

Pest Update (March 25, 2020)

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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.

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Plant development for the growing season

The temperatures are continuing to move upward with days in the 40s to 60s and the nights often remaining in the 20s. A sure sign of spring is the willow shoots beginning to turn a bright orange-green and this display will quickly be followed by a lush green flush.

of growth. Willows often leaf out a month earlier than many other trees. This is a peachleaf willow (*Salix amygdaloides*) in Hill City proving that winter is almost over and the promise of a spring is soon to arrive.

Timely Topics

Maple tapping time has arrived

There are two ‘traditional’ articles in each year’s *Pest Update*, a spring article on tapping maples and a winter article on picking out the perfect Christmas tree. I have been including both in the *Update* since the beginning of this series back in 2002. This year the maple article focuses not on making syrup, but just ‘maple water’ one of the newest drink trends.

I started tapping in South Dakota back in 1998 beginning with a large silver maple next to my barn. My interest was not making syrup, just collecting the sap for a drink. The process is like tapping for syrup, just saves a lot of work.

Sap begins to run when the day temperatures are about 45°F, nights between 15 to 25°F, and moist soils. It looks like we had all these conditions for the entire state beginning last week. The sap flow will stop if the weather cools, as it often does with our seasonal fluctuations, but will start again with the return of warm days and cool nights.



Tapping season begins at McCrory Gardens.

The best candidates for tapping are sugar maples (*Acer saccharum*) but these trees are generally found in our eastern communities and one native stand in Sica Hollow State Park (note: some authorities consider the maples in Sica Hollow black maples, *Acer nigrum*, but others lump these two together). Sugar maple, as the name implies, produces the sweetest sap.



Silver maple bark.

Silver maple (*Acer saccharinum*), a more common tree in towns and windbreaks, also produces a sweet sap. These trees have platy bark (picture to the left) and small round reddish buds at this time of year. Even our native boxelder (*Acer negundo*) can be an acceptable sugar tree. The average sugar concentration in sugar maple is about 4.5% and ranges from about 3% to nearly 7% in some very sweet trees. Silver maple sugar content averages a little above 3% with a range between 2% and 4% so there are some silver maples that are sweeter than a sugar maple. Boxelder sap averages between 2% and

3% but once again there are some trees out there that can be closer to 5% so even some boxelder can make a good syrup.

Regardless of species, the best trees to tap are large, healthy, open-grown ones. They need to be at least 10 inches in diameter (measured at 4.5 feet above the ground) and larger is even better. The tree should be in a sunny location so that it had the opportunity to make plenty of sugar the previous season. The tree must also be free of large dead limbs and trunk decay. Trees with large dead limbs attached to the trunk and other signs of rot such as cavities and hollow branch stubs should not be used as drilling holes in these trees may increase decay.

Commercial spouts or taps, called spiles, can be purchased on-line along with drop line tubing (a packet of five spiles and five drop lines cost about \$20 to \$25). Spiles are tapped into holes drilled into the trunk. A ship auger bit on a carpenter brace is the best drill to use though an electric drill with a wood bit will work. Drill a hole of equal diameter to the tubing and about two inches deep, or a little less, into the tree, slanted slightly upward as you drill in for better flow. The wood coming out of the hole should be cream or white color indicating it is in the sapwood, not dark which means the hole went too deep and entered discolored interior wood.



The holes should be placed about 3 to 5 feet above the ground and the number of holes that can be placed into a tree is based upon the diameter. A 10-inch diameter tree can have a single spile; a 15-to 20-inch diameter tree two spiles. While commercial producers may put three into trees more than 20-inches, you probably do not need to produce that much sap for maple water.

Do not drill holes closer than about 8-10 inches from one another. Also do not drill within six inches to the side of where you drilled the previous year and never above or below a hole. Drilling holes too close to the previous year's or above or below may lead to tree decay. Also, if you are only doing one tap, place it on the sunny side of the tree.

Place a food-grade bucket (plastic or metal) beneath the spile and place the drop line (5/16-inch food grade tube) connected to the spile into the bucket. Put a cover over most of the bucket to reduce debris from collecting in the sap (place a hole in the side of the bucket to insert the tube. You can use a metal or plastic cover.

The sap flow may occur over several hours during a day, usually the morning, and the sap should be removed daily or more frequently as sap can spoil if left in the warm sun. Once the sap begins to flow it may continue for anywhere from two to six weeks. The early season's sap is light and mild. As the season progresses the sap becomes darker and stronger flavored. The season ends when the buds are beginning to expand, the sap become cloudy and develops a "butterscotch" off-flavor. This seems to happen sooner with silver maples and boxelders as they begin to leaf out before super maples. Once the season is finished, remove the spile from the tree. Do not place anything into the hole and do not use the same hole or drill one directly above or below it the following year.



Sap dripping from a drop line.

During the sap run a single spile may produce anywhere from a pint to nearly gallon of sap per day, though on cool days none may run and on a sunny day you might get even more, even several gallons! A single tap may produce from five to twenty gallons of sap during the season. Most trees are not going to produce enough sap to make much maple syrup and boiling it down is not an easy task. It may take about 30 to 40 gallons of sap to make a single gallon of syrup.



A glass of flesh sap.

The best use for the sap may be for your coffee or cooking. The raw sap can be kept for a day or two in the refrigerator. I like to use it for my coffee water in the morning. Leave a bucket of raw sap set out overnight in freezing temperatures. The next morning carefully break off the crust of ice on top – that is mostly water. Next run the raw sap through a cheesecloth and store in a glass container in the frig. Next morning use it for your coffee water (note: heat the water on the stove, not in an electric percolator). This water adds just enough sweetness for my taste and even gives a slight maple flavor to the coffee (and it's another excuse to drink a quart or more of coffee a day). Don't store it for more than a couple of days or it will become cloudy.



If you are not a coffee or tea drinker, just drink the sweet water right out of the container. However, it is best to pasteurize it first. While it comes out of the tree clean, the sap picks up bacteria (*Pseudomonas* and *Rahnella* have been found) from the tapping process. The sap can be pasteurized on the stove and while there is a lot of advice on the temperature and the timing, if you bring it up to near boiling and then quickly cool it

down (set the covered pan outside works) you can extend the shelf life of the maple water though still keep it in the refrigerator.

This idea has caught on and now you can buy maple water as a bottled drink. "Sap on Tap" it's called and along with coconut water has become a trendy drink! Maple water is selling for about \$3 to \$4 retail for a 12-oz bottle. This is becoming a popular market in Minnesota as the producers get to skip the time and expense of boiling and essentially bottle it right from the tree (though it is pasteurized to limit bacteria growth). This is a new market and maybe a good opportunity for someone in South Dakota with a grove of silver maples.

Ash tree removals continue in Sioux Falls



Removal of an ash tree that was not infested but severely decayed.

Ash tree owners in Sioux Falls have about another eight weeks to complete any removals of unwanted ash before the Sioux Falls summer ban on the felling, pruning, or transport of any ash brush or logs. The dates are the same as last year - no ash felling, pruning, or brush movement between Memorial Day and Labor Day. These dates have bracketed the flight period of the emerald ash borer during the past two years in Sioux Falls. Since the emerald ash borer will be emerging from the trunks, limbs, and branches

of infested trees through much of this three-month period, the ban slows the spread of adults throughout the city.

The City is removing ash along streets during the fall, winter and spring and while this is causing concern to some residents of the city, it's the right thing to do and is being duplicated by other South Dakota communities. The strategy for the city is to "flatten the curve", a term many have heard during the past two weeks regarding COVID 19. The principles of this infectious disease management has some similarities to emerald ash borer management. In both instances doing nothing results in a steep peak that can overwhelm resources. The City of Sioux Falls is avoiding that steep curve by systematically removing ash that are not yet infested throughout the city. This is far better strategy than reacting to a future crisis by having to remove standing dead, infested ash trees before they fall.



Removal of ash trees in Brookings.

E-samples

Ash bark beetles in declining ash



Emerald ash borer was a concern to a campground owner in northeastern South Dakota. He noticed woodpeckers had drilled into some declining ash and stripped bark off in the process. Blonding, a process where the outer bark is stripped off the tree, is associated with woodpeckers drilling ash to access emerald ash borer larvae so his concern was valid.

Fortunately the galleries beneath the bark were not the typically power-filled, serpentine galleries created by the emerald ash borer larvae as they tunnel through the inner bark but instead those from the **ash bark beetle** (*Hylesinus*).

The ash bark beetle is a native insect that colonizes dying branches and occasionally will attack whole trees if the tree is stressed. We saw an outbreak of this insect back in the late 90s during the flooding and I have seen a resurgence of this insect the past two years again due to wet soils stressing the trees.

The galleries that run perpendicular to the grain are craved by the adults as an egg gallery. Eggs are laid along the length of the tunnels and once hatched, the tiny (about the size of a rice grain) white, C-shaped larvae tunnel with the grain in parallel with their siblings.



Egg galleries are long tunnels running perpendicular to the trunk.

The insects are not a concern, they are a sign that the tree is dying rather than the insect being the key reason for the decline. Management usually involves the removal of the tree if it has serious dieback (more than 20% of the canopy dead), otherwise reducing the stress is a common strategy. During drought this usually means watering but with the opposite problem, flooded soil, there is nothing that can be done.

Squirrels removing bark from red oaks

I received a picture of a stripped red oak tree from an alarmed tree owner in northern Minnesota. She wondered what would strip the bark off one entire side of the oak on her property. It occurred over the last few weeks.

This is the work of gray squirrels and is a phenomenon long observed in Minnesota and South Dakota. I found a *Minnesota Forestry Note* from 1956 that discussed

the problem on sugar maples in northern forests. The paper mentioned squirrels were stripping the thin bark from trees to reach the sweet inner bark tissue in the spring. The damage was limited to small patches on the branches for most tree though occasionally the entire tree was stripped. Interestingly, more larger trees (10 inch diameter or larger) were damaged than younger trees.



Bark stripped off the trunk of a red oak by gray squirrels.

The damage occurs on thin barked trees so we see this on maples, elms and red oaks. We usually do not see this damage on bur oaks since they develop thick, corky bark. The damage also occurs in the spring when the inner bark – the tissue that transports sugars through the tree – are the sweetest in the spring. Not sweet enough for people that have access to snicker bars, but if you are a squirrel that can not use a candy machine, its good enough.

Unfortunately, the damage can kill a tree if it strips off enough bark. Its not so much the length of the damage but whether it goes around the trunk. Stripping all the bark around the trunk severs the connection between the canopy that produces the sugars and the roots that use the sugar to grow and absorb water and elements. Eventually the roots starve, less water is absorbed and the tree dies. The red oak in the above picture is a zombie tree – the living dead.

Samples received/site visits

Minnehaha County

A false alarm, not emerald ash borer



I received a call from a tree owner that was told by a tree company that their tree was infested by the emerald ash borer. Since the tree was in Brandon, it was worth a visit. The tree was an ash, and it was old and dying, but it was not emerald ash borer. There were some larger holes at the base from mechanical damage (being hit by objects such as mowers) and some pencil-size round holes made by our native clearwing ash borers, but none of the D-shaped holes made by the emerald ash borer.

The tree also was not presenting any of the classic signs of an emerald ash borer infestation – no watersprouts in the canopy, no blanding of the upper branches nor drill holes from woodpecker activity. I have stopped by to examine many ash trees in the communities surrounding Sioux Falls where a tree service has stopped by and told the tree owner they had to treat since their tree was infested. One instance, the tree owner agreed to pay \$1,600 to treat eight of their trees. None of the trees were infested.

When I contact the tree company, the usually response is they assume if they find a hole in a tree, it must be an emerald ash borer.

There are many excellent tree and ground care companies in Sioux Falls, ones that have been in business for many years and have a great track record of caring for trees, and we also have a few tree, lawn, and landscape companies that have jumped into treating trees without knowing much more than how to inject (and in some instances not knowing how to even identify an ash). As with any service, its important for an ash tree owner to interview a company and their experience in caring for trees, not just how long they have been injecting ash trees. Also be caution of someone going door-to-door in the communities surrounding Sioux Falls and telling people to treat their trees since they are infested.

Since some of these communities are within 15-miles of the outbreak in northern Sioux Falls, the standard recommended distance for treating trees, some cautious ash owners are treating their trees as a preventive measure. However, we have not confirmed emerald ash borer in these towns so anyone being told their tree is infested should contact me via email or text so this can be followed up.

Minnehaha County

Spruce planted too deep

A homeowner association called about spruce they had planted years ago that never thrived and have barely grown. Since I was in the area working on the emerald ash borer survey, I made a stop.



The trees were clearly stunted. The lower branches were dead or already removed. The shoot growth, which should be at least 8 inches long per year, was closer to 3 inches and had been at this rate for at least the past five years.

The reason? Well, when you can pull branches out of the ground, you know these trees were planted too deep. It appears that at least six inches of soil was piled over the root ball when they were planted. This is not always a rapid death, if it were more people would be aware of the problem, but sometimes trees can linger for years or even decades before finally dying.



The question, of course, was what could be done to help the trees now. There is nothing that can be done at this point. Removing the soil around the base will not work as this leaves a low spot around each tree that will just hold water (and we have had two wet years). Fertilizing will not help as the trees do not need nitrogen or other elements but oxygen.

The trees will be removed and replaced. Since this is in Sioux Falls, in a sheltered location with good soils and drainage, I am recommending they try to include some Douglas-fir in the new planting along with Black Hills spruce.

Meade County

Soil compaction and ponderosa pine

While I was out working in Custer State Park I stopped to look at this tree. This is a follow-up to a sample discussed in the January 15-22, 2020 issue of the *Update*. There was some needle damage to the young ponderosa pine due not to a needleminer (as suspected) but pine tip moths, which can also mine needles (an interesting though not life-threatening, insect problem that seems to be in the area), the real problem, which was asked in the original question posed with the sample, was compaction.



The young tree, and the mature tree next to it, were growing in a compacted gravelly soil that was also used for parking. While pine can be found growing out of rock cracks in the Black Hills, that does not mean they thrive in these environments and most die.



The mature tree had many dead branches and thinning shoots. Pines will normally retain about three-years of needles, but stressed pines, like these, might only retain a year or two of needles. The needles were also a light green rather than the normal darker green which may be an indication of an element deficiency.

The best management may be to carefully break up the compacted gravel around the base of each tree, at least out two feet from each trunk, and then cover the gravel/soil with a pine bark (not the nuggets, use shredded bark) out to a distance of five feet and depth of 4 inches. These actions will provide a better rooting environment for the root plate, the area with the greatest density of roots.

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