

Pest Update (May 13, 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.

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Plant development for the growing season

We saw typical spring weather in South Dakota last week – it snowed. The Black Hills experienced flurries and some snow accumulation while much of the rest of the state saw freezing night temperatures.



This episode of cold temperature stalled pest and plant development. The crabapples (as pictured, appropriately the ‘Spring Snow’ crabapple) and chokecherries are now blooming in Brookings, but a little later than average. We should catch up soon with the day temperatures expected to be in the 80s later this week.

Treatments to do now

Diplodia tip blight first fungicide application should be applied now. Tip blight is probably the most common disease of pines, especially Austrian pine. Symptoms in early summer are the new needles becoming brown and stunted. Infected twigs will become stunted. The treatment is a fungicide containing thiophanate-methyl, propiconazole or chlorothalonil (labeled for treatment of this disease) just before the bud sheaths opened. Timing is critical, once the bud sheaths have opened and the candle begins to form, it’s a little late to begin the first application and this is the one that provides most of the protection.

You probably should have applied your second application of fungicide for apple scab soon. Remember most of our fungicides labeled for homeowner use are protectants. They provide a chemical barrier between the susceptible tissue and the pathogen’s spore. Once the spore germinates and enters the leaf it is too late for fungicide treatments. This is the reason for beginning treatments as the leaves open and then continuing applications on a regular basis into the growing season. If you have not yet started treating your apple or crabapple for apple scab it is probably too late to prevent infection this summer.



Lilac/ash borer treatment with an insecticide containing permethrin as an active ingredient can begin probably a week from now. The lower 6 to 10 feet of the ash trunk should be sprayed to protect susceptible trees. The insecticide will kill the adults as they are walking on the bark to lay their eggs. The adults with their banded abdomen and smokey brown wings resemble wasps. A good way to get birds and people to leave you alone! Fortunately, the lilac/ash borer lacks a stinger so are only a threat to ash and lilacs. People are safe.

The insecticide will also kill the newly hatched larvae before they burrow into the wood. Systemic treatments are generally ineffective so injecting a pesticide or pouring one around the soil are not practical means of managing this borer.



The adults are usually out flying about a week or so after Vanhouttee spireas begin to bloom and the shrub will be flowering soon. You will also know the adults are flying when you see the pupa skins sticking out of the emergent holes on infested trees as seen in the picture to the right.

All ash trees do not need to be sprayed, just ones that are showing stress from drought or other stressors. A healthy ash tree usually is not susceptible to this borer. Lilacs that have canes less than 1 inch in diameter at the base are also not susceptible to this borer, but it is common in the older canes of mature lilacs.

Timely Topics

What will happen to the fruit tree blossoms from the cold?



This has been a common call, text, and email this past week. There were a lot of concerns as nightly temperature dipped into the upper 20s while many trees were in full bloom. Almost all fruit trees have the same threshold for flower injury, about 28°F. If the temperature dips this low about 10% of the flowers may be injured. If it dips even lower, 24°F, about 90% of the flowers will be injured.

We saw communities drop to about 27°F for a morning or two so we may have lost some flowers. These cold-damaged flowers now should have a dark brown center (as well as petals with brown, shriveled edge). The brown center means that the reproductive structures may have been damaged.

Fortunately a tree does not need every flower pollinated and bear fruit to have a full harvest. The pome fruit trees, apples and pears, can lose more than 50% of their flowers and still produce an abundant crop. Many of the stone fruit trees – apricots, cherries, peaches and plums – need a larger percentage of their flowers to survive. But hopefully enough made it.

The fruit trees that are most susceptible to flower injury are apricots and peaches. The trees will survive our climate but the flowers are frequently kills by frost. We see a good crop about 1 in 5 years due to our unpredictable spring weather.

There is more than emerald ash borer attacking ash trees.

The most common insects confused with the emerald ash borer are the banded and redheaded ash borers (*Neoclytus*). The adults for these two native wood borers look different but the larvae and their tunnels are identical.



The tunnels (more properly called galleries) made by their larvae are like those created by the emerald ash borer and are sometimes confused with it. While *Neoclytus* larvae burrow deep into the sapwood, they sometimes are content to feed in the thin strip of inner bark where emerald ash borer also makes its home. The tunnels between these two can also be similar. All three insects pack frass (powdery wood fibers and poop) behind them as they burrow through the tree as larvae. While the tunnels are more meandering, than serpentine, for the banded and redheaded ash borers, I have seen them create serpentine galleries in healthy trees.



Neoclytus borer larva.

The larvae are relatively easy to separate, the banded and redheaded ash borer larvae are about one-half to one inch long, cylindrical with rounded abdominal segments. They have a small head with dark jaws and an enlarged area (prothorax) just behind the head.

The emerald ash borer larva is usually one and one-half inches long at maturity. They are almost flat with bell-shaped abdominal segments. The head is slightly darker and there are two small pinchers on the rear. There is nothing saying that a tree cannot have all three insects in them as we have seen in trees last week in Canton.



Emerald ash borer larva.

Update on new emerald ash borer infestation in Canton

The ash trees are beginning to leaf out in Canton, and it is a little easier to identify trees infested by the emerald ash borer. At the top of the next page is a picture of an infested tree along one of the creeks that empties into the Big Sioux River. The tree presents the typical symptoms of being infested with the emerald ash borer.



There is blanding along with woodpecker drill holes along the trunks. There is also some epicormic shoots along the trunk and limbs and one of the two main leaders is not leafing out.

The city is beginning the process of removing ash trees. They are removing ash in one of the parks this week. The community has an estimated 2,000 ash trees. About 400 of these trees are along streets or in parks, the remaining 1,600 are in yards. Unless an ash tree in Canton is treated for emerald ash borer it will become infested by the borer within the next eight year and about 99% of the community's untreated ash will be dead within 10 to 12 years.

E-samples

Cytospora canker in white spruce



Cytospora is a common disease of Colorado spruce (*Picea pungens*), also known as blue spruce. However, it also occurs on Norway spruce (*P. abies*) and white spruce (*P. glauca*), also known by its geographical variety, the Black Hills spruce.

The disease is not common on Black Hills spruce but Rick, one of the South Dakota Department of Agriculture (SDDA) urban foresters, inspected one last week that clearly was presenting symptoms of the disease. The branch base shows the bluish-white resin blisters that are characteristic of the disease. If the outer bark is carefully removed around the resin, there will be small, almost pinpoint size, black specks that are the fruiting bodies on the sapwood. These are releasing spores that can infect other trees (and other branches on the same tree) through wounds.

Tent caterpillars

Tent caterpillar nests are expanding and becoming more noticeable. I am receiving numerous pictures of these nests from around the state. As mentioned in last week's *Update*, we have three different species of tent caterpillar in South Dakota: forest tent, eastern tent and western tent. They have similar life



cycles and treatments are also the same so identification is not critical to management.

Regardless of which “worm” is in the tree, now is the best time for treatment as the insects are venturing outside of their nests and beginning to feed on foliage. The caterpillars are less than 1/2-inch long so it does not take a lot of insecticide to kill them right now and there are many insecticides label for their control.

Samples received/site visits

Fall River County

Declining Colorado spruce

The initial thought was that tree was infected with a needlecast disease as the tree was presenting with discolored needles along the lower branches. However, there were no signs of either common needlecast disease in the sample that was submitted. There are many possible reasons for the lower branches of Colorado spruce having discolored needles and declining and most of these are due to abiotic causes. However, this will require a site visit to determine the true problem.

Hughes County

Declining lindens due to planting depth



I received some pictures of a declining little-leaf linden with fruiting bodies on the side of the trunk. When I stopped by the tree it had a wide dead area at the base extending in a vertical, narrowing strip to about 12 to 15 feet. The tree had a thin canopy and was shorter than the adjacent linden that was planted as the same time.



The fruiting bodies along the sunken bark covering the dead wood were from a sap rot and the fungi was taking advantage of the situation rather than being the problem.



The real problem related back to the time of planting. The larger linden showed a flare at the base (picture to the left) while the stunted linden has the trunk going straight into the ground (picture to the right). I dug around the base of the stunted



linden and was not able to detect a woody root in the top six inches of the soil. The tree was planted too deep.

Most tree species do not tolerate having their lower trunk buried. This inhibits gas exchange for the trunk and the attached roots. Stem-girdling roots which choke out the trunk are also a common occurrence with deeply planted trees.

The real challenge to the problem of planting too deep is it can take year, decades even, for a tree to decline and die from improper planting. By the time the tree dies, the blame is assigned to insects or pathogens merely taking advantage of the dead and dying tissue, such as the sap rot fungus, rather the true culprit – the planter.

Hughes County FI2000009

Spruce spider mite



The submitted branch has discolored needles that showed extensive stippling. The twigs appeared dirty with a lot of dusty debris and there was also fine webbing. These are all symptoms associated with spruce spider mites (*Oligonychus ununguis*). We were also able to find an adult scurrying around the twig. The adults are about 1/50-inch long (need a 15 x lens to see them). They are dark green with pale legs.

The damage, bronzing, is not apparently until summer. Too many people have the attitude 'see and spray'. They see the damage and they spray. Now is the time to treat, or fall, when this cool-season mite is active. Treating in the summer, when day temperatures are staying above 80°F, is not effective as the mite is in the egg stage and not easily killed by treatments.

We are at 278 growing degree days (GDD) in Sioux Falls and are in the window for spruce spider mites activity (200-370 GDD). Spruce spider mites feed by inserting their piercing-sucking mouth parts into the needles and removing the cell contents. Now is the time to treat to avoid damage this summer.

This is one pest that is best managed by a commercial applicator. They have the miticides that are best targeted to this mite and cause little harm to predatory mites and insects that provide most of the control. There are two active ingredients (a.i.) used by commercial applicators with bifenazate the most common. This a.i. is a contact miticide effective against eggs to adults and provides about a month of residual action.

Miticides containing abamectin (which is also an insecticide) are also used by commercial applicators. This a.i. is derived from a naturally occurring soil microorganism. This is also a contact miticide. It is not effective against eggs, but will kill the immatures and adults. Avid is a miticide that contains abamectin and it

has translaminar properties meaning it penetrates the needle creating a reservoir of active ingredient.

Acephate is also an a.i. found in insecticide used against mites, most often as a soil injection. Other insecticides such as Malathion may have mites on the label but have very limited effectiveness against mites. Other insecticides, carbaryl and imidacloprid, can actually increase mite populations so should not be used.

Lincoln County

European elm flea weevil



Holes in an elm leaf used to mean one thing, the tree was infested with elm leaf beetle (*Xanthogaleruca luteola*). Now it is hard to find elm leaf beetles as they have been almost completely displaced by the new kid on the block, the European elm flea weevil (*Orchestes alni*). This insect was first confirmed in the U.S. in 1982 but was not found on the Great Plains until 2007. Now we can find it across the state.

The adult insect is a tiny weevil, about 1/10-inch long. It is reddish brown with black spots and a long snout. The large back legs allow it to jump (like a flea) so they can be hard to catch. The adults live through the winter and are moving out to the leaves to lay eggs along the margins. Once the eggs hatch the larvae burrow into the leaf to form mines. The adult weevils feed on the lower surface of the leaves with the thin, opaque upper layer falling out to leave a hole.



This insect is not a tree-killer, but it can make almost every leaf on a tree look like Swiss-cheese. They are a little choosy of which species of elm they munch on with Siberian elm (aka Chinese elm) (*Ulmus pumila*) their favorite. They will also feed on any of the hybrid elms that have Siberian elms in their parentage, so we see damage on 'Cathedral' and 'Regal' elms.

Minnehaha County

Needlecast disease on Black Hills spruce

A common needlecast disease of spruce is *Rhizosphaera* needle cast (*Rhizosphaera*). This pathogen, along with *Stigmina* needle cast (*Stigmina*), cause the infected needles to turn purple by the second year and later brown. These needles are usually shed by the third year (healthy spruce can maintain needles to their 5th year), so the tree's lower canopy becomes thin and open.

The two needle cast diseases are very common on Colorado spruce. It is sometimes hard to find a Colorado spruce that is not infected and these along with cytospora canker often leave mature spruce bare for the lower 10 to 20 feet.

The disease is common with Colorado spruce but is rare on our Black Hills spruce and other spruce species. Rare but not unknown. Rick, the SDDA urban forester,



also found this Black Hills spruce that was infected with the disease. We were able to find the fruiting bodies of *Rhizosphaera* coming from the stomata lining the needle. I have only seen *Rhizosphaera* only a few times in the past decade on Black Hills spruce and have yet to see *Stigmina* on this species.

We usually recommend Black Hills spruce for planting over Colorado spruce and still do. However, this is a good reminder that few tree species are 'pest-free' and almost all are susceptible to one or more potential problems.

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