

Pest Update (May 6, 2020)

Vol. 18, no. 13

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

Email: john.ball@sdsu.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.

Plant Development.....	1
Treatments to do now.....	2
Timely topic	
Confirmation of emerald ash borer in Canton SD.....	2
Digital workshop on emerald ash borer this Thursday 7pm (CDT)....	3
E-samples	
Cup fungi on logs.....	5
Lecanium scales on ash.....	5
Samples received/site visit	
Beadle County (pine wilt disease).....	6
Dewey County (dothistroma needle blight on ponderosa pine).....	7
Hughes County (bronze birch borer).....	8
Kingsburg County (cytospora canker on Colorado spruce).....	8

Plant development for the growing season

The temperatures are continuing to warm with the days pushing into the 80s. South Dakota weather trends are never a straight line and after a few weeks of warming it looks like we might see a few weeks of cooler weather with some below-freezing nights. Any South Dakotan would not be surprised if it snows in May.



The spring progress of blooms is continuing though we are still behind the average bloom times for many trees and shrubs. The dwarf forsythia (*Forsythia viridissima* 'Bronxensis') are still in bloom in Brookings. The Prairie Gem pear (*Pyrus ussuriensis* 'MorDak') is just beginning to bloom along with some of the early crabapple cultivars.

Treatments to do now



Diplodia tip blight first application of a fungicide 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. Twigs may be infected and become stunted and deformed. The treatment is a fungicide containing thiophanate-methyl, propiconazole or chlorothalonil (labeled for treatment of this disease) just before the buds sheaths have opened (see picture) and that is happening now. 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.



Spruce needleminer treatment – the larvae are moving from their webbed nest and resuming their feeding. This is a picture of a larval I pulled out of a nest of webbed needles. A spray of high-pressure water right now may knock them off the tree though be sure to rake up the fallen needles and larvae after the water spray. The other approach is pesticide treatments, most commonly insecticides labelled for the needleminer and containing carbaryl as the active ingredients, to kill the larvae as they begin moving out onto the foliage. Remember to spray inside the canopy, not just the exterior. Actually "power washing" the lower canopy of the spruce is a good way of cleaning off all the dead and dying needles as well as some insects. However, be aware the tree will appear a little more open afterwards!

Timely Topics

Confirmation of emerald ash borer in Canton, South Dakota

I receive an email from an arborist about an ash tree he suspected was infested with emerald ash borer (*Agrilus planipennis*). The tree was dead. When I removed the bark I found numerous meandering galleries that are characteristic of those made by the redheaded/banded ash borers (*Neoclytus*). However, a few of the galleries and some of the exit holes resembled those of the emerald ash borer.

There was a small property near this tree filled with volunteer ash. The trees were about 12 feet tall and 3 to 4-inches in diameter. The volunteer ash trees had woodpecker pecks along the trunks with some blanding where woodpeckers had shredded the outer layer of bark.

I felled and debarked many of the volunteer ash trees. The trees were all heavily infested with the eastern ash bark beetles (*Hylesinus aculeatus*). The adults were dark brown with distinct light and dark patterns. They emerge early in the season and the adults were burrowing into the stems to form egg galleries.



I also found ash-lilac borer (*Podosesia syringae*) galleries and larvae (to left) in the lower trunks of these trees. The galleries are unique as they are not packed with frass, but are swept clean by the larvae. The galleries also penetrate deep into the sapwood. The larvae have thoracic legs and prolegs which separates them from other ash borers.

Neoclytus galleries and larvae were also present in these trees. While the adult stage of the redheaded ash borer (*N. acuminatus*) and the banded ash borer (*N. caprea*) look very different, the larvae are almost identical. The larvae are white with a dark, round head capsule and rounded body segments. They both make meandering, frass-filled galleries in the inner bark but will also penetrate into the sapwood.

There were also serpentine galleries in necrotic patches along the stems. These are common gallery patterns and damage associated with *Agrilus* larvae, including the emerald ash borer. I was able to collect larvae from some of the inner bark. Emerald ash borer larvae are dorso-ventrally flattened with bell-shaped segments and a pair of pincer-like appendages at the end of the last segment.



The head capsule width is used to determine larval stage. The larvae were 2nd, 3rd, and 4th (pre-pupae). Cross-sectioning the necrotic patches showed that most of these trees had become infested within the past two years.





I was also able to collect emerald ash borer pupae (to left) from their chambers in the sapwood. Emerald ash borer pupae are also distinct and not easily confused with other ash borers. The presence of 2nd instar larvae to pupae is an indication of both a one- and two-year life cycle in this emerald ash borer population. This is common in relatively new infestations.

I also found other trees in the community that are presenting symptoms of an emerald ash borer infestation – extensive epicormic sprouting, blonding and woodpecker drills. The town is only about two miles across so the borer will spread throughout the community relatively quickly and there are probably other infested trees that are not presenting symptoms yet. There are no means to contain the infestation or slow the spread as is being done in Sioux Falls. The best management is to begin the process of deciding which trees are worth treating and which ones to remove over the next few years.

This infestation is about 20 miles from the other confirmed infestation in Sioux Falls. The discovery of this second infestation is not surprising and I expect we will find more infestations this year and next in the communities and counties surrounding Sioux Falls.

Online workshop on emerald ash borer to be held Thursday evening at 7 pm (CDT)

The appearance of emerald ash borer in another South Dakota community will bring attention to this insect to the forefront again. Sioux Falls was not an isolated find but really the beginning of a procession of new infestations that will be discovered and confirmed over the next decade and beyond.

Many people in the Canton and Sioux Falls area, along with residents of the three county area – Lincoln, Minnehaha and Turner – as well as people across the state will have questions on the status of emerald ash borer, how to identify infested trees, and treatment options and timing.

The South Dakota Department of Agriculture (SDDA), South Dakota State University Extension, and the City of Canton are hosting an online EAB workshop on Thursday, May 7 beginning at 7 pm (CDT). This workshop will provide important information for residents in the quarantine area on EAB and current efforts to limit the spread. I along with officials from the SDDA and the City of Canton, will present information and answer questions. More information about the workshop and how to log in to watch can be found by going to the SDDA's emerald ash borer website at <https://emeraldashborerinsouthdakota.sd.gov/>

E-samples

Cup fungi



I receive a picture asking if this was a scale insect. No (that is the another e-sample), it's a cup fungus. This may be the scarlet cup fungi but that is based solely on the picture. The scarlet cup fungi is one of the first to appear in the spring and provides dapples of color among the gray, fallen leaves. They often appear as a row or cluster on fallen logs or even pieces of bark.

The fungus cap is cup-shaped, about 1/2- to 2-inches across. The color to the cups starts out as bright red but fades to reddish-brown as they age. The fungus is a decomposers of dead woody tissue so they play an important role in recycling fallen trees to organic matter. Some references mention certain cup fungi are edible but the standard caution – never eat any fungi that has not been identified by an experienced mushroom hunter who is standing there with you!

Lecanium scale



I received a picture of a branch covered with large “bumps” as they were described. These are scale insects and appear to be lecanium scales. Calling these lecanium scale is a easy choice as lecanium is more a complex than a single insect. Microscopic examination of the insect is necessary to separate the various species. Since they have similar life cycles and cause the same injury, it's really a moot point as to which.

Lecanium scales overwinter as immobile immature females along twigs and shoots. They appears as a hardened brown shell that are tightly attached to the bark. The female mature in early spring as the temperatures warm. Eggs are laid under the scale and they hatch out about the time lindens are in bloom. The mobile young are called crawlers and they move about onto the leaves and feed for the summer by sucking sap from the tissue. In the fall they move back to the twig and continue feeding.

Lecanium scales are a soft scale meaning they produce honeydew as they suck the sap from the tree. This is a sticky substances that rains down on surfaces beneath the tree during the summer. I receive calls about trees ‘weeping’ during the summer and the cause is usually soft scales or aphids.

The natural enemies generally keep the scale population in check. If the tree is small (less than 10-feet) the best treatment is insecticidal soap applied in mid to late June when lindens are in bloom. This will kill the young crawlers but not injure the scale's natural enemies. The treatment for mature trees is an insecticide labelled for treating this insect and containing imidacloprid as the active ingredient. This is applied as a soil drench around the base of the tree (pull sod or mulch always first). This is applied after the leaves are beginning to open and will be translocated to the foliage by the time the crawlers start to feed.

Insecticides containing imidacloprid should not be used on trees that have insect-pollinated flowers as this active ingredient is deadly to bees. It should also not be applied around a tree if flowering annuals are to be planted in this same location after the applications (for that growing season). These flowers are also attractive to bees.

Tent caterpillars



Tent caterpillars are starting to form their nests. This is a picture of a new web nest on a crabapple in Moody County. We have three different species of tent caterpillar in South Dakota. The forest tent caterpillar is found in Marshall and Roberts County. The western tent caterpillar is found West River and the eastern tent caterpillar East River. Based on the location, this is most likely the eastern tent caterpillar but the management is the same for all. Right now the small caterpillars are living within their protective webbing. If you tear open the nest, their numerous natural enemies can make a quick meal of them. Tear the nest, do not burn it. Every year I see an example of "fireblight" where some tree owner decides to take

a blow torch to destroy the nest and the tree become collateral damage.

Samples received/site visits

Beadle County

Pine wilt disease

This seems to be a bad year for pine wilt disease. This is a lethal disease of exotic pines, primarily Austrian pine (*Pinus nigra*) and Scotch pine (*P. sylvestris*). The disease is caused by a nematode, the pinewood nematode (*Bursaphelenchus xylophilus*), that colonizes the vascular system of its host (along with a bluestain fungus that it also feeds on). The combination of these two agents results in the rapid drying and death of the tree. The tree usually dies within the same season it is infected.

The nematode and fungi are carried from a dead host to a new, healthy tree, by sawyer beetles. A sawyer beetle, also known as a long-horned beetle, leaves a dead, infested tree with thousands of nematodes. These are released into the new host when the beetle feeds on the shoots of nearby healthy pines.

Once infected, the nematode and bluestain fungi populations expand. The nematode moves to the resin ducts and feed here which stops the formation of resin. They move to the tacheids, the tubes that carry water, restricting water flow in the tree. Bluestain fungi also aid in collapsing the vascular transport in the tree so infected trees die quickly.



The infected pines goes from its normal dark green (Austrian pine) or bluish-green (Scotch pine) foliage to gray-green to tan or brown by the end of the season. The wood is also stained with blue streaks and is very light.

Some trees are latent carriers so it is common for a windbreak to have the trees die one-by-one over a decade or more. The best management practice is to remove and destroy infected trees

before the long-horned beetles emerge. This is usually sometime in April so a little late for these trees but still worth doing.

Dewey County

What might be wrong with these pines?



The problem on these ponderosa pine needles is dothistroma needle blight. I am seeing more of this problem this spring than the past several years. Fortunately the window for control is mid-May so there is still time to treat. The symptom most likely began appearing last summer or fall though by now the discolored foliage is very noticeable. The symptoms start with yellow and tan spots that become bands around the needle bordered with a yellow halo. Usually by spring

the halo has darkened, along with the band, and most of the needle has dies though the very base is often still green. The disease is difficult to identify as the symptoms are similar to a number of other stressor but during moist, spring weather small black fruiting structures will erupt from the tissue and these can be used for identification.

Dothistroma is a needle disease, unlike the other common disease diplodia tip blight that infects and shunts the shoot tips. Treatment for dothistroma is a copper or mancozeb fungicides applied as the new growth expands (mid-May) and

repeated in late June. Ponderosa and Austrian pines should also receive a third application in mid-July.

Hughes County

Dying birch



This is a declining Whitespire birch (*Betula populifolia* 'Whitespire'). The tree is infested by the bronze birch borer (*Agrilus anxius*). You can see the D-shaped exit hole on the trunk. They look like those of emerald ash borer since they are close cousins differing only in their specific hosts, birch versus ash, and origin, North American versus East Asia. They both attack stressed or non-native hosts that lack defenses. Bronze birch borers begin emerging at about 400-450 degree-days (base 50°F), beginning when Ohio buckeye is in bloom (420 degree-days). The flowers are just beginning to form on the trees in Brookings so I expect we will see emergence sometime in mid-May.

The best time to treat is after the leaves have opened and the tree is finished blooming (it forms the wind-pollinated catkins). The same insecticides and delivery systems used for emerald ash borer are used for bronze birch borer, emamectin benzoate and by trunk injection.

Whitespire birch is a cultivar of a native birch, gray birch, and the tree is noted for its tolerance to bronze birch borer. But birch is adapted to cool summers, not the hot summers that occur in our state. The best treatment is to try to reduce the stress on the tree by mulching. Birch prefer cool roots and mulching can provide a better environment.

Emerald ash borer adults emerge between 450-500 degree-days (base 50°F), a little behind its cousin, the bronze birch borer, beginning when black locust bloom (460 degree-days). I expect emergence to begin around the end of May, just after Memorial Day.

Kingsbury County

Dying lower branches in a spruce row



This is cytospora canker, a disease almost mentioned weekly in the *Update* this year. It is a very common disease of spruce (especially when they begin touching one another in a row) and results in the tree slowly losing all the branches from the ground to perhaps five or six feet. A good check to see if the disease is present is to look at a lower branches that is dying and see if you can

find bluish-white resin blisters on the branch, this is usually an indication of the disease. The only practical solution for the belt is to prune out the dead and dying branches. The best solution would have been to place them on a wider spacing but when they are small no one ever expects them to fill in on 12-foot spacing!

The South Dakota Department of Agriculture and South Dakota State University are recipients of Federal funds. In accordance with Federal law and U.S. Department of Agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, or disability (Not all prohibited bases apply to all programs.) To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

This publication made possible through a grant from the USDA Forest Service.