

Pest Update (August 19, 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.

Plant Development.....	2
Timely topic	
Emerald ash borer updates.....	2
Development in trees	
Bacterial blight is also in Amur maple.....	3
Douglas-fir: another possibility for windbreaks.....	3
Meyer spruce.....	4
E-samples	
Basswood leafminer is back.....	5
Horntails in maples.....	5
Walnut anthracnose.....	6
Samples received/site visit	
Brookings County (pear sawfly).....	6
Brown County (reverting Alberta dwarf spruce).....	7
Clark County (fabric issues).....	7
Marshall County (pine beetles).....	8
Perkins County (dothistroma needle blight).....	8

Plant development for the growing season

Dry is still the word, and lets also add HOT. Much of the state (other than the southcentral and east central parts of the state) has not seen precipitation for a while and drought intensity is either abnormally dry or moderate drought.



Some trees are beginning to shed their dry, wilted leaves and many trees have scorched foliage. These leaf margins will have a brown or burned appearance. The discoloration usually dips farther into the leaves between the veins. These trees need a drink and a *long* drink. A mature tree needs several hundred gallons of water a week – put a soaker hose beneath it and let it run slowly for a few hours at night. Seedlings need about two or three gallons a week, and this is best applied in several smaller doses than all at once.

Watering is recommended for trees and if possible, windbreak seedlings, particularly conifer seedlings. A common recommendation for reducing winter burn is to water just before freeze up. That is too late. The best time to water to avoid winter burn is August and September so the tree goes into fall healthy. I expect to see a lot of winter burn or winter kill on young conifers this winter if this dryness persists.

Timely Topics

Emerald ash borer update

Life stages detected in sampling



Emerald ash borer sampling continues in Sioux Falls and Canton. The majority of larvae are mostly 3rd and even a few 4th instar are appearing. 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.

However, I can still find 2nd instar larvae. You can cut into the inner bark of an infested tree and find at least three different stages of larvae. Those that are 2nd instar may not complete their development in time to pupae next spring and continue in their larva stage all next summer. These emerge the following year and



require two years, rather than one year, to complete their life cycle from egg to adults.

The third and fourth instar are larger insects and their galleries (tunnels) are longer and larger. These are the ones that etch the sapwood. The third are the ones that significantly disrupt the transport of photosynthates (sugars manufactured by the leaves) to the roots. The fourth instar have completed feeding and are curling back on themselves in a shallow chamber. These are preparing for their long winter nap.

While treatments for emerald ash borer can be performed at this time of year (if there is adequate soil moisture), or this fall, remember these are effective at killing next year's adults and larvae, not this year as the damage and feeding is almost done.

Bacterial blight is also in Amur maple

As reported in the past two issues of the *Update*, we are seeing an increase in bacterial blight of lilac (*Pseudomonas syringae*). The disease begins with the foliage developing light yellow lesions. These lesions expand, present a water-soaked appearance, and the leaf turns black. The rapid wilting and blacking of the leaves and succulent shoot tips can appear so rapidly that some people confuse it with herbicide drift. I have received numerous calls from people assuming the lilac row in their windbreak was exposed to drift.



But lilacs are not alone in being infected by this pathogen. There is another common windbreak tall shrub/small tree that is also affected, Amur maple (*Acer tataricum* subsp *ginnala*). Marty Draper, a plant pathologist at SDSU (now an Associate Dean at Kansas State University), and I first reported this in the early 2000s in the *Update* (and discussed on *Garden Line* for those that remember that weekly public TV show). This was not a new discovery, bacterial blight had also been reported in many genera and species in a *Plant Disease* article in 1986 but in South Dakota it is most common in lilacs, pear (*Pyrus*) and, oddly, Amur maple.

The treatment is the same for Amur maple as with lilacs. Prune out affected shoots during dry weather and apply a copper fungicide just before bud break.

Douglas-fir: another possibility for windbreaks

We have limited conifer diversity in the windbreaks that lace across our state. If we eliminated Colorado spruce (*Picea pungens*), white spruce (*P. glauca*), ponderosa pine (*Pinus ponderosa*), eastern redcedar (*Juniperus virginiana*) and Rocky Mountain juniper (*J. scopulorum*), our belts would be bare of conifers.



I was driving into Britton last week and noticed this large spruce in the cemetery, except it was not a spruce. When I got closer, I saw it was a 40-foot tall Douglas-fir (*Pseudotsuga menziesii*). Oddly enough old cemeteries is where I tend to find Douglas-firs, not in windbreaks. A South Dakota Extension publication from 1943, *Planting Windbreaks to Survive Drough[t] in South Dakota* (SDSC Extension Circular 397) mentioned the five conifers we typically use as windbreaks with the addition of a sixth, Douglas-fir The tree is not as drought tolerant as the junipers or as exposure as spruce but it is a tough tree. And a forgotten one.

The Rocky Mountain Douglas-fir (*P. menziesii* var. *glauca*) is best adapted to the Northern Plains. It is hardy to Zone 3, adapted to soil pH up to 7.5 and windbreak suitability groups 1 and 3. It performs best in moist well-drained soils and tolerates dry soils but not wet, poorly-drained sites. It is not for all sites but certainly deserves more use.

And another possibility: Meyer spruce



While I was in Britton, I looked at a few small Meyer spruce (*Picea meyeri*) and heard a complaint that they grow too slow. I will not argue that they are slow until they become established. In Minnesota they also found it slow to start but eventually grow up to one-foot per year, just slightly behind Colorado spruce. The trees on the SDSU campus, about 6 feet tall, are growing about 7-9 inches per year and the nearby Colorado spruce of similar height are putting on 8-11 inches per year.

Meyer spruce is native to the mountains of northcentral China and is also found in a relic stand north of Beijing on the steppe. Frank Meyer, who first provided its botanical description and scientific name found these trees northeast of Beijing in the 1910s.

Its hardy to Zone 3, tolerant of many soils and very pest resistant. The bluish-green needles are blunter than Colorado spruce and the branches are more flexible. It's not a perfect tree, slow to establish and browsed by deer, but Meyer spruce is another possible choice for windbreaks.

E-samples

Basswood leafminer



This insect is continuing to cause defoliation of bur oak stands in central South Dakota. The leaves showed brown blotches which are the result of an insect tunneling between the upper and lower tissue of the leaves. The leaves are also skeletonized, with the upper leaf surface tissue chewed but the mesh of veins remains.

The foliage injury is due to the basswood leaf miner (*Baliosus nervosus*). While basswood (*Tilia americana*) is the favorite host, this same insect frequently attacks white oaks including bur oak. We do not have native basswood trees west of Hwy 81 but there are extensive oak stands lining the many creeks and rivers in western South Dakota and these are suitable hosts.

Fortunately, the population of this insect tends to drop after two or three years of defoliation and the problem disappears for a decade or so. There was an outbreak of this same insect in these draws about 15 years ago and the defoliation was severe on the oaks for about three years and then the insect population crashed. The insect has caused significant injury for about four years now so hopefully it will decline by next year.

Horntail wasps on maple trees



I am receiving a few pictures of big wasps buzzing and hovering around large trees. The trees appear to be silver maple trees in the pictures. The 1-inch plus, black or brown with yellow striped wasps have a spear-like appendage at the end of their abdomen. This long “stinger” gives the insect its common name – horntail.

The stinger will not be used on people but on trees as it functions as an ovipositor – to lay eggs. The insect uses the stinger to drill in the wood of dead or dying trees and deposit the eggs. The larvae make large (1/4-inch wide) tunnels through the wood and feed for several years before emerging as adults. I occasionally receive samples of the adults in March from firewood stored in the house for the winter.

This is a group of closely related wasps with the most common one being the pigeon tremex, *Tremex columba*. This insect is common around maples, cottonwood, and elms. Pigeon tremex adults are flying from July to October so the calls about this insect usually begin to come in just before Labor Day.

There are other horntails found in pines and spruce though these are less common. However, some horntails (*Urocerus*) are attracted to fire-damaged ponderosa pines in the Black Hills. This summer I have seen a few of these buzzing around the scorched pines at the edge of burns along with the more numerous sawyer beetles.

The appearance of horntails around a tree are an indicator that the tree is decayed and may be a hazard. The horntails also introduce some bacteria. The tree should be evaluated by an arborist to determine whether it needs to be removed.

Walnut leaves are falling



Walnut anthracnose (*Gnomonia leptostyla*), a very common fungal disease of black walnut, is beginning to appear. The most common symptoms are circular brown spots with a light yellow halo. The infected leaflets turn yellow to brown and fall prematurely.

As with other anthracnose disease, the tree becomes infected in the spring as the tender new leaves emerge in the cool, moist spring environment, but the symptoms – yellowing leaves with black spots that drop prematurely – do not occur until now, even if the weather turns hot and dry. The disease overwinters in the twigs and fallen leaves (one reason an infected tree only has leaves remaining at the tips is the spores “rain” down from the twigs and these are usually above the “rain.” The disease is not harmful to the tree and now is *not* the time for control.

Samples received/Site visit

Brookings County

Pear sawfly on cherry



Pear sawfly (*Caliroa cerasi*), also known as pear slugs because of their slimy appearance. The olive-green larvae are about 1/4-inch long with front of the insect just a little wider than the rear. The insects in the picture have about another 1/8-inch to grow and will lose their green slime and become an orangish yellow.

The larvae are the damaging stage and feed on the leaves of cherry and pears (hence the name) and even an occasional plum or apple. They feed on only one surface of the leaf, a type of damage known as a window-paning. The damage is usually not severe enough to warrant treatments.

There are two generation per year of this insect. The adults emerge in the spring from cocoons in soil. The adults are a non-stinging wasp about 3/16-inch long. The adult female cuts slits in the edge of the leaves with her saw-like ovipositor with the eggs hatching within two weeks. The young larvae move out and feed on the upper surface of the leaves for about a month before dropping to the soil and forming a cocoon. The second-generation adults emerge beginning in July to start the life cycle over again. The second-generation larvae, the ones out now, are the most damaging to the plant and can leave a young tree almost completely defoliated.

Almost any insecticide will kill the larvae (but check label first to be sure they are including on it). Usually the damage is not noticed until it is too late, and their natural enemies provide the best long-term control.



Brown County

Reverting Alberta spruce

This was not a requested site visit. I just happened to see this tree while Aaron, the Aberdeen city forester, and I were doing some pesticide evaluation. This is a dwarf Alberta spruce (*Picea glauca* 'Conica') with an unusual top. This dwarf conifer typically has a dense conical shape but occasionally one or more of the branches near the top will revert back to the species, the white spruce, and begin growing as a "normal" tree. These branches must be removed before they take over the entire dwarf tree and all you are left with is a white spruce!

Clark County

Fabric issues



This was another call to a young windbreak (about 12-year old trees) where some of the pines in the row were stunted and dying. Once I pulled the sod off the top of the fabric, the fabric was found to be imbedding in the stunted trees (but not the healthy ones). As mentioned several times in the *Update* this year, once soil and litter covers the fabric, it will not deteriorate. If only narrow slits was made when the seedlings were pulled through the fabric at planting, sometimes the fabric will not yield as the tree trunks expand and instead the fabric becomes imbedded. Eventually this can cut off the movement of food from the needles to the roots. This will kill the tree as the roots starve.

Marshall County

Engraver beetle



I looked a few pines in a grove of evergreens that had dead tops or the entire tree was dying. These trees were infected by engraver beetles (Ips). These insects typically attack and colonize stressed and declining pines. This appeared to be the case here as the pines that were closest to the area that was flooded earlier this year. Pines are not adapted to wet or poorly-drained soils and this stress is enough to attract the beetles. I also found pockets of mature pines in the same area that were dying (and infected with the beetles) and the pattern was the same. The trees closest to the water were the ones that were dying (for everyone in the western part of the state wondering why trees near the water were dying, Marshall County had an abundance of water the past two years and there are still a lot of new lakes in the area).

While the insect is content to make its home in dying trees, if the population expands, they sometimes will spill over into nearby healthy trees. The best management is to remove and burn (or otherwise destroy) the infested trees this winter. The beetle does not survive in trees once the bark is removed so debarking the wood will also eliminate the threat and this wood can be used a firewood.

Perkins County

Dothistroma needle blight



I received some plastic bags of ponderosa pine needles along with some pictures of the trees. The needles are infected with dothistroma needle blight (*Dothistroma septospora*), one of the trio of pine pathogens we are seeing this summer - diplodia tip blight, dothistroma needle blight and pine wilt. Pine wilt only affects introduced pines, both Austrian and Scotch pine. Diplodia and dothistroma are common on Austrian and ponderosa pines (rarely Scotch pine).

The common symptoms presented by a tree infected with dothistroma needle blight are needles with a dead, gray tip with yellow and tan spots beneath that often enlarge to form bands (hence the other common name red-band disease).

Typically the base of the needle stays green. The symptoms often are restricted to the lower third of the tree with the top of the tree usually staying symptom-free.

There seems to be an increase in both these diseases on ponderosa pines this summer in the northcentral and northwest part of the state – Selby to Buffalo. No treatments should be applied at this time of year. Treatments, fungicide sprays, are applied in spring when the tissue is vulnerable to infection. The timing differs between the tip blight and needle blight.

Dothistroma treatments begin in mid-May to protect the older foliage with a second application in early June followed by a third to protect the new foliage. The new foliage is not susceptible until it begins to harden off so the final application can be as late as early July in some years. Copper fungicides are used to manage the disease with Camelot and Junction two commonly used fungicides in South Dakota by commercial applicators.

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