



PENNSYLVANIA'S CHRISTMAS TREE SCOUTING REPORT

FRIDAY, SEPTEMBER 23, 2016

Newsletter compiled by Sarah Pickel, PA Department of Agriculture. This week's scouting data contributors: Sandy Gardosik (PDA) and Sarah Pickel.

GROWING DEGREE DAY TOTALS:

LOCATION	GDD TOTAL	DATE
Indiana, Indiana Co.	2945	9/22/16
Montoursville, Lycoming Co.	3205	9/22/16
Elizabethtown, Lancaster Co.	3654.5	9/22/16
New Cumberland, York Co.	3694	9/22/16

* Figures courtesy of www.accuweather.com.

This is a special edition of the PA Christmas Tree Scouting Report, written to share fall management information for spruce gall adelgids.

SPRUCE GALL ADELGIDS

For at least the last two weeks in Lebanon County, galls of Eastern spruce gall adelgid on Norway spruce have been drying and opening.



Eastern spruce gall drying and opening [S. Pickel, PDA]

Galls are abnormal swollen areas of plant tissue brought on by pests, diseases, mechanical injuries and other causes. These particular galls found on Norway spruce are said to resemble small pineapples and are caused by Eastern spruce gall adelgid, *Adelges abietis*. Adelgids are small, soft bodied, sucking insects which are

similar to aphids and feed on conifers. The galls they form can be unsightly on a nursery tree of Christmas tree and can spread exponentially in one season. Many farmers attempt to get control of adelgids by making an insecticide application in the spring, however, the better time to achieve control

of these insects is in the fall. To explain why that is, it is necessary to explain the life cycle of these tiny insects.

From late spring through early fall, the adelgids can be found developing inside interior chambers of the galls. In September, the green galls begin to dry out and turn brown and as they do, the interior chambers crack open. The light tan-colored, immature nymphs inside the gall exit the chambers and move to the needles on twigs close to the gall.

Once on the needles, the adelgids go through one more molt to become winged adults. Then winged adults can disperse to other limbs on the same tree or on nearby trees and will lay eggs at the end of the needles. The overwintering generation of tan/gray colored nymphs hatch from these and move to the bases of the buds. These adelgids are typically settled at the buds by early-mid October and will overwinter in this location. The overwintering adelgids remain settled and exposed until early spring. When



Top: Winged adelgid on needle after emerging & molting (Note: white cast skins closer to gall); Middle: Winged adelgid adult; Bottom: Fall eggs [S. Pickel, PDA]

temperatures begin to warm in the spring, the adelgids will develop a protective, woolly wax covering. This cover formation typically occurs within a range of 22-170 GDD (potentially late March – mid-April). When the coverings are fully formed, the adelgids will lay eggs (100+ each). Those eggs hatch when bud break occurs. The new nymphs feed on the base of the developing needles which causes the needles to swell together and form a gall around the nymphs.



Waxed over ESGA nymphs - spring [S. Pickel, PDA]

Because much of the adelgid life cycle is protected inside the gall, the times available to achieve control are the spring before the overwintering nymphs cover up with the protective covering and in the fall after the overwintering nymphs have settled at the buds. The challenge with trying to achieve control of the nymphs in the spring is that sometimes the adelgids begin forming that waxy covering very early and that can prevent the pesticide product from being truly effective. The better time to get effective control is in the fall.



Eastern spruce galls in July [S. Pickel, PDA]

and that can prevent the pesticide product from being truly effective. The better time to get effective control is in the fall.

While the adelgids have begun exiting the galls and started laying eggs at this time, it is still a little early to think about making insecticide applications just yet. Growers want to be certain that the overwintering nymphs are present before making those applications. I recommend scouting under buds of Norway spruce after the first of October to look for these nymphs before deciding to make an

application yet. Growers can make one or two applications depending on how severe the pest problem is or if the life stages are pretty staggered (eggs are still present).



Overwintering ESGA nymphs - uncovered [R. Lehman, PDA]

While this update focused on Eastern spruce gall adelgid, the related adelgid Cooley spruce gall



Cooley spruce gall adelgids on Blue spruce (above) and Douglas-fir (below).

adelgid, which forms thumb-sized galls on Colorado blue spruce, and can also be found on the needles of Douglas-fir, can be managed very similarly. For growers who have seen sever damage from this adelgid on their trees, they can make

and application in mid-October. If nymphs have settled at the bases of blue spruce buds or are uncovered on the needles of Douglas-fir, it is time to make an application.

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>.