



Tree Pest Alert



August 4, 2021

Volume 19, Number 25

In This Issue

Plant Development.....	1
Treatments to begin now.....	1
Timely topic.....	2
Emerald ash borer update.....	2
Pine wilt disease update.....	2
Squirrels gone wild.....	3
E-samples.....	3
Carpenterworm in ash.....	3
Wetwood in poplars and elms.....	3
Samples received/site visits.....	4
Lincoln County (Aphids on viburnum).....	4
Lincoln County (Shothole disease on chokecherry).....	4
Minnehaha County (Ash plant bug).....	4
Pennington County (Verticillium wilt in ash).....	5

Samples

John Ball, Professor, SDSU Extension Forestry Specialist & South Dakota Department of Agriculture and Natural Resources Forest Health Specialist

Email: john.ball@sdstate.edu

Phone: 605-688-4737 (office), 605-695-2503 (cell)

Samples sent to: John Ball
Agronomy, Horticulture and Plant Science Department Rm 314, Berg Agricultural Hall, Box 2207A
South Dakota State University
Brookings, SD 57007-0996

Note: samples containing living tissue may only be accepted from South Dakota. Please do not send samples of plants or insects from other states. If you live outside of South Dakota and have a question, please send a digital picture of the pest or problem.

Any treatment recommendations, including those identifying specific pesticides, are for the convenience of the reader. Pesticides mentioned in this publication are generally those that are most commonly available to the public in South Dakota and the inclusion of a product shall not be taken as an endorsement or the exclusion a criticism regarding effectiveness. Please read and follow all label instructions as the label is the final authority for a product's use on a pest or plant. Products requiring a commercial pesticide license are occasionally mentioned if there are limited options available. These products will be identified as such, but it is the reader's responsibility to determine if they can legally apply any products identified in this publication.

Reviewed by Master Gardeners: Bess Pallares, Carrie Moore, and Dawnee Lebeau

The South Dakota Department of Agriculture and South Dakota State University are recipients of Federal funds. In accordance with Federal law and U.S. Department of Agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, or disability (Not all prohibited bases apply to all programs.) To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW Washington, DC 20250-9410, or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

This publication made possible through a grant from the USDA Forest Service.

Plant development for the growing season

We are at 2160 growing degree days (GDD base 50) in Sioux Falls. We are still ahead of our average (1850 GDD) for early August. Plant development is way ahead of normal.

But plant development is not going in the direction we want to see. Fall foliage color is beginning to appear across the state, about a month earlier than normal. I took this picture of a Sensation boxelder turning red in Hot Springs last week. I am also seeing cottonwoods and other trees with leaves turning yellow.



Early fall foliage color is common on trees during droughts, a condition that affects all of South Dakota in varying degrees this year. Late season water deficits in trees tends to present in earlier and shorter fall foliage color. We are already seeing a little fall color starting on droughty sites and some of these trees are beginning to drop leaves. There are trees skipping the color change entirely and turning a crisp brown which brings us to the next section - treatments.

Treatments to Begin Now

If possible, begin watering your small evergreens now, especially any seedlings planted this past spring. Too often tree owners try to prevent winter injury on their conifers by watering just before freezing weather. But conifers need to go into fall healthy to survive the winter. A conclusion to research articles on fall watering practices and conifers going back to the 1980s (Pellett et al. 1980. *Journal of Arboriculture* 6: 146-149) concluded "Watering during dry periods in late summer is beneficial in reducing winter injury in conifers." Watering in the fall, just before freeze-up had minimal benefits so get the hose out now so you don't have dead conifers next spring!

Timely Topics

Emerald ash borer update

Larval development

The 1st and 2nd instar are the only larval stages that have been collected during the past few weeks. These are still small larvae, so they are just threading their way through the bark and inner bark. These will soon develop into the 3rd instar and these are the tree-killers. The 3rd and 4th instar plow their way through the inner bark severing the connection between the roots and the leaves.



I have had a few folks from Sioux Falls call me this past week to ask if they need to treat their trees again (last done in 2019) and when. The answer is yes, and while earlier this year would have been better, now is still okay. But now means this week, before the larvae get any bigger!

How infested can a tree be and still respond to treatment?

The ideal is not to wait until the tree is infested. We are encouraging everyone in Lincoln and Minnehaha Counties that has an ash they want to keep to start treatments this year if they did not do so last year.

However, ash trees are tough and a tree that has been infested for several years can be restored by insecticide injections. Trees that have been infested for several years usually present extensive dieback and even with these treatments, what is dead, stays dead. An arborist will have to come and do canopy restoration pruning to return the canopy to an attractive and safe form.



A reasonable threshold to treatment is about 30% canopy decline. If the tree is presenting with less than this, it can still be treated and restored. However, if more than 30% of the canopy is now dead or dying (as in the picture), the best option is removal.

Pine wilt disease update

The disease continues to appear across the state from Bison to Beresford. The common symptoms are an Austrian or Scotch pine that appeared fine this spring – a full canopy of green needles – to one where almost all the needles have turned tan to yellow and are hanging from the twigs or already dropping to the ground. The needle discoloration typically starts at the top of the tree and progresses downward.

While this is the typical pattern of symptoms for pine wilt, and one we almost always see for Scotch pines, Austrian pines may present a different pattern. Scotch pine start presenting symptoms in the summer and are dead by the same fall. Austrian pine may present the first year with only a few branches showing tan and wilting needles. The following summer the entire tree wilts and dies.

This was the pattern of an infected Austrian pine outside my office building. Last fall there were a few branches that had the needles turn color, dry and fall. This year more branches had their needles turn tan and fall, almost in an upward spiral pattern around the canopy.



There were still a few healthy branches on the tree when we felled the tree last week. But the tree's trunk and the other branches that had tan needles also had blue stain fungus coloring the interior wood. We were able to find the pinewood nematode (*Bursaphelenchus xylophilus*) within the stained wood.

Pine wilt disease requires months of hot, dry weather to develop. This describes the weather during this year and last, so it is no surprise that the disease is appearing in so many Austrian and Scotch pines. There are some tree companies in the Sioux Falls area – the epicenter of the emerald ash borer epidemic in the state – that have been taking down dead pines all summer.



I stopped to take this picture of the stand of Scotch pines on the west side of I-29 near mile marker 101. This was a beautiful, little stand of Scotch pines but now most of the trees are either dead or dying of the disease. Pine wilt goes through a pine stand like a pinball, not a bowling ball. The entire stand is not knocked over at once – like a strike – but trees here and there are killed within the stand until the entire stand is dead. This process may take years, as it has here.

Squirrels gone wild

Calls are coming in wondering why small twigs with attached leaves are covering lawns beneath the trees. The twigs have a ragged cut at their base. Some trees have dozens of detached twigs hanging in the tree or littering the ground. Ash and oaks seem to be the two tree species most affected based on the calls.



Squirrels cut twigs to line their winter nests. The winter nests, also called dreys or dens, are formed in trunk cavities to provide more protection from the cold. The summer nests are set high in trees in-between branches, a squirrel hammock to enjoy the warm, summer days.

The squirrels are also gnawing on hackberry branches, usually near the union with the trunk. These branches

have their leaves turning a bright yellow and wilting. If trace these branches back to the junction with the trunk, you will find the branch base has almost all the bark and some of the interior layers of wood missing from squirrels chewing.



E-samples

Carpenterworm in ash

This was a recently felled, dead ash tree. Once the tree was cut down, they noticed these large (more than 1/4-inch diameter) holes deep inside the wood. The holes were empty of debris, but one had a surprised worm looking out of it!



The long, about 2-inches, greenish white larval is the carpenterworm (*Prionoxystus robiniae*). This insect infests dying hardwoods and the larvae can spend several years tunneling through the interior of the tree. Ash and cottonwoods in declining windbreaks tend to be their favorites. The control is a chainsaw to remove dead or dying infested trees. The insect only attacks dying trees.

Wetwood in poplars and elms

I am receiving pictures of trees weeping a dark sap from cracks between branch unions. This is wetwood, a bacterial disease that affects poplars and elms. The slime that oozes down the trunks is caused by fermentation pressure in the interior trunk where the disease develops.



The increased pressure causes the slime to erupt out of any cracks. There are usually cracks in the ridges of branch unions, so this is a common site for the material to come to the surface (as well as old pruning wounds). The slime is dark due to its alkalinity, it will bleach any bark it flows over on the way to the ground. Long light streaks are common on infected trees.

There are not cures for this disease. Fortunately, the disease is found in the heartwood and interior sapwood of the infected tree and does not seem to have a major impact on its health. However, the presence of wetwood is an indication that there is some decay in the tree, While the wetwood bacteria does inhibit decay fungus development, it might be best to have the tree examined by an arborist to evaluate its stability.

Samples received/Site visits

Lincoln County, Aphids on viburnum

The call and visit were about small insects climbing on their cranberrybush viburnum. The young shoots were covered with aphids and these insects live by sucking the sap from the tender growth. These shoot tips have the highest concentration of nutrients so it's a good area to congregate.

The shoots were also covered with ants running back and forth along the shoots. These are harvesting honeydew, the sticky, sugary substance that is excreted by aphids as they suck sap from the plant. Ants "milk" aphids for this energy-rich material and they also protect aphids from predators.



The ants were also a little panicky. The reason was lady beetle larvae were also on the leaves and shoots. These are the wolves of the ant dairy farm and can feed on up

to 50 aphids a day. They do not attack ants, nor will ants attack lady beetle larvae but the ants will attempt to herd their flock away.

At this late in the season, I would just let the lady beetle larvae do their job and reduce the aphid population. Any sprays will kill as many lady beetles as aphids. A soil drench could be used but by the time its absorbed and in the sap, the lady beetle may have already finished off the aphids.

Lincoln County, Shothole disease

This Schubert chokecherry was covered with holes throughout the leaves. These holes are probably the result of cherry leaf spot and shot hole disease. It is a field diagnosis, but it also describes an array of possible pathogens rather than a single causal agent. The circular openings in the leaves can be due to bacteria (*Pseudomonas* and *Xyanthomonas*) or fungi (*Blumeriella*, *Stigmia*, *Thyrostroma* and *Wilsonomyces*).



The symptoms often first appear as small off-color spots on the leaves which enlarge and turn brown. As they enlarge, individual spots may coalesce to form large irregular blotches. Eventually the tissue in the spots dies and drops out forming holes. Many people mistake these holes for insect feeding.

Generally, these are aesthetic problems on chokecherries and not a threat to their health. While fungicides and bactericides are used to manage some of these disease in an orchard setting, they are rarely warranted in the ornamental landscape.

Minnehaha County, Ash plant bug



The tree owner was worried about emerald ash borer but the injury on the leaves was unrelated to the borer. The small, light-colored spots throughout the leaves are called stippling. These symptoms are the result of feeding by the ash plant bug (*Tropidosteptes amoenus*).



The nymphs and adults puncture the leaf tissue, which causes the spots, and suck the sap from the tissue on the underside of the leaf. Ash plant bugs are green to dark brown with a light-yellow triangular spot on the back. The adults have wings and are about ¼-inch long.

There are two generations per year and the ones feeding now are the second generation. They are feeding on the youngest leaves and their damage is minimal. There is no need for treatments now. While we also saw a lot of stippling last year, and this year, the insect populations tend to fluctuate, and they may decline next year.

Pennington County, *Verticillium wilt in ash*

This call was in concern to a tree being infested with emerald ash borer. The tree canopy was thinning and the tree owner thought it might be due to emerald ash borer.



Canopy thinning, where an area of the canopy has fewer and smaller leaves than normal, is a common symptom for trees infested by emerald ash borer. But thinning can be due to other agents, including the fungal pathogen for verticillium wilt, *Verticillium dahliae*.

Verticillium wilt is most common with ash, catalpa, elms, Norway maple and smoketree though it can affect more than 300 plants from herbaceous to woody. The disease can also have acute and chronic symptoms. Acute symptoms present as leaf curling and dying on individual branches while chronic present as slowing growth and stunted foliage in a portion of the canopy – in other words thinning.

Infected branches typically show vascular streaking. The sapwood discolors in bands and streaks along the grain of the wood. This is common in catalpas, elms, and Norway maple, but rarely appears in ash. The lab is the only way to tell it is verticillium wilt in ash. The lab samples were cultured for the pathogen, and it was positive.

A tree with chronic symptoms can survive for years or decades. Management is simply watering during droughts and mulching to improve the soil environment. The other recommendation is not to plant susceptible tree species in this yard. Verticillium is a soil-borne pathogen and pockets can remain viable for decades in the soil.