Pest Update (September 9, 2020)

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

Email: john.ball@sdstate.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/

Plant development for the growing season

We had snow in the Black Hills and cold weather throughout the rest of the state. The temperatures dipped below freezing in some western counties. While these cold temperatures may have ended some uncovered impatiens, it will have little impact on our woody plants. It was not cold enough, or long enough, to harm most woody plants. Usually by September as the days are shortening, most of our woody plants have acclimated to survive temperatures at or slightly below freezing for a short period.

Timely Topics

Emerald ash borer update

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. The mature larvae are also more than 1 inch long now. These larvae are either mature or are maturing and will form a pupae in the spring, becoming adults in early June. This is the one year life cycle (adults-eggs-larvae-pupae-adults in one year) that is common with large, established populations of the insect.

This is a shift from 2018 when the majority of larvae required two year to mature, meaning the larvae required from June of one year to April almost two years later to mature. This two-year life cycle is common with new infestations that are colonizing healthy trees. Northern Sioux Falls and Canton now have established populations that are increasing at an increasing rate.

The zig-zagging tunneling pattern of the larvae is a characteristic of *Agrilus* larvae. A similar pattern can be found in bur oaks colonized by the native two-lined chestnut borer and in paper birch colonized by the native bronze birch borer. The zig-zagging or serpentine pattern is either up or down the trunk or branch and the galleries are more serpentine in a vigorous host tree and become almost straight in a tree that is near death.

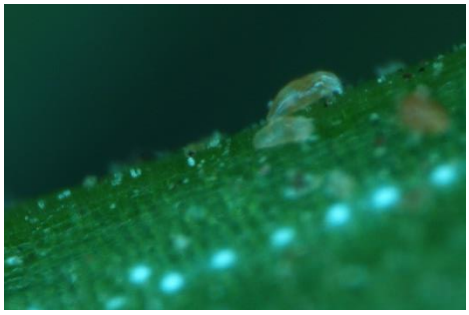
The thought is that phloem pressure, sap flow, is the means by which the tree resists the attack. The larvae begin their zig-zagging by making cutting across the grain, then turning abruptly and reversing direction. When it begins to tunnel beyond the previous turn, it abruptly changes direction again and the larvae makes increasingly longer galleries with each leg. The advantage of these cross-grain tunnels is the insect can keep the spiracles (breathing holes along the abdomen –

larvae don't have a nose) open on the inside of each leg, reversing the side with each turn.

As the tree is colonized by more larvae each year, the severing of the phloem and the outer sapwood reduces the flow of sugars and water so the sap flow is also reduced. After a few years of continual attacks, the tree has so little sap flow, the insect does not need to zig-zag to resist sap pressure and can run tunnels straight along the grain, rather than against it.

Spruce spider mites are becoming active

The spruce spider mite is a cool season mite so it is active in the spring and fall. The damage is most noticeable during the summer heat and that is when the calls start coming in to our offices. However, the time to treat is coming very soon, not during the past summer.



Spruce spider mites have needle-like piecing mouthparts and injure the tree by sucking the fluids from cells in the needles. This damage appears as stippling and flecking of the needles and when infestations are heavy the entire needle will turn a yellow or bronze. The mites also produce a very fine webbing.

The best clues that mites might be the problem is to look at last year's shoots and needles and inspect for stippling, fine webbing, and a small dark gray "dust" spots that are the cast skins to the mites. Occasionally I can even find a dead mite stuck onto a resin drop. Spider mites rarely kill trees but their feeding can result in the loss of the older needles and interior browning.

Spruce spider mites overwinter as eggs and in the spring enter a larva then nymph stage before becoming an adult. This cycle does not take very long and can be completed in less than a week. This is the reason for the common spray recommendation for two treatments 10 days apart. Many pesticides do not kill the eggs. A single application of the pesticide may reduce the adult population but once the eggs hatch the population quickly rebounds.

The populations develop the quickest during the cooler spring and fall weather. During much of the summer the mite is dormant and easy prey to other mites and insects. Treatment options are very limited for homeowners, horticultural oils and insecticidal soaps being the two most common, since these are the least likely to harm the many beneficial insects and mites that provide most of the control. These

products, however, can turn a blue spruce green so use with caution unless the color change is not an issue.

There are also some foliage applied insecticides available to the public that provide some management of these mites, Malathion and acephate being two common active ingredients. These are really suppression treatments, not eradication, and Malathion is only mildly effective. They should be applied in about a week and then another treatment about a week later.

Commercial applicators have more effective chemicals available, such as Forbid (Spiromesifen) and Lucid (Abamectin) that are applied to the foliage when the mites are active in the spring and fall. Commercial applicators can also apply Lepitect (Acephate) as a soil treatment in the spring. I recommend tree owners contacting a professional if tall trees (15 feet or more) need to be treated.

The cranberry native to South Dakota

We have a cranberry in South Dakota but it is not related to the cranberry, just shares a similar name. However, it does produce an edible fruit. This is the cranberrybush viburnum (*Viburnum opulus*), a tall shrub native to South Dakota as well as northern North America and Europe. It is native to Roberts and Marshall Counties in eastern South Dakota and it is also found in the Black Hills.

The plant is widely used as an ornamental and windbreak shrub so it is not difficult to find. At this time of year it is very easy to spot as it becomes covered with bright red, globose drupe fruit about 1/3-inch diameter. The fruit appears in clusters throughout the plant. Since it is a drupe fruit, similar to cherries, you'll find a single seed in the center of a juicy fruit.

While the fruit makes good jams and preserves, it must be picked at the right time - after the first one or two hard frost. If you pick it before then the fruit is very sour (and smells). You'll notice the birds usually do not touch the fruit until after a few frosts, either should you.

A note of caution, do not pick any fruit unless you know what exactly what it is, even this one! Cranberrybush viburnum can be identified by not only its red fruit clusters but the large, 2 to 5-inch long, three lobed leaves that are arranged across from one another on the twig.

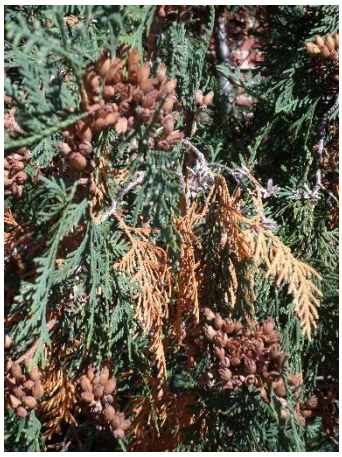
E-samples

Buckeyes, not chestnuts, are falling from trees

This is one picture of fruit sent in this week. First, these are not chestnuts. The American chestnut (*Castanea dentata*) is not adapted to our state's growing conditions. The furthest west I have found one growing is in the Hodgson Arboretum at the University of Minnesota Experiment Station in Waseca, Minnesota (a nice little arboretum, well worth the drive over if you are in the area). I found another one in Brookings County this summer but it only manages to grow a foot or two year summer before dying to the ground in the winter.

What people bring or send in as chestnuts are usually nuts from the buckeye tree (*Aesculus glabra*). This is a common tree in our region since the squirrels plant them for free in almost every garden. The nut contains the poisonous glycosides aesculin and fraxin. Ingesting the raw seed will result in muscle twitching, vomiting and abdominal pain, diarrhea, and death – that should convince you not to eat them!

The raw nuts, tender shoots and leaves, particularly wilted leaves, are also toxic to horses and cattle (rabbits too but they seem to be smart enough not to eat them). Squirrels seem to do just fine eating the raw nut and it apparently contains a sweetener that (at least to a squirrel) is sweeter than sugar. The nut can be made safe for human consumption by roasting and leaching. They were used as a starchy food by Native American, but I do not recommend even trying to do this. Go buy a Snickers bar instead.



Fall color is occurring on arborvitae

Pines and spruce have their older needles turn yellow (or sometimes brown) before falling. Usually this normal fall needle drop is easy to tell as it is the interior needles that are coloring and dropping, not the needles near the tips.

Arborvitae, another common evergreen shrub also has a seasonal color change on the older needles before they are shed. However, the yellowing occurs more randomly, with almost ribbons of yellowing foliage

appearing throughout the entire shrub though still more concentrated in the interior foliage.

Willow scab is appearing across the state

Willow scab (*Venturia saliciperda*) is a very common foliage disease that appears in late summer on willow trees across the state. The disease is closely related to apple and pear scab and the typical symptoms are discolored and falling leaves as well as tip dieback. This disease has similar symptoms to black canker (*Glomerella miyabeana*), a willow twig disease that can also cause the leaves to wilt and the shoot tips to die back.

The two diseases are difficult to separate but the willow scab infected leaves will usually have “tufts” of spores on the underside of the leaf, generally along the midvein. These two diseases are often found in association with one another and when they occur together the disease is just simply called willow blight. These two diseases are common problems when the spring weather is moist, a condition typical of eastern South Dakota this year.

Samples received/Site visit

Hutchinson County **What is this vine? Can I eat the berries?**

Apparently there are a lot of people looking for food. The leaf and fruit was from Virginia-creeper (*Parthenocissus quinquefolia*), a woody vine common to the state. The 1/4-inch diameter bluish black berries appear in September and are quickly taken by the birds. The information on whether it is edible is conflicting. Most mention it may be poisonous (kidney failure) but a few guides mention it *might* be edible. Probably best to leave it on the vine and instead buy another snickers bar.

Meade County **Tip dieback on spruce**

This mature Black Hills spruce has a thinning canopy and many of the terminal shoots have died back. The needles for the past several years are also shorter than that typically found on this spruce.

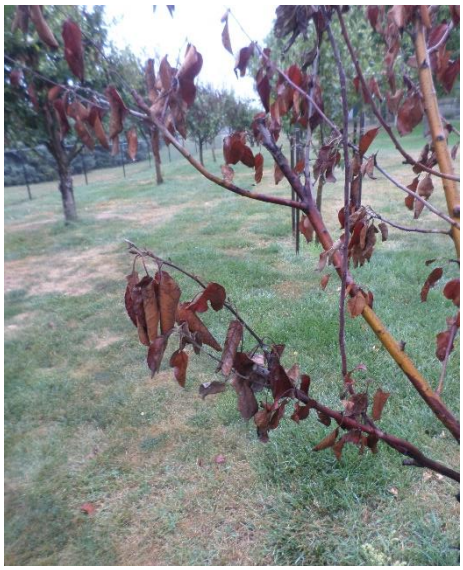
The question was whether this is freeze damage from the May cold snap that occurred in the Black Hills. That dip to sub-freezing temperatures resulted in damage – dieback and deformed leaves – in many of our ornamental trees and shrubs in the region. These plants, adapted to a milder climate in eastern North America, western Europe and east Asia were "fooled" by the earlier warmth in April and coming out of dormancy expecting spring weather, not winter.

Our native trees are not as easily fooled and remain dormant later into the spring. Unusual cold weather in May, is unusual to us, but trees and shrubs that have existed in the Black Hills for millenniums know not to wake up too early.

We were not able to find any pathogen, mite, or insect on the sample to connect to the symptoms. Most likely the problem is age, older trees are more sensitive to stresses, and possible some change with the site. Loss of root volume due to construction or changes in drainage are often the precursor to this gradual thinning of spruce.

Minnehaha County

Fireblight in apple orchard



There has been a lot of bacterial blight on lilacs this year and we are also seeing another bacterial disease, fireblight (*Erwinia amylovora*). This disease is common with some apple and crabapple varieties and many pears. This orchard had many apple cultivars, such as Fireside, that are very susceptible to the disease.

The name fireblight comes from the appearance of the infected shoots; they look as if they were scorched by fire. The attached leaves and the shoots turn brown-to-black with the discolored leaves hanging downward throughout much of the growing season. Fruit is also affected and the apples or crabapples

turn dark and shrivel into mummies. These zombie fruits will also cling on for much of the season.

The bacteria enters the tissue through the flowers (bees can carry it) and in wounds on the young shoots (hail injury provides openings). Once inside the plant, the bacteria moves from the flower or shoot into the attached branch through the vascular system and can eventually spread to the entire trees.

Management of the disease includes pruning out the infection. Infected shoots should be pruned out during the dormant season, late March is usually a good time. While the disease is dormant as well as the trees, the pruners or hand saw should be disinfected with Lysol disinfectant between cuts to avoid further spreading the disease. A 10% bleach solution will also work but this solution is corrosive to the metal blades.

The canopy should be kept open. Not only does thinning out the branches result in larger, more flavorful, colored fruit, it also provides an environment less suitable to the bacteria. The disease thrives in warm, humid conditions.

A copper fungicide can be applied just before bud-break in the spring. Copper has some properties that kill bacteria as well as fungi. This reduces new infections. It does not “cure” an infected tree.

Minnehaha County **Pine wilt disease**

Scotch pines throughout this county and the surrounding area are dying at an increasing rate from this disease. The disease is cause by a nematode (with perhaps some help from associated bacteria, fungi and even a mite). The disease is lethal to Austrian and Scotch pines, once infected the host tree always dies and usually in the same season the infection starts.

The typical symptom pattern is the tree’s needles are their normal dark green (Austrian pine) or bluish-green (Scotch pine) in the spring and early summer. But by mid-summer, the foliage starts to turn yellow or brown, usually on just a few scattered branches. Within a few more weeks the entire tree is yellow to brown with the needles hanging from the branches.

The best treatment for infected trees is to remove and destroy the wood by April 1. After this period, the sawyer beetles that carry the nematode from dead to living trees, emerges and flies to nearby pines.

An interesting note: the disease is generally found south of Hwy 212 in South Dakota. It has not been detected in North Dakota yet as pine wilt needs warm summers to develop. We have tested Scotch pine trees in Aberdeen, Mobridge and Mound City that are presenting similar symptoms but have not found the nematode in any of these. Whether the nematode populations in these trees is too low to detect or some other agent is responsible for the rapid decline of these trees is not yet known.

Pennington County **Walnut, herbicide or disease?**

We were not able to find any signs or symptoms that are associated with common pathogens or insects. There was some walnut anthracnose, not unusual at this time of year. Nor is the injury what we would expect from freeze last May. That usually presences as dieback and leaf tatter.

The cupping of the leaflets and twisting of the petiolules (leaf stalk to the leaflets) are two symptoms that present with exposure to growth regulator herbicides. The most common one is 2,4-D and, in town, is often the work of homeowners spraying for lawn weeds on hot days (we had plenty of those in the past month). But August is not a good time to spray for most lawn weeds. The applications usually just damages the trees in the yards of the applicator and neighbors.

Turner County **Powdery mildew**

Nothing like a hot, humid summer to bring out the powdery mildew on lilacs. The powdery white spots first started to appear on the lower leaves of shaded plants in July and by now most lilac leaves are covered in this white or gray fungal growth.

The disease is more of a nuisance than a shrub-killer (though it kills the appearance). Since the fungus lives on the leaf surface, it is very easy to kill with fungicides but at this point in the season most lilac owners just let it go. The leaves will be falling soon. The disease needs to be treated when the symptoms were first noted, back in that hot, humid July day.

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

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