

Pest Update (August 5, 2020)

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John Ball, Forest Health Specialist SD Department of Agriculture,
Extension Forester SD Cooperative Extension

Email: john.ball@sdstate.edu

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

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 dying 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.

Available on the net at:

<http://sdda.sd.gov/conservation-forestry/forest-health/tree-pest-alerts/>

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 and 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.

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Plant development for the growing season

The hot, humid weather has returned after a brief period of warm but drier air moved across the state. We are seeing fruit ripening on many of our trees and depending on the species, some are ripe enough to pick now. We are well into the month of *Canpasapa Wi*, the “moon of cherries blackening”



But not every chokecherry turns black. This is a yellow chokecherry (*Prunus virginiana*) with ripe fruit at the Big Sioux Nursery in Watertown. The yellow chokecherry fruit is considered to be less astringent, almost sweet, compared to the more common black fruit (tastes buds may vary).

The yellow ones occur in the western Northern Plains. Hansen, the horticulture professor at South Dakota State College (and famous plant collector), named one the Spearfish Yellow chokecherry and noted that not only was the fruit sweeter, the tree did not sucker as much (a common problem with the variety Schubert, one of the black fruited chokecherries). A yellow fruited chokecherry found in Sheridan County Wyoming

has been released as ‘Yellowbird’.

Timely Topics

Emerald ash borer update

Life stages detected in sampling



Emerald ash borer sampling continues in Sioux Falls and Canton. The majority of larvae are still second instar though a few third instar have also been found this past week. The third instar are larger (we measure the width of the head capsules to determine instar) and their galleries (tunnels) are longer and larger. These are the ones that significantly disrupt the transport of photosynthates (sugars manufactured by the leaves) to the roots. Trees that were injected

earlier this spring (or last year) should be spared the damage done by these larger larvae.

Other borers collected during sampling

Emerald ash borers are not alone in their trees. We have many other insects that make their homes in ash. Most are attracted to stressed trees, ones with weakened defenses. While emerald ash borer can attack healthy or stressed ash, they are attracted to weakened trees as well so you can find almost every insect that attacks ash in weakened trees.



In the last week there seems to be a real increase in adult eastern ash bark beetles (*Hylesinus aculeatus*). These are recently emerged adults that are already looking for a branch to burrow in to spend the long winter (usually branches less than 4-inches in diameter). Next spring these adults will be constructing a long, straight galleries in these shoots. After the galleries are constructed, eggs are laid along the length. When these hatch, the numerous larvae make

their own galleries perpendicular to the egg gallery and against the grain of the wood. The exit holes created from these insects sometime form two perfect rings around the branch.

Verticillium wilt

As reported in last week's *Update*, *Verticillium wilt* (*Verticillium dahliae*) is appearing again in eastern South Dakota. We go through several years where we have few reports of the disease to years, like this year, where it seems to be everywhere. The disease most commonly affects catalpas, elms, and maples. Ash may also be affected and we had a severe outbreak on green ash in Sioux Falls in the mid-90s.



The most common symptoms associated with *verticillium wilt* is wilting and scorched (or chlorotic) leaves appearing during the hottest and driest time of the summer. The leaves may also be stunted.

The reason for the wilting is the sapwood becomes plugged by the fungus and the tree's reaction to the infection. The affected branches will often have green (in maples) or brown (catalpas and elms) streaking in the sapwood. The streaking is often found farther down the branch than the wilting so check for the browning nearer the base of a wilting branch, not the tips. Ash infected by *verticillium wilt* rarely show any streaking.

Since wilting can be due to many other agents, the only way to conclusively diagnose *verticillium wilt* is to culture the pathogen from a branch presenting



symptoms of the disease. The branch samples need to be cut from 1 to 2 inch diameter branches and should be about six inches. The branches must be showing symptoms but not have yet died from the disease. Do not send in samples without contacting me first via the email at the top of the *Update*.

The presence of the disease does not necessarily mean the tree must be removed.

There are two types of infection, acute and chronic. Some trees, mostly ash and maples, have the chronic infection. These tree may live for decades with the disease, having only a branch or two die every now or then. Other trees, usually catalpa and elms, have acute infections. The disease may appear on a branch or two at mid-summer, spread to a larger portion of the canopy within a month and the tree dies by the end of year.

Verticillium is soil-borne so an infected tree cannot be cured and once an infected tree is removed, the pathogen can remain dormant for as long as 15 years in the soil in thick walled structures called microsclerotia. The only effective treatment is not to plant certain trees in soils where the pathogen is known to exist. The most common hosts in South Dakota are catalpa, elms, and maples. However, lilacs are also susceptible and I am receiving pictures of wilting lilacs that may be either bacterial blight or verticillium wilt.

What is up with holes in oak leaves?

We have received reports of oak leaves in the state that have discolored blotches. These same leaves usually have irregular holes throughout the blade. This appears to be the work of the oak leafminer, a fly member of the family Agromyzidae. There are both native oak leafminers and their Asian cousins that have come to this country.



The adult female fly inserts her ovipositor (stinger) into the bud which pierces the tiny folded leaves within and leaves them with a series of holes (she twills the stinger around to make the holes). As the leave continues to unfold these tiny holes expand and there will be holes lined up along the midrib of the leaf. The larvae mine (feed within the leaf) the opened leaf which leaves blotches. These blotches may eventually drop out leaving large ragged holes in the leaf.

The larvae drop to the ground after mining the leaves, usually by midsummer so the insects are gone now. The only evidence is the holes and the tiny pepper-like

frass in some of the blotches. The larvae are pupating in the soil now and the adults will not be out again until spring

Don't remove tree tubes too soon

A common problem with tree tubes is that trees will sometimes fall over once the tubes are removed. Tree tubes protect seedlings from rabbits and deer (browsing and rubbing) as well as mechanical injury from weed eaters. They also provide a "mini-greenhouse" that improves the growing environment for the young trees resulting in better survival and growth.



The downside is the rapid terminal growth comes at the expense of diameter growth. The protective tubes limit swaying in the wind, an important trigger for diameter growth, so the trees in the tubes do not develop the proper taper. If the tubes are removed after the tree just begins to grow above the top, the slender stem will often bend completely over as it cannot support the top.

The solution is to either remove the tube while the tree is still small and not peeking out above the tube (though this eliminates the protection) or leave it in the tube until the tree's trunk is almost filling it and the canopy is far above it. As the tree increases in height above the tube, the trunk will sway and develop the necessary taper.

The worst time to remove the tube is just after the tree has branched out above the tube. These young branches are heavy since they now have room to expand but the trunk is still too slender to support it.



E-samples

Bacterial blight on lilac

The shriveled, water-soaked leaves and blackening tips on lilacs are symptoms of the bacterium *Pseudomonas syringae*. The disease is appearing throughout the state this late summer. Rick Mayko, a community forester with the South Dakota Department of Agriculture has been seeing the symptoms appearing for the last two weeks in southeastern South Dakota (and provided the picture on the next page).

Bacterial blight can occur on all lilac, but it seems to be most common on white-flowered common lilacs (but not the purple). The disease has a very similar

presentation as that of fireblight, another bacterial disease which does not affect lilacs but can also be confused with the symptoms of verticillium wilt. Lilacs are susceptible to verticillium wilt.



Bacterial blight begins as small, water-soaked spots on the leaves. These spots enlarge, and eventually the affected leaves wilt and turn brown or black with the shoot often showing a shepherd crook. This separates from verticillium wilt where the leaves turn yellow, wilt and fall.

The only treatment is to remove infected canes to at least 2 to 3-inches above the ground. This pruning should be done during dry weather when the leaves and shoots are not wet. The hand pruners should be sprayed with Lysol Disinfectant, or a bleach solution (note bleach is corrosive) to avoid spreading the disease (or prune during the winter when infection is low).

The disease can also be managed with a spray of a copper containing fungicide applied in the spring just before bud break. While the disease is caused by a bacterium, not a fungus, this fungicide treatment seems to reduce the problem. Generally, infected lilac survives the disease with pruning and perhaps a year or two of copper fungicide treatments.

Fall webworm



Fall webworm (*Hyphantria cunea*) is apparently on the march, a little early as this is not Fall. They are tent-making insects that feed in colonies on trees, but there are a few differences between the tent caterpillars and fall webworm. First, the tent caterpillars appear in the spring while the fall webworm larvae feed during late summer. Second, the tents of the tent caterpillars typically are constructed in the interior of the tree at branch crotches while the fall webworm nests form at the branch tips and are wrapped around twigs and leaves. Third, the primary hosts differ with tent caterpillars generally feeding on fruit trees while the fall webworm is found on chokecherry and walnut. There are other hosts, of course, and I can find tent caterpillars, particularly the forest tent caterpillar on ash, maples and other hardwoods and at this time of year I find fall webworms on chokecherry (as seen in the picture),

cottonwood and maples as well as walnut, but they certainly seem to prefer chokecherry and walnut as a home and meal.

Fall webworm adults are white moths that fly during early July with the females depositing eggs in masses on foliage. Eggs hatch soon afterward, and the pale larvae form loose nests and feed throughout the late summer months. The nests often appear as a few randomly masses dotting the canopy of the tree but as the larvae grow, more nests appear. I have seen young chokecherries almost completely wrapped in silky webbing from this insect. After completing their feeding, the mature larvae drop to the ground to pupa to spend the winter beneath debris and litter.



An otherwise healthy tree can withstand several years or more of defoliation by this insect. Sometimes we find dieback on small chokecherries that have been repeatedly defoliated but on mature cottonwoods and walnuts there seems to be no outward expression of cumulated defoliation; they seem to continue to grow just fine.

There usually isn't much need to treat for this insect. The nests are already forming and the damage to the host tree is minimal. A contact insecticide such as one containing carbaryl, cyfluthrin, or permethrin as the active ingredient will kill the larvae as they feed, and these can still be applied (or my favorite Captain Jack's Dead Bug Brew – an organic alternative). If they are used, be sure to spray the foliage, not just the nest, as the insects leave the nest to feed on foliage at night and this is when they will pick up the pesticide. Pruning off the nests while the insects are still inside may do more injury to the tree than the feeding, however, removing the nests with a rake or other object will destroy the webworms' shelter and reduce survival. Burning the nests might be entertaining but will injury the tree (and possibly the arsonist) and other trees and nearby structures.



Lady beetle larvae to the rescue

I received this picture of a critter crawling around an oak leaf. This is the larva of a lady beetle. The larvae are dark, almost alligator-like, with three pair of large legs. These are some of the most effective aphid predators, eating their own body weight in aphids every day! That's about 50 aphids a day. Once they eliminate one aphid colony, they move to other leaves to find new ones.

Unless you spray them. Unfortunately lady beetle larvae are often collateral damage in a plant owner's attempt rid aphids from the leaves. These are easily killed by many contact pesticides, sometimes disproportionately to the number of aphids. Usually its best to let nature do the job.

Stinkhorn



We are seeing a “bloom” of mushrooms and one of the unpleasant ones is the stinkhorn. The name is appropriate as this mushroom has a very bad odor. A patch will smell like rotted flesh – ugh! Well maybe to people but flies like the odor and will land to feed on the slime on the caps which contain spores that they will now carry to other locations.

There is not much that can be done to prevent stinkhorns from appearing. They are feeding off dead organic matter and if enough organic matter remains in the soil they will continue to sprout up. Fortunately, the fruiting structures – the mushrooms – do not remain up for every long and can be easily cut and discarded.

An interesting note. Given enough organic matter and a few wet days, these can grow extremely fast. Sometimes as much as 6 inches in a few hours so they can literally appear overnight!

Tar spot



Tar spot (*Rhytisma*) is showing up on Freeman (*Acer x freemanii*), red (*A. rubrum*), and silver maple (*A. saccharinum*). The disease began as greenish-yellow spot in late June and then develops into these black tar-like structures we are seeing now. The remaining leaf tissue is sometimes chlorotic. The treatment for the disease is two-fold. First, a common recommendation is to remove and destroy the fallen leaves this autumn to reduce the overwintering fungus, usually not a practical treatment unless you are able to go through your entire neighborhood! Next year treat the tree with a copper fungicide as the leaves expand and repeat the application about two weeks later (read and follow the label carefully as copper can be damaging to the plant, do not

apply at the high rate on young foliage). However, if we have a dry spring next year the disease is not likely to be severe.

Samples received/Site visit

Codington County

Phomopsis on eastern redcedar seedlings



I am sure everyone is getting tired of hearing about dying cedars but this seems to be the year for it. These seedlings were infected with the fungus *Phomopsis juniperovora*, one of the pathogens associated with juniper twig blight (we based this diagnosis on spores, not symptoms as more than one fungus can cause twig blight). The common symptoms are the dieback of the new growth with the needles turning color from yellow-green to eventually

ash gray as they die. The disease only affects new growth (needles and shoot), the older, mature tissue is resistant (but not immune) to this disease.

The disease is usually limited to the new growth and shoot less than 1/2-inch diameter, hence the name twig or tip blight. But in some years, usually after a few wet years, the infections can be so severe that entire shrubs may be affected and all the needles turn brown to gray and the plant dies.

The disease can be managed through copper-based fungicides or mancozeb applied as the new growth begins to expand, usually late May/early June, and repeated every 10 to 14-days until the new growth stops and matured. This usually occurs by the end of July but in wet years (the last two years) the infection period can continue as long as the end of August as the plants keep producing new shoots.

Davison County

Browning cedars



The dying cedar problem continues! However, these browning juniper (often called cedars) had Kabatina (*Kabatina juniperi*) twig blight. This twig blight has similar symptoms to Phomopsis, with shoot terminals go from a normal bright green (or bluish-green) to yellow then gray. But Kabatina symptoms appear in very early spring, usually April, and do not progress into the season. You will see the shoot tips turn yellow in the spring and then new growth that

forms later in the year may develop its normal color. Kabatina infection occurs through wounds in the fall (hail or freeze injury) and there are no fungicides available to manage this disease.



I visited the community of Bryant to look at a widespread problem with ash. The community of about 500 residents has two tree problems, 1) all their trees are mature or over-mature with most planted about 100 years ago and 2) they have almost as many ash as people!

The ash trees have significant dieback and in the upper canopy the trunks and limbs are covered with the conks (fruiting bodies) of decay fungi. Several of the trees have had the tops break out and fall during the strong winds that occurred during several storms this year.

The lower trunks are also covered with exit holes, not emerald ash borer, but the native borers, ash/lilac borer, banded ash borer, carpenterworm, and the redheaded ash borer. The trees are not going to survive much longer, maybe a decade or two, even if it were not for the threat of emerald ash borer.

So what's a community to do? Begin with an inventory the number and relative size of their public ash trees, those in parks and along streets. This provides the number of trees to remove before emerald ash borer arrives or treat once it does. Most communities are not going to have the resources to treat their public ash trees so working on a plan to gradually remove them and replant is key to having removals overwhelm their resources once the insect arrives and leaving a community devoid of shade trees when its over.

The South Dakota Department of Agriculture can assist communities in inventorying their public ash trees. City officials can contact the South Dakota Urban and Community forester in Pierre at 605-773-3623 to discuss setting up an inventory of their ash trees. Its hard to tackle a problem without knowing how big it really is – the inventory is the first step.

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