

# Pest Update (March 3, 2021)

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Note: samples containing living tissue may only be accepted from South Dakota. Please do not send samples of 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 as 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 are experiencing the typical roller-coaster weather swings that characterize the Northern Plains Falls and Springs. We go from -25°F to 55°F and back and bare lawns to half a foot of snow on the driveway.

These seasons are when woody plants suffer “Winter-injury”. One of the major limitations for growing trees in South Dakota is not our midwinter cold temperatures, it is that we can experience equally cold temperatures in the Falls and Spring when trees are not as tolerant of cold winters. Let us hope the cold weather is behind us.

## Timely Topics

### ***Maple Sugaring 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.

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 – maple water. The process is like tapping for syrup, just saves a lot of work. Processing syrup requires high heat to evaporate off most of the water, with maple water the water is kept which means more product. This partially explains why Grade A maple syrup can sell between \$0.85 and \$1.00 per fluid ounce and maple water about \$0.25 to \$0.30 per fluid ounce.



Sap begins to run when the day temperatures are about 45°F, nights between 15 to 25°F, and soils are moist. It looks like we had two of the three requirements throughout the state beginning this week (except for the moisture but the latest snow melt will help that). The sap flow will slow as the weather cools next week, as it often does with our seasonal fluctuations, but will start again with the return of warm days and cool nights.

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 (*Acer saccharinum*), a more common tree in towns and windbreaks, also produces a sweet sap. These trees have platy bark 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 sap is about 4.5% and ranges from about 3% to nearly 7% in some very sweet trees. Silver maple sap 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 tapped as drilling holes in these trees may increase decay.



Commercial 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, dark coloring means the hole went too deep and entered discolored interior wood or the tree is decayed.

The holes should be placed about three to five 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, most tree owners probably do not need to collect that much sap.

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 a hole was 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 doing only 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). Place a metal or plastic cover over the bucket to prevent debris from getting in the sap.

The sap flow may occur over several hours during a day, usually the morning, 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 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.

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 the run might be two gallons! A single tap may produce five to 20 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.

The best use for the sap may be for 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 and discard 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 fridge. 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 is another excuse to drink a quart or more of coffee a day). Do not 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 it is still best to 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 is 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.

### ***Improving Survival of Bare-Roots Planting during Droughts***

The recent storm left a (mostly) welcomed layer of snow that is slowing melting and soaking into our dry soils. Moisture is still lacking in much of the state. The most recent drought monitoring map shows almost all western South Dakota in severe drought while much of eastern South Dakota under moderate drought. However, the driest spot is Lincoln County along our eastern border which is under extreme drought. Unless we receive a lot of snow and rain this spring, it is not looking good.

Bare-root planting season is only six to eight weeks away and this year a little bit more care will be needed to reduce mortality. Some losses are expected even in good years, 100% survival is a worthy goal but not always attainable. However, this Spring will not be a “good” year and planting crews and property owners both must work a little harder to have the seedlings establish and grow.



The additional care begins at transporting the trees to the site. It is critical to keep the seedlings covered and moist until they are placed into the soil. Exposure to sun and drying wind can desiccate tender roots and this year seedlings need to keep every roots. Even two minutes exposure to sun can cause a quarter of the roots to die. Keep the seedlings in the box if possible or covered with wet burlap, shingle tow, or

other moist material. Placing seedlings in water may sound like a good idea but the idea is to keep root moist, not saturated, as they still need air. Limit placing the trees in water for only a few minutes.

Some planters use a root dip to protect the roots before planting. These are polymer gels that hold water (and serve as a protective covering). Some gels also contain mycorrhizal fungal spores, bio stimulants, organic matter, and extracts. The results are mixed. Studies have shown slightly higher survival with the use of root dips, mostly with pines and other coarse-rooted trees and less benefit for spruces and fine-rooted trees (*Tree Planter Notes* 43(4):159-162).

Other studies have shown that the primary benefit of root dips was the additional attention the seedlings received (keeping them moist and covered), rather than the product itself (USDA Forest Service Proceeding 2012. RMRS-P-60). A clay slurry can provide similar benefits but is harder to apply. However, the conclusion of most studies say root dips may help, but at least do not hurt, so this year might be a good time to consider their use (note: always read and follow label directions – never exceed them!).

The use of hydrogels as soil amendments for planted bare-root seedlings has even more mixed results. The greatest benefit has been with seedlings planted in sandy soils, not loam or clay soils. Some studies have even shown a reduction in survival for seedlings planted in soils amended with hydrogels (*Journal of Forest Science* 53: 204-209). The common recommendation is to do a small trial with specific species and soils before utilizing on a wider scale. So, for example, if someone has seen benefits of using hydrogels on their loam soils when planting pine – use them. But this may not be a good year for their widespread use if the planter has no previous experience with them.



The one substance you cannot go wrong with using is plain old H<sub>2</sub>O. Absolutely water at planting, about a quart a tree and every two to four days thereafter if possible. Even doing this routine for even the first two weeks following planting can make a big difference in survival. Following planting each seedling should have about a pint per plant but only water if the soil is dry at a depth of four to eight inches. Do not overwater – it is a waste of water and can reduce seedling survival and growth.

The upper few inches can dry between watering if the trees were planted at the correct depth (root collar at soil line). Walking down the row and checking soil moisture before irrigation can save someone from watering when they do not need to. Water slow enough that the water soaks in, not run off.

Finally, do not bother to water without weed management – fabric and herbicides. Otherwise, the weeds are taking from the water from the seedlings (it is why we call them pests!).

### ***A Tree Grows in Nemo***

This is one of my most interesting tree calls – because it was a house call! This tree is growing out of the roof of a bar in Nemo. The ponderosa pine was there first and the building gradually enclosed it. The pine seems to be doing fine despite having the lower 12 feet in the building and the canopy far above it. My greatest concern is the seal around the trunk to keep the water from running down the tree into the building. This has not been inspected and adjusted for years and someday (if not already) it will girdle the trunk.

Another concern is the limited access to the roots. The trunk has an opening around its base but otherwise the roots are



covered by the floor out at 10 feet or more from its base. Other than spilled beer, not much liquid is available to the root plate, the root zone surrounding the trunk to about six feet out. This is the zone we do not like to see covered as the highest density of roots occur there. However, just as trees in the Black Hills grow and adapted to rocky ledges, this one has found a way to make a bar its home. It is a tough tree that has managed to beat the odds (hence the play on the title of the book *A Tree Grows in Brooklyn*).

## E-samples

### ***Attack of the Bunnies!***



Rabbits are browsing their way through many woody plants now. It seems that the Winter is just about over before we see them destroy the plants we like the most! This is (was) a mugo pine (*Pinus mugo*) that the rabbits have browsed all the year-old needles and nipped the terminal shoots (rabbits leave a characteristic 45° angle to the cut). There are also the coco-puff size pellets around the plant as bunnies seem to poop as fast as they eat.

There is no saving this shrub. Almost all the terminals have been nipped off meaning the buds for this year's growth are gone. The loss of the youngest needles will also reduce growth since there is less foliage to 'fuel' the expansion of new tissue. It is best just to remove the shrub and plant another (and cage the plant next year).

### ***Galls on Pine Branches***

This is western gall rust (*Peridermium harknessii*) a disease that causes a portion of a branch to swell into round or pear-shaped galls which turn almost orange in early Summer when they produce spores. The disease can also be present on the trunks but here it forms a swollen, target-like canker. The branch galls slowly enlarge over the years and can eventually cause the branch distal to the gall to die.

The disease can be found on ponderosa pines (*Pinus ponderosa*) in the Black Hills and in windbreaks across the state. Usually, it is only in a few trees as most pines are resistant to the disease. While ponderosa pine is the most common host, the disease can also be found occasionally on Scots (*P. sylvestris*) and mugo (*P. mugo*) pines.





Most pines, even ponderosa pine, are resistant and not affected by the disease. This is the reason behind removing young trees with the disease. Merely pruning out infected branches does not stop the disease. New branches may also become infected.

### **Winterburn on Arborvitae**



The warming weather is resulting in evergreens turning brown. The problem is mostly confined to arborvitae (*Thuja occidentalis*) at this time, but I expect to see samples coming in from other evergreens as the season progresses. Winterburn or Winter-drying can be due to many agents. If the weather in the Fall sudden turns from warm to cold, the evergreen tissue can freeze. If the plants go into Winter dry and

are exposed to winds during warm (above freezing) sunny days, the tissue can desiccate as the water lost through transpiration cannot be replaced. Regardless of cause or causes, the browning usually does not present until we have a string of warm days in late Winter or early Spring.

Once the brown tissue appears it is too late to do anything about it. However, do not rush to prune out the browning tissue just yet. More may still appear so might as well do all the pruning at once. Also, sometimes the tissue is more discolored than dead and may turn green again once the growing season begins. Best to wait until May to decide on what to shear.

### **Samples received/Site visits**

Lawrence County

#### **Possible herbicide injury**



I was called to look at some declining trees in a development and noticed many of the younger pines – those less than about 12 feet tall – and downslope from lawns were stunted and losing their needles. Upon closer inspection I noticed that the terminal shoots were thickened and there was abnormal growth at the base of the needle sheaths (see picture at top of next page).

This presentation is usually associated with the application of growth-regulating herbicides. Picloram and dicamba are two herbicides used in the Black Hills that can cause these symptoms on pines. While 2,4-D and triclopyr are also growth-regulating herbicides that mimic plant growth hormones, I do not see them typically used in the quantities



that would produce these symptoms. I say usually because it is less common, not unknown.

The only way to tell which herbicide or herbicides or even if it is herbicide is through tissue analysis. However, these herbicides are metabolized quickly and if applied last summer while the shoots were expanding (the most likely time based on the symptoms) we are not likely to find detectable concentrations in the needles.



Lawrence County

### Zimmerman pine moth



This was a development in Spearfish that some pines had globs of pitch appearing along branch whorls. This is the work of the Zimmerman pine moth (*Dioryctria*) larvae. The adult moth is just your typical gray (with zigzag banding) moth fluttering about during the late Summer. The larvae that hatch in early Fall are responsible for the tree damage.

The larvae do little harm during the Fall as they have just enough time after egg hatch to form silky cocoons to survive the Winter. When the larvae begin feeding the following Spring, the array of tunnels they create near the branch attachment to the trunk can cause the limbs to snap off.

Zimmerman pine moth will attack Austrian (*Pinus nigra*), ponderosa (*P. ponderosa*) and Scots (*P. sylvestris*) pine trees. The smaller trees, those between six and 20 feet tall, seem to be the size most often attacked. The insect usually does not kill these trees but there can be enough branch breakage that the mature tree shape will be distorted.

Treatment is an insecticide application made in early Spring (mid-April to early May) to kill the larvae before they burrow into the tree and again in late Summer (August-September) to kill newly hatched larvae as they crawl along the bark to find a spot to form their over-Wintering cocoon. Insecticides labelled for treatment of Zimmerman pine moth and containing permethrin as the active ingredient are the most common ones used against this pest.



## Meade County

### Falling spruce trees



The concern for this visit was the landowner's concern there was a disease causing mature spruces to fall over. However, the failures were limited to only white spruce that had one defect – the formation of codominant leaders. These are upright leaders of approximately the same diameter at their base. The trees had formed their codominant leaders where they were small, less than four feet tall. This was most likely due to something, even a bird, damaging the single terminal and the two lower branches bent up to assume dominance.

These are very weak connections as the two leaders do not fuse together. Instead, the bark of each leader is pressed between them and become imbedded. Since the trees are in the forest, not near a home, removal of these codominant trees is not a major concern. However, a 70-foot-tall spruce (or pine) with codominant leaders starting near the base is an accident waiting to happen. Best to remove the standing 'twin' trees rather than cut up the fallen trees off the house.

## Stanley County

### Browning cedars



Considering all the calls last Summer on diseased cedars, both eastern redcedars (*Juniperus virginiana*) and Rocky Mountain junipers (*J. scopularum*), it is not surprising that people are looking at their windbreaks now. Some are seeing discoloration "suddenly" appearing. These two junipers sometimes turn brown during late Winter. When the color change comes during March the typical culprit is desiccation injury. At this time of year, we begin to experience warm (40°s and 50°s) and often windy days. This combination means that the evergreen foliage will begin to lose moisture through transpiration, but the water cannot be replaced as the soils very cold. Oftentimes the damage is minor and temporary as the foliage recovers once the soils warm.

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

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