

Scale crawlers are flat, oval shaped and paprika colored.

Hosts of this pest include Eastern white pine, Scotch pine & Mugo pine.

Populations are often heavier on Scotch and Mugo pines. It may also be found on spruce, true fir and Douglas-fir, although these occurrences are less common. Crawler emergence can last 2 to 3 weeks, so, if the population is heavy

enough to warrant a treatment, growers may want to consider making one application of an insecticide, followed by a 2nd application one week later. If control is not achieved at this point in the season, there is a second generation which is active in mid-July. This is another time when the scale may be managed.



may also lead to a waxy coating on the upper surface of the infested needles, giving the branches a flocked appearance. The crawlers, or first generation of nymphs, which will soon be found moving among the adult scales will be tiny, oval and lemon yellow.

The scale activity observed this week is a little earlier this year than is usual. Crawlers are normally seen mid to late May. Growers should be scouting populations of this scale now. The crawler emergence signals the time for beginning control applications. There are a few options for elongate hemlock scale control. The standard control application recommended by Penn State research is either a series of 3 applications with 4 weeks between each application, or 4 applications with 3 weeks between each application (trials suggest Dimethoate). Some growers have found that a single application of the chemical spirotetramat (Movento, Kontos) has been effective. Another option is a pre-bud break basal trunk application of Safari, as recommended by research from Connecticut's Ag Experiment Station.

ELONGATE HEMLOCK SCALE

Eggs and some crawlers were found inside the casings of female elongate hemlock scales in northern Dauphin County this week. Very soon these crawlers will be seen moving around on the needles. Look for the scales on the lower branches of hemlocks, true firs, and Douglas-fir (occasionally spruce). The upper surface of infested needles will have a yellowed speckling, and the scales will be found on the underside of these needles. Female



scales are oblong, smooth and amber-brown in color. Male scales are white, shorter and can have a build-up of waxy filaments. This waxy build-up

CEDAR APPLE RUST

Cedar apple rust is a disease that is very noticeable at this time. As the name suggests, this is a disease that affects two alternating hosts: apple and eastern red cedar. While eastern red cedar is not a Christmas tree, many conifer growers may also be growing this conifer species for the landscape. During this wet, spring weather, galls growing on twigs of red cedar have swollen and produced bright orange spore-producing telia, or tubular growths.



The spores released from these growths can only infect apple or crabapple leaves. After the telia are done sporulating, they will dry up and die, killing the twig from the gall to the tip of the twig. Fungal spots develop on apple leaves which will produce a

different spore producing structure (aecia) structure on the undersides of the leaves. Spores released from the apples can infect the cedar from mid-summer to early fall. With that infection a gall will begin to form the following spring, but will not be mature enough to release spores for another year. For management, galls can be clipped off of the tree before the telia begin to elongate to stop the cycle. If trees grown next to an orchard regularly have an issue with this disease, a fungicide program for either the apples or the cedar could be looked into.

BALSAM TWIG APHIDS

Since buds of Canaan, Fraser and other true firs are beginning to open, the window for preventing damage from Balsam twig aphids is coming to a close. Once the buds open, aphids will move inside and begin their damaging feeding on the new needles. A control application of horticultural oil, insecticidal soap or insecticide can still be effective before the buds break. After buds are open, use caution when applying insecticides. The tender growth can potentially experience phytotoxic burn. (This damage is more likely to happen at this time from the application of a horticultural oil.)

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 12, 2016.