Pest Update (July 8, 2020)

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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.

Plant development for the growing season

The weather remains warm and humid in much of the state. Rains are scatted with some areas of the state in moderate drought while other parts are receiving adequate precipitation.

The hydrangeas are in bloom in Brookings, both the panicle and smooth. These are some of our best summer-flowering shrubs. The picture is of a Vanilla Strawberry hydrangea (*Hydrangea paniculata* 'Renhy')

Treatments to do

If you have not started apple maggot treatment on your favorite apple trees yet, best start now. See last week's *Update* for more information on management.

Timely Topics

Emerald ash borer updates

Emerald ash borer now discovered in a third South Dakota community

Emerald ash borer has been found in Worthing, South Dakota. The new find was about 9 miles to the northwest of the infestation in Canton. A group of mature trees presenting the common symptoms of being infested - woodpecker drills, bark blonding, canopy thinning - was identified in the north side of Worthing. D-shaped exit holes were found on the bark and serpentine, power-filled, galleries beneath the bark. At this time of year, larvae and pupae, are difficult to find as the most common life stage during early summer is the adult. However, an adult beetle (was found on tree (there is luck!).

The last two years of wet weather has left many trees in and round Worthing in tough shape. Anyone driving by the Worthing exit on I-29 can see groupings of dead cedars, ash and even cottonwood that were (or still are) standing in stagnant water. The infested trees in Worthing were also stressed by flooding but it is not surprising that emerald ash borer is attracted to dying ash. While emerald ash borer is capable of successfully colonizing healthy North American ash species, it

– like all *Agrilus* – goes for the weak. One common means of detecting emerald ash borer in a community is to purposely stress ash by gridling and see if the borer attacks them.

We need to start thinking about removing infested trees this fall

The appearance of the emerald ash borer outbreak in Canton is striking. First, you can find a heavily infested tree, identified by the extensive canopy decline - bark blonding, and woodpecker drills – standing next to green ash that look perfectly fine. Infested trees appear to be almost randomly scattered throughout the town though a higher number on the western end.

The other noticeable characteristic is that infested trees that are now dead or near death can also be found in the community. These trees are a risk to the community safety. Ash trees that died from emerald ash borer have wood properties that differ from a healthy ash and their failure is unpredictable. This is not a unique characteristic of ash, though ash wood does split easier than most, as any tree killed by borer dries out quickly and may fail sooner than expected. Ash trees infested by the borer dry out very rapidly and so did pines that were infested by the mountain pine beetle.

A familiar sight in the Black Hills is hillsides covered with fallen pines that died during the mountain pine beetle epidemic. The epidemic ended in 2016 so most of the infested trees have fallen by now but some are still coming down. The Forest Service even has posted notices along trails alerting hikers to the possibility of falling trees.

Hillsides of dead pines in the forest is one thing, rows of street-side dead ash is another. While emerald ash borer has killed millions of ash trees in the United States, the dead falling ash have also killed people and damaged property. These dead or dying trees have fallen on people walks along sidewalks or driving down the street in their cars. The trees have also collapsed on houses.

The trees are also a risk to arborists that are removing them. Infested trees have fallen in an unpredictable ways while being felled, even collapsed from the vibration of the soil while the aerial lift was being driven up to the tree. This means not only are dying trees a risk to the public, the risk to the arborists means more care needs to be taken during removals and that means the price goes up.

Two common thresholds for removing trees infested by the emerald ash borer. First, no climbing in trees presenting more than 20 to 25% canopy decline. These trees need to removed by an aerial lift or a knuckle boom mounted grapple saw. Once the tree has more than 50% canopy decline boom mounted grapple saws are the best means of taking the tree down. Manual tree felling is just too unpredictable by that point. And unpredictable means just that – sometime they fall just the way the faller expects, other times they don't.

Ash trees presenting 50% canopy decline due to emerald ash borer should be removed this winter. There will be a number of trees in Canton that will need to be removed and I expect even more the following year.

Update on Juniper (cedar) discoloration and dieback

We continue to see discolored and declining on cedars (junipers) across the state but concentrated in the center with most reports from Hughes, Hyde, and Sully counties. There is no single causal agent for all this decline. Instead, we are seeing four different pathogens as well as freeze-injury from this past winter. The two junipers affected are the eastern redcedar (*Juniperus virginiana*) and Rocky Mountain juniper (*Juniperus scopulorum*). However, much of the injury is seen on Rocky Mountain junipers windbreaks between the Missouri and James River.

There are three juniper diseases - Cercospora, Kabatina, and Phomopsis. Collectively these are referred to as twig blight. The reason for the appearance of these disease is probably related to the above-average precipitation for the past two years providing the moisture for the diseases to develop.

Phomopsis (*Phomopsis juniperovora*) and Kabatina (*Kabatina juniperi*) twig blight have similar symptoms. The shoot terminals go from a normal bright green (or bluish-green) to yellow then gray. Kabatina symptoms appear in very early spring, usually April, and do not progress into the season. You will see the shoot tips turn yellow and the new growth later in the spring develops 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. There are many cedars that are only affected by this pathogen.

Phomopsis twig blight has a similar color change to the tips, from normal green to yellow then gray but the infection and color change begins later, May, and the new growth that continues to form in the summer can also become infected and turn color. Generally older foliage is resistant so the disease is often limited to shoot tips, but entire branches can become infected as well. The symptom pattern generally begins near the top of the evergreen and then progressing downward. Phomopsis infection begins in the spring and the disease can be managed with fungicide applications, mancozeb is often used (copper also works), beginning in early June with repeating treatments about every two weeks until the new growth slows. This usually occurs in July as the weather turns dry and growth stops.

Cercospora is caused by the fungus *Pseudo-cercospora juniperi.* The symptoms first appear on the lower branches which differs from the other two twig blights. The affected needles turn a dull brown by early summer before becoming gray and dropping. The disease progressively moved from the base to the top of the evergreen as well as from the branch base to the tip. Infected junipers will become thin and open – almost as if they were scorched by fire. This is more a problem on Rocky Mountain juniper than eastern redcedars and repeated years of infection can kill these evergreens. The most common treatment is fungicide applications of mancozeb or copper. The first application should be made in early June with a second in late June, and a third in mid-July if the weather stays wet.

Another disease, most commonly associated with pines, is appearing on juniper tips. Diplodia tip blight (*Diplodia pinea*) is a serious problem on Austrian and ponderosa pine but we are seeing it on junipers this year. Since this is a tip blight, the symptoms are almost identical to Phomopsis twig blight. Diplodia tip blight can be treated with fungicides but the window for treating occurs a little early, late May just before the new growth begins and a second treatment about two-weeks later. The appearance of the disease is probably unusual and not likely to require treatment in future years.

There is no law that a juniper cannot have more than one of these pathogens and we have received samples that contain more than one. Also we are now beyond the treatment window for all these pathogens so no controls should be started. Finally, the only way to tell which disease is present is to examine discolored

foliage for fruiting structures and spores. Field identification is difficult and I have had several instances when I thought for sure that the symptoms in the field were related to one pathogen but once back in the lab it turns out to be another.

E-samples

Birch leafminer

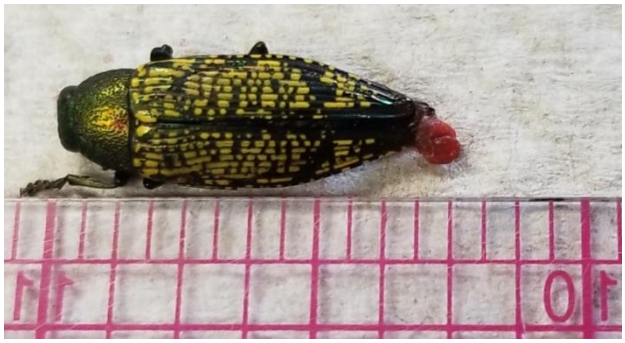
This is another river birch with blotches on the leaf (this was first reported in the *Update* two weeks ago). If you look closely at the blotches, you will notice that the upper and lower leaf tissue is intact but puffed out as the interior tissue is missing and replaced with tiny pellets. The pellets are frass (insect poop) and the missing tissue is from the tunneling by the birch leafminer (*Fenusa pusilla*) a small insect that feeds inside the leaf during the larval stage (hence the name miner). The larvae hatch on the newly expanded leaf and feed for several weeks before dropping to the soil and pupating. The insect remains in the soil until the following May when the adults – which look like small flies – emerge and lay eggs on the new expanding leaves.

There are two generation per year so adults are usually again out in mid to late June and lay eggs on the newest foliage. The insect can only attack young, expanding leaves so mature foliage is immune. Birch leafminer feeds on the leaves of all birch but seems to really like river birch. Generally, treatments are not necessary as an otherwise healthy birch can withstand having almost 2/3's of its leaves mined before it is significantly stressed by the event.

Birch leaf miner is not the only problem for this tree. The leaves are also pale green with darker veins. These are the symptoms of chlorosis, a disorder due to an iron deficiency in the foliage. The deficiency is not a lack of iron in the soil but that the iron is unavailable to the tree due to the high pH.

Emerald ash borer look-a-like

I am receiving more pictures of suspected emerald ash borers. So far this year all have been the green metallic wood borer (*Buprestis confluenta*). I have been receiving them for years as they do look close to emerald ash borer (and they are in the same family, Buprestidae so call them distant cousins). The Buprestis beetles are also known as jewel beetles because of their shiny, metallic bodies. They are also torpedo-shaped so the body shape is similar to emerald ash borer.



The difference is that while the emerald ash borer is torpedo-shaped, it is smaller and slimmer than the Jewel beetles. The green metallic wood borer is about 1/2 to 3/4 inch long and green or purplish brown with yellow specks. The emerald ash borer is a metallic green and a little less than a 1/2 inch long.

This picture of a green metallic wood borer was submitted from the central part of the state last week. This insect is native to the Great Plains and Front Range and is content with feeding in dying poplars and cottonwoods among other hosts. No one would even notice them if not for its relative the emerald ash borer.

Mulberry fruit

One of the most common leaves submitted for identification are from mulberry. The leaves which can be unlobed, one lobe or even three lobes can all occur on the same branch. The other common question is regarding the fruit. I had several pictures of mulberry fruit submitted during the past week with two questions; What is it? and Can I eat it?

The mulberries submitted are the introduced white mulberry *Morus alba* and despite the name "white" the fruit is usually a deep purple. The raspberry-like fruit of the white mulberry has a mild, sweet flavor but is often bland and not nearly as sweet as the native mulberries such as the red mulberry (*Morus rubra*) which is found in Iowa.

Still some berries and a bowl of sugar to dip them in can make a nice treat on a hot summer day!

Powdery mildew

"Dusty" leaves are appearing on lilacs in many areas of eastern South Dakota (and Rapid) due to the high humidity. This a very common disease of lilacs but powdery mildews (usually different fungi as these mildews are host specific) can occur on many different plants including grapes, roses and Virginia-creeper. Powdery mildew appear as white to grayish spots or patches on the leaf that often contain small pin-size black dots. These

symptoms usually occur on the upper leaf surface. They also are more common on plants that are crowded and shaded, locations that provide the high relative humidity need for the disease to develop. Since the disease occurs mostly on crowded plantings, the best solution is to selectively prune out (or even remove) plants to provide better air circulation and lower the humidity. There are also many fungicide labeled for control of this disease but these need to be applied every 10-days throughout the growing season or at least throughout the hot, humid summer weather.

Spittlebugs on junipers

This is an unusual sample and the name fits the description. The foamy spit on this juniper is the work of a spittlebug nymph. The nymphs (immature bugs) feed under this spittle-like foam in early to mid-summer before becoming adults. The adults also feed on the plant but do not produce spittle so are not as noticeable.

The insect, while a curiosity, rarely sucks enough sap from the plant to cause any serious effects. However, if a branch or two is heavily infested, it may die back a little though generally the injury is no more than some yellow spots on the foliage. The insect can be controlled with an application of an insecticide with carbaryl or malathion as the active ingredient. But a high pressure stream of water can be enough to "knock" the population down and try this first and it's a great way for you to cool down on a hot day!

Samples received/Site visit

Davison County **What is wrong with this juniper?**

This is Phomopsis, see the article on juniper decline for more information on the problem and management.

Fall River County **What is wrong with this juniper?**

This is Phomopsis, see the article on juniper decline for more information on the problem and management.

Hughes County **What is wrong with this juniper?**

This is Phomopsis *and* Diplodia, see the article on juniper decline for more information on the problem and management.

Minnehaha County **Why is my maple tree wilting and dying?**

Every year I receive calls about maple trees that have individual branches wilt and die or the whole tree wilts and die. Sometimes the tree owner mentions that the tree – if it was a red maple (*Acer rubrum*) or one of the freeman (*Acer* x *freemanii*) maple cultivar – had brilliant fall foliage color the previous season.

When you look at the base of these trees, the trunks are usually going straight into the ground so it was planted too deep. Since it was planted too deep, and probably had been in a container too long when it was purchase, the roots have circled around the buried stem and strangled the tree.

If you catch it early, the girdling root can be cut away but once they start encircling the stem its too late. The solution is not to buy pot-bound trees that have roots already circling and then, never plant the tree too deep. If the stem is completely above ground, then the root cannot easily girdle it.

Pennington County **What is the causing the discoloration of this spruce?**

This is Rhizosphaera needle cast (*Rhizosphaera kalkhoffii*). This is a common needlecast disease. The symptoms occur in midsummer with the previous season needles turning yellow then purplish brown by late winter. Small black fruiting bodies with smooth margins emerge from these needle stomates in the spring. Treatment is with a fungicide containing Chlorothalonil as the active ingredient, with the first application when new growth is 1/2-inch long and the second about three weeks later.

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