Pest Update (September 2, 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/

Plant development for the growing season

Dry, Dry, Dry. Most of the state is either classified as Abnormal Dry or Moderately Dry. The south-western edge of the state, Fall River and Shannon Counties are classified as Severe Drought. The only area of the state that has escaped the dry weather is the south-central region.

Trees and shrubs need watering right now, especially newly planted woody plants. I saw these panicle hydrangeas that have wilted and most likely will die. They were planted last weekend at a commercial property (which is usually a death sentence for plants – no one takes care of them) and no one has watered them since them. No hoses are out and there is no irrigation system.

Fall is just around the corner with temperatures expected to drop from the 90s to the 50s and there is a chance of snow in the upper elevations of the Black Hills.

Timely Topics

Emerald ash borer update

Larval development

Emerald ash borer sampling continues in Sioux Falls and Canton. Most of the larvae are still 3rd instar, but there are more 4th instars this week and even a few 2nd instars. As mentioned before, we measure the width of the head capsules to determine instar. The head capsule is about 0.3-0.5 mm wide for 2nd instar, 0.6-0.8 mm for 3rd instar, and greater than 1 mm for 4th. The mature larvae are also more than 1 inch long with some almost 2 inches long by now.

Three third instar emerald ash borer larvae in ash.

The 3rd instars are the troublemakers. They are the instar that does most of the damage to the tree. They chew though more of the phloem (the sweet inner bark) than the other instars. They are also thick enough that they do not fit in the thin larger of phloem and etch the sapwood as they sweep back and forth in their tunnels.

The 4th instar larvae are also called the prepupae. These are larger larvae than

A 4th instar larva burrowing into the sapwood.

3rd instars but may be overlooked as they burrow into the outer sapwood, like this one that was chewing its way into the wood. They carve an opening into the outer sapwood and curl back on themselves – like a cat taking a nap – and this is not too far off as these nap for the winter and become pupae in May.

The 2nd instar larvae I am still finding in the branches probably are not going to complete their development in time to pupae next spring. These will continue in their larva stage all next summer. These will emerge the following year and require two years, rather than one year, to complete their life cycle from egg to adults.

We saw more of this two years ago when larvae could be collected almost any month of the year. Now the majority of emerald ash borers have settled into a one-year life cycle.

Adult beetles are not flying anymore

The adults are gone now. The last adults emerged in late July and lived out their short life feeding on ash leaves and laying eggs. All these eggs have hatched and the 1st instars burrowed through the bark to become the 2nd, 3rd and 4th instars we see now. All the emerald ash borers are tucked securely in the tree now until next year, about Memorial Day, when they begin emerging from their long winter naps.

The adult-free zone is demarked as beginning on Labor Day, just to be on the safe side. Beginning Monday in Sioux Falls and Canton, ash trees can be felled and the wood moved without the concern of adults exiting from it *this* year. However, if this infested wood is cut and stacked for firewood, the insect can still complete their development before the wood dries and emerge next year. It is best to let the tree service fell trees and dispose of this wood.

Emerald ash borer city restrictions and federal/state quarantine – not the same!

Since emerald ash borer can survive in firewood split from recently felled trees, ash firewood, along with any other hardwoods (since most folks cannot identify wood), cannot be moved from the Federal/State quarantine area (Minnehaha, Lincoln and Turner Counties) at any time of the year.

Unfortunately, too many people are confusing the City of Sioux Fall's emerald ash borer restriction on pruning and removing ash trees (prohibited between Memorial Day and Labor Day when adults are out) with the Federal/State quarantine. I am receiving calls and emails from folks throughout eastern South Dakota that are stocking up on firewood for the winter. These people have seen firewood advertised on Craigslist and Facebook as coming from the quarantine area saying it can be sold anywhere in the state after Labor Day – NO, NO, NO.

The quarantine restricts more than just the movement of firewood. There is a long list of ash products that cannot be moved outside the quarantine from nursery stock to ash lumber. There are exceptions for some materials if a permit is issued. For more details on the quarantine go to the state's emerald ash borer website at:

https://emeraldashborerinsouthdakota.sd.gov

Fall fungi: are they food?

At this time of year, I start getting samples of fungi and this is one picture that came in this week. The bright yellow to orange lobed structure composed of layers or brackets is the fruiting body of the **sulfur shelf fungi**. This is one of the late summer/fall fungi and appears on dead and dying trees. Ash is a common host in our area.

They seem to appear almost overnight in September and are hard to miss due to their bright yellow and orange color. The fruiting bodies will fade to a more uniform pale yellow as they begin to weather and are usually gone by October. The sulfur shelf fungi is eaten by many animals and, when cooked properly, are considered delicious for us! The fungi are also known as the "chicken of the woods" since some people think they taste like chicken (but what doesn't?). However, **an important caution**, never assume any fungi you find

is edible until it has been examined by an experienced mushroom hunter. Pictures are only a guide.

I also had one landowner identify some fungi on his trees. The question was were these edible? The best way to learn which ones are edible is to go out with an experienced mushroom hunter. Learning edible mushrooms is not a task that should be left solely to Google (or a book for those over 60).

The fungus in question was the **oyster fungus** (*Pleurotus*); these are edible. The oyster fungus fruiting bodies are almost a pearly white and form shelves on dead standing trees (cottonwoods are a common host) and even fallen logs. They are also a fall fungus with the fruiting bodies appearing in late summer and early fall.

The oyster fungus has an oyster-like texture and a slight seafood flavor. This flavor is very mild and usually not noticed once incorporated into a meal. The texture is what is noticed.

Again, **important disclaimer** – do not assume you are collecting oyster fungus since it looks like the picture in the *Update* – go with someone who has collected before and knows their fungi!

Aphid populations are building on many plants

The hot weather is increasing the aphid populations on many trees and shrubs. Infested trees and shrubs are easy to spot by the colonies of aphids on the undersides of the curled leaves and the amount of "sticky" leaves and any objects beneath the tree. This is due to the honeydew excreted by the aphids as they feed on the leaves. Ants "milk" aphid for honeydew so you often find the two insects together.

Treatment now is a little too late. When the infestation is first noticed, the tree or shrub can be sprayed with an insecticide containing acephate as an active ingredient. This is a systemic insecticide and will move into the foliage and kill the aphids feeding on the underside. However, check before spraying as you might find ladybug larvae feeding on the aphids – just let them do the job.

E-samples

DO NOT EAT THIS FRUIT!

I have been receiving pictures of this fruit accompanied by the question “Can we eat this?” The short answer is NO! This plant is the common buckthorn (*Rhamnus cathartica*) which is easily identified by the single thorn at the tip of each twig. The dark purple to black drupes (a fleshy fruit with several small seeds berries found on this tall shrub in late summer and fall should not be eaten or used in jams or jellies. Eating the fruit will result in sudden and persistent diarrhea.

The fruit seems to also go quickly through birds who deposit the seeds everywhere. The tall shrub/small tree can be found in windbreaks throughout the eastern side of the state. It also frequently comes up in shrub beds. There is *no* value to European plant (also found in western Asia and northern Africa) as it serves as a host to the soybean aphid, cereal rust, and the spotted wing drosophila. An interesting note, I found a reference in a South Dakota Horticultural Society meeting notes back in the late 1800s from a gardener from Iowa bringing this plant to South Dakota to use as a hedge plant – thanks, Iowa.

Marssonina leaf spot on cottonwood

At this time of year, I also receive samples of cottonwood leaves falling and these, along with ones still on the tree, are covered with reddish-brown to purple lesions that often have a yellow halo. Usually the only foliage remaining on the tree is at the very tips of the tallest branches. The problem is marssonina leaf spot (*Marssonina brunnea*). This foliar fungal disease is more common on cultivars of cottonwood than the species.

The disease can leave some almost completely defoliated by the end of August. This often weakens the trees, increasing winter injury and susceptibility to drought stress. A common recommendation is to rake up and destroy any fallen leaves to reduce the population of overwintering fungi but this is of limited value and often impractical. Fungicide treatments may provide some control of the symptoms. These are usually applied as a fungicide containing chlorothalonil applied at bud-

break. If the weather stays moist, applications may need to be continued on a 7- to 10-day cycle till the summer weather turns dry.

Marssonina leaf spot on aspen

The disease is not exclusive to cottonwoods but is also common on other poplar species such as aspen. The question with the pictures was about oystershell scale. The tree had been treated for this sessile insect by a professional tree company last year but now they are seeing discolored leaves. The discolored leaves are not associated with the scale. The leaves have marssonina leaf spot. The oystershell scales were properly treated. There were no scales on the new shoots from this year (I emailed the tree owner). Many of the scales on the older branches and trunk are dead, but the hollow shells can remain attached for years.

The best way to check the effectiveness of the treatment is to look at the new growth. The young scales, called crawlers since they move about, like to suck the sap from the new shoots because they are more nutritious for them. They have settled by now and are couch-potatoes (well, shoot-potatoes) and have formed their hard shells. If hard shells are not found on these new shoots, something killed them (and their natural enemies also do much of the killing) and the treatment was effective.

Samples received/Site visit

Brule County **What is causing these blotches on the basswood leaves?**

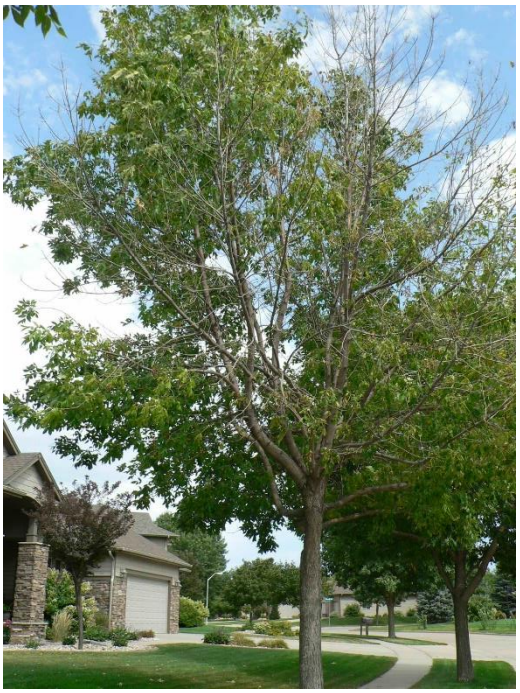
We often see discoloration on linden leaves at this time of year. Usually it turns out to be sooty mold, a fungus living on the honeydew excreted by aphids as they feed. However, this can be linden leaf blotch, a disease caused by the fungus *Didymosphaeria petrakiana*. The blotches develop in late summer, with the upper leaf surface forming dark brown to black lesions with fingernail-like projections from the margins. Infected leaves can also

begin to fall prematurely, and it is common to see tree completely defoliated by mid-September. There are no fungicides available for control, but fortunately it rarely harms the tree, just their appearance.

Lincoln County **Is this needlecast on the spruce?**

Yes, the old fruiting structures were rhizosphaera, a common fungal disease of spruce. The treatment is two applications of chlorothalonil, the first applied as new growth reaches about ½ inch in length and the second about three weeks later. This will not cure the disease but will slow the spread.

Minnehaha County **Declining ash**



Not every stop to look at an ash in Sioux Falls is about emerald ash borer. This stop was to inspect an ash that was declining on two of the main stems. The leaves on just these two stems were discoloring, wilting, and falling.

The tree was being treated for protection from the emerald ash borer (it is in the southern part of the city, where the insect population is low) so the borer was not the problem. The problem was not in the canopy or the trunk, but the base. One side of the lower trunk was flat, almost bent inward; this is a telltale sign of stem girdling roots. Just beneath the soil there was a large root pressed against the trunk. The tree owner had planted it from a container (the origin of many root problems) about 13 years ago and he recalls just “sticking it in the ground.”

Maples are the most common urban tree afflicted with stem-girdling roots, along with lindens, but ash was also a concern (before emerald ash borer). Regardless of the species, all container-grown trees must be planted at the proper depth, so the upper-most root is just beneath the soil. Planting too deep, where the base of the stem is beneath the surface, is the prerequisite for stem-girdling roots. If the stem is above ground, it is harder for a root to encircle it.

The other treatment is to remove the circling roots before planting. The old method (which does not work) was to quarter the soil mass of roots. Now the approach is to shave the soil mass, just cutting in all the way around the root mass to remove the circling roots but not disturb the roots behind it.

While the stem-girdling roots are a problem, there is no law that a tree can have only one problem. We are see more verticillium this year and along with elm, maples, and catalpa, ash is one of the species susceptible to this soil-borne disease. The symptoms associated with verticillium wilt and stem-girdling roots are similar. In fact, back in the 80s many trees with stem-girdling roots were misdiagnosed with verticillium based upon the presentation. I collected some twig samplings and we are culturing these for the disease. While the presence of verticillium wilt will not change the outcome – remove the tree – if verticillium wilt is present then elms (even the hybrid elms), maples, and catalpas should not be planted.

Minnehaha County **Mildew on ninebark**

This was a call about a white coating on their purple-leaf ninebarks. These are the Little Devil™ ninebark (*Physocarpus opulifolius* 'Donna May') and the problem is powdery mildew. This small shrub with burgundy-purple foliage can be covered with masses of whitish leaves and shoot tips by this time of year. This powdery mildew (and there are different species of mildew for different species of plants) thrives when the humidity and temperatures are high but the leaves are dry – just the conditions in Sioux Falls this summer.

The fungus is unusual, as it grows on the surface of the leaf and shoots but sinks root-like structures (haustoria) into the tissue to obtain nutrients. The fungus also causes distortion in the plant tissue so infected shoot tips are covered with pink to white witches' brooms of stunted leaves. The disease does not kill the plant, just detracts from the appearance.

The disease can be managed by planting these ninebarks so they are spaced properly and there is good air circulation around them. Mildew is more common on crowded plantings in the shade than widely spaced plants in the sun. Mildew can be treated with fungicides and there are many options here. Just be sure they are labelled for mildew and ninebark is identified as one host. Baking soda (1-1/2 teaspoon) and 3 teaspoons of horticultural oil mixed in 1 gallon of water is frequently mentioned as an alternative control. However, test this first on a few shoot tips to be sure it is not phytotoxic on your shrubs. All treatments begin in the spring when the leaves first appear and continue through the summer on a two-week basis – lots of work.

The Little Devil ninebark is marketed as mildew resistant, but it is not. This is just one of a long list of promises made by the nursery industry – Endless Summer hydrangea blooming all summer, Asian white birch resistant to bronze birch borer, etc. – that are not true. Nursery catalog descriptions, as with political campaign promises, should be viewed with caution.

Stanley County **Cercospora on cedar**

Will it ever end…another cedar (juniper) sample. While we have seen numerous problems with cedars this year, they are not all the same problem. We have seen phomopsis, kabatina and cercospora on these plants and their treatments vary. This sample had cercospora. There are numerous issues of the *Update* this season that cover these diseases and the treatments. Start with the July 8, 2020 issue.

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

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