Pest Update (June 17, 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

The growing degree-days for Sioux Falls are almost 620 (as of Wednesday, June 17). We are seeing some of our summer-flowering shrubs in bloom including Japanese tree lilac and smokebush. The appropriately named smokebush (*Cotinus coggygria*) produces this smoky pink inflorescence. The "smoke" is not from the flowers but the hairs on the stalks that support the tiny flowers.

Treatments to do now

Spruce bud scale crawlers will soon be hatching. The scale resembles a small round, reddish bud and they can be found on near the tips of the branches where the side branches attach to the shoot. They, and their mobile young called crawlers, suck the sap from the shoots resulting in dieback and decline of the lower branches. Since these are soft scales, they produce honeydew that results in a black, sooty appearance to the needles and twigs. The scales have one generation per year and the crawlers' hatch about the time littleleaf lindens bloom which should be in another week. The best treatments are insecticides containing Carbaryl as the active ingredient and applied on the foliage and shoots near the tips. Products containing Imidacloprid can be effective as a soil drench but need to be applied in the fall for control the following year.

We are also coming up to the time to treat for spruce needle miner. The needle miner (*Endothenia albolineana*) gets its name from the fact that the young larvae are so tiny they can live inside the needle, mining it as they feed. They eventually outgrow their home and then create a nest of webbed, detached needles to live in. The larvae usually feed on the lower, exterior needles, almost stripping the tips of needles but they can also be found in the interior of the tree and even the tops of young trees. The adults are small moths that will begin flying soon and depositing eggs on the needles. The treatment is usually with a pesticide containing Carbaryl as the active ingredient and labeled for this use. Infested tree should be treated in another week

Timely Topics

Emerald ash borer update

The emerald ash borer adults are flying in Sioux Falls and we are beginning to pick a few up in our funnel traps. The peak to emergence is about the time lindens are in full bloom – about a week from now – so I expect traps catches to increase over the next few weeks.

Now that trees are in full leaf, it is easier to spot the ash trees that have been infested for two years or more. This is a green ash tree in Canton that has been infested for a few years and is presenting severe dieback. A closer examination of its trunk reveals the distinctive D-shaped holes through which the adults emerge. The callus also shows galleries that formed from previous infestations.

Ash decline in the Black Hills: oystershell scale

If ash in the Black Hills does not have enough problems with May freeze injury and mechanical injury from the recent hailstorm, now it has a pest problem. No, not emerald ash borer, but oystershell scale (*Lepidosaphes ulmi*).

Oystershell scale is an armored scale (meaning the adult female forms a hard shell) that commonly infests ash and lilac and can be found on maples and willows. The name oystershell comes from the adult brown to gray shells that are about 1/10-inch long and resembles oyster shells.

The adults move about as fast as oysters – meaning they do not move at all. The eggs hatch from beneath these shells in late May, about the time Miss Kim lilacs are in bloom, and the young, mobile crawlers scurry out to the expanding shoots to find a spot to insert their piecing-sucking month parts and begin sucking out the content of cells just beneath the bark. Eventually the crawlers lose their legs, remain stationary, and form a hard, waxy shell which covers and protects the adults.

The fluid lost is usually not enough to affect the host but large populations of scales, ones where the

individual scales are almost touching one another, can weaken the tree. These high populations can result in extensive branch and limb dieback. There are many ash trees from Spearfish to Hot Springs presenting dieback that have every branch covered by these scales.

Treatment of this insect is focused on killing the crawlers, either as they move out to the new shoots or after they begin to settle. This is the life stage that is most vulnerable for control and killing these immatures will prevent further injury to the host. The settled crawlers are harder to kill than the mobile ones so earlier crawler treatments are more effective than later ones. We are the mobile crawler stage in Rapid City (GDD 475 June 17) and at the settled crawler stage in Sioux Falls (GDD 618).

The crawlers are susceptible to many contact insecticides but most of these will also kill their natural enemies which provide most of the control. A softer option is a summer (horticultural) oil spray. The oil will smother the settled crawlers as they have not yet developed a thick waxy covering. Oil can be used alone or combined with other treatments.

Another option is pyriproxyfen, an insect growth regulator. These are also effective against mobile and settled crawlers. The IGRs also have minimal impact against the natural enemies of the scale. Pyriproxyfen is available under the trade name Distance and may be applied by commercial applicators.

Most systemic insecticides have very limited effectiveness against armored scales as they do not concentrate in the feeding sites of these insects. However, one does work, dinotefuran, and it is available under the trade names Safari and Zylam. These can be applied as a soil drench or a lower (the first 8 feet) trunk spray as it is readily absorbed through the bark. These are available to commercial applicators.

Another pest to worry about

Photo credit: Pennsylvania Department of Agriculture

A potential pest, not yet found in South Dakota, is the spotted lanternfly (*Lycorma delicatula*). This Asian insect was first detected in Pennsylvania in 2014. It has spread along the mid-Atlantic states and has become established from New Jersey to Virginia and detected in some of the surrounding states. The insect does not spread by flying but by the egg masses hitchhiking on almost anything, including trucks of decorative rock! There is no reason it cannot easily travel here on a car or camper.

This insect is a potential threat to fruit crops – peaches and grapes – as well as some tree species (river birch, silver/red maples, walnut, and willows). Spotted lanternfly is a sucking insect that uses its piercing-sucking month parts to suck sap from its host – think of sticking a straw through the lid of a soft drink cup. While there are lots of insects that feed this way, what make the spotted lanternfly a little unusual is it injects a chemical that keep the sap oozing from the puncture after feeding – like a mosquito bite that just keeps bleeding – but instead of blood streaking down, it's a grey streak of sap. The sap loss can be enough to weaken or even kill a plant. The insect also produces a tremendous amount of honeydew and everything beneath the tree is covered with this sticky substance. Not a pleasant sight.

While spotted lanternfly feeds on a wide range of plants, one host that is considered essential (or at least highly desired) for the completion of its life cycle is Tree-of-Heaven (*Ailanthus altissima*). This is considered a weed tree in much of the country – another invasive from Asia. Fortunately, it is not hardy throughout much of the state so we probably will not see spotted lanternfly become established much north of Hwy 14. Unfortunately, Tree-of-Heaven has naturalized along the Missouri River from Dakota Dunes to Pierre, so we have enough of these hosts to allow the insect to become established along this riparian corridor.

Tree-of-Heaven in Pierre, SD

Tree-of-Heaven is even a street tree in communities such as Kadoka, Pierre, Platte, and Yankton. While we want more diversity in our community tree population, we can do without this one! Many eastern states are adding this species to their noxious plant list and actively removing these trees to eliminate hosts for the lanternfly.

E-samples

Ash rust

Ash rust (*Puccina sparganiodes*) is appearing on ash throughout eastern South Dakota and the pictures keep coming in. This is causing some concern as people are noticing these bright yellow depressions on the upper surface of the leaves. There will soon be raised orange spot on the undersides.

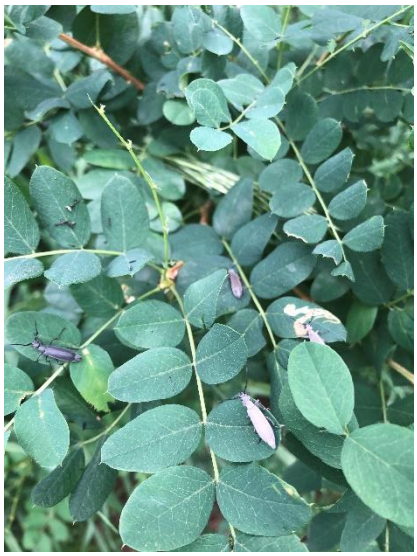
Most rust disease require an alternate host. The pathogen moves back and forth from one host to the other and if one

is not present, the disease does not occur. The alternate hosts for ash rust are marsh and cord grasses and we have an abundance of these in eastern South Dakota. The disease overwinters on these grasses and spread to the ash trees as they leaf out. The trees are about to return the favor as the orange aecia (fruiting structure) will be releasing spores that will infect the grasses.

Severely infected ash may have their leaves, both the leaf blade and the petiole, become twisted and distorted. Some years even the small twigs have been affected. I expect to start receiving calls in the next few weeks about bent and curled falling leaves.

It is too late for any effective treatment for the disease as the leaves are already infected. Any fungicide should have been applied as the leaves were emerging. Generally, fungicide treatments are not advised as most years we do not see the disease. It just depends on how wet the weather is while the ash leaves are expanding.

Blister beetles are appearing



I received this picture from Tony, a forester with the South Dakota Department of Agriculture. He took this picture of blister beetles feeding on peashrub in Lawrence County. We have several species of blister beetles in the state including the ash-gray blister beetle (*Epicauta fabricii*). These beetles are about 1/2-inch long, gray, with long soft wing covers and long legs.

The adult beetle feed on legume and they are a problem in alfalfa. It is not that they eat a lot of leaves – they are more flower feeder – but that they can be incorporated into bales. Blister beetles get their name from an oily substance, canthardin, that is contained in their bodies. A crushed beetle will release this material which can makes the bale unpalatable to livestock (even deadly to horses). If you smack one on your neck, the fluid will leave large watery blisters that can become infected.

The blister beetles also like to feed on foliage of many woody legumes, especially peashrub and honeylocust. I have seen them defoliate a peashrub hedge in three days! Usually they are not noticed until the plant is almost completely defoliated and by then its too late for control.

Treatments may not always be helpful anyway as the larvae of the blister beetle is beneficial as they feed on grasshopper egg pods.

Maple bladder galls

I am receiving lots of pictures of "bumps" on silver maple leaves. These bumps are due to a small mite, the maple bladder gall mite (*Vasates quadrpedes*). The small 1/5-inch rounded galls appear on the upper side of the leaf and start out as green, turning to red and eventually black by the end of the season. The adult mite moves out from bark crevices in the spring to feed on the underside of the newly forming leaves. The galls form from this feeding activity (the mite injects a toxin into the leaf), and the mite now has shelter and protection.

The mite lays eggs within these galls and once hatched the young move to new leaves to form their own gall homes (a few are leaf potatoes and stay in their parent's gall basement). Once mid-summer comes and there are no more new leaves forming, the mite population slows and eventually the adults move back to the bark crevices to wait out the winter.

No treatments are recommended as the galls do no harm to the tree, even if every leaf is cover!

Samples received/site visits

Beadle County **Carpenterworm in ash**

We have several native borers that infest ash. These are often more an indicator that the tree is declining rather than being the primary cause of the decline as the native borers tend to attack stressed trees. These insects were generally overlooked in the past but with the heighten awareness of emerald ash borer, more folks are noticing holes in their ash trees.

We received a report that was sent into the state's emerald ash borer website www.emeraldashborerinsouthdakota.sd.gov (Report a sighting) that I followed up on. This was a large ash tree, more than three feet diameter and about 60 feet tall. The canopy did not appear to be thinning but instead dieback. There were also some old wounds that were hollow, an indicator of internal decay.

There were holes in the trunk, the reason for the call, and these were large holes – larger than a pencil diameter – and there were equally large reddish-brown pupal skins protruded from some of the holes. This is the carpenterworm (*Prionoxystus robiniae*), a moth whose larvae burrow through hardwoods. Sycamore is a

common host in the south, poplars in the Rocky Mountains, and here on the plains, ash is the preferred host.

Carpenterworms tunnel in both the heartwood and sapwood of their host. Since they are burrowing through less nutritious material (the inner bark – phloem – has the most sugars) the larvae can take several years to develop. Carpenterworms rarely kill their host and on large trees are more an indicator that the tree is in decline rather than being the reason for the decline.

Sadly, the tree needs to be removed due to the severity of the decay and that it is towering over homes. Ash has more problems than just EAB!

Brookings County **Catalpa frost injury**

I have had several reports on catalpa that have died back since last fall or leafed out this spring with tattered leaves with blacken margins. These conditions can most likely be blamed on the spring cold snap that affected much of the state. Catalpa deacclimate a little faster than some other species so are more sensitive to May frosts than other trees such as oaks. The young trees are often more affected by these temperature fluctuations than mature trees. Many catalpas only had some of the buds killed as the wood is still whitish green beneath the bark. These trees may still send out new leaves yet this year – I have seen frost-injured catalpas leaf out as late as the first week of July! So before giving up on these trees, wait a few weeks and keep them watered if the weather turns dry.

We are also seeing leaf tatter on many catalpa trees regardless of age. The numerous holes and tattered margins on the catalpa leaves can also be traced back to the spring frosts. The tender leaves are very susceptible to freeze injury. Sometimes the entire leaf is killed, even before the bud opens, but often only small pockets of cells in the tiny leaves are killed and once the foliage fully expands these pockets of dead cells become the holes and tatters. Many of the severely tattered leaves will fall prematurely but will be replaced by a second flush of foliage.

Custer County **Ash plant bug**

I looked at some ash trees that were suffering from numerous problems. One, the ash plant bug (*Tropidosteptes amoenus*), was responsible for the discolored leaves. The foliage shows stippling, tiny yellow dots, on the upper side of the

leaves. This injury is from the plant bug piercing the leaf tissue and sucking out the fluid. Usually the damage is limited to stippling, but in severe incidents the leaves will turn brown and curl.

The adult ash plant bug is about 1/4-inch long, oval-shaped and range from pale yellow to green in color. The adults have a distinctive yellow triangular spot on the back. The nymphs are smaller and are light green to black. There are a few adults and lots of nymphs feeding on the leaves right now with the major difference between the two being the adults have wings (but nymphs like all kids move very quickly).

This is the first generation of nymphs feeding now. There will be a second generation feeding again in August, but the later season damage is less noticeable. It is this first generation that causes most of the aesthetic injury. Fortunately, the ash plant bug is not a tree-killer. An otherwise healthy ash can withstand this defoliation. However, this can stress the tree and make it more vulnerable to attacks by borer, including the emerald ash borer.

It is too late for any effective treatment against the first-generation nymphs as they are already out feeding. There are many insecticides that will manage this insect including those that have Carbaryl and Permethrin as an active ingredient. These are applied about a week after bud break to control the newly hatched nymphs before they cause significant damage. Insecticides containing Dinotefuran can be applied as a soil drench. This application needs to be applied at least one month before the insect is feeding so may be done in the fall for control the following spring.

Pennington County **Spruce bud scale**

I stopped to look at a row of mature white (aka Black Hills) spruce (*Picea glauca*) in a back yard in Rapid City. One of the trees was noticeable thinner than the rest. A closer examination of this trees showed a very high population of spruce bud scale (*Physokermes piceae*). These insects feed by sucking the sap out of the branch and branchlets. They are often found clustered around the base of new shoots, sometimes as many as five or more. The foliage may feel a little sticky from all the honeydew excreted by the insects and this surface may be covered in dark sooty mold.

Spruce bud scale is often overlooked as its size (about the size of a bud) and color, reddish-brown (about the same color as a bud) means most people confuse them with buds. The adult scales also are immobile – just like a bud! We are coming up to the treatment window as the eggs will soon (GDD 700) be hatching beneath the scales and the crawlers moving out to suck sap from the new shoots. See "Treatments to do now" section of this *Update* for more information on treatments.

Stanley County **Freeze injury on Freeman maple**

The fall rapid drop in temperature as well as the late spring frost resulted in a lot of tree damage. While many tree species are present some dieback and branches that are only now leafing out, a few trees have just completely died. One of these has been the Sienna Glen maple (*Acer* x *freemanii* 'Sienna'). This Freeman maple cultivar is noted for its hardiness (the parent tree was found near Lake Elmo Minnesota) and reduced susceptibility to frost cracking. However, it seems to suffer more from seasonal temperature fluctuations than other Freeman maple cultivars such as the Autumn Blaze maple (*A.* x *freemanii* 'Jeffersred').

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