South Dakota State University Extension

Tree Pest Alert

Feb 26-Mar 5, 2025 (biweekly now until April 2025) **Volume 23, Number 5**

In This Issue

Samples

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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.

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 listing 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.

Reviewed by Master Gardeners: Carrie Moore and Dawnee Lebeau

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

Plant development for the growing season

There were snow flurries during the past two weeks along with a little rain. We will take any moisture we can get at this point. The rain was possible as our day temperatures were more consistently above freezing. The growing degree days (GDD-base 50) jumped from single to double digits across the state.

While we are not yet seeing much plant development, silver maples bloom at about 40 GDD. We see the small red flower buds beginning to open on silver maples in the southeastern part of the state.

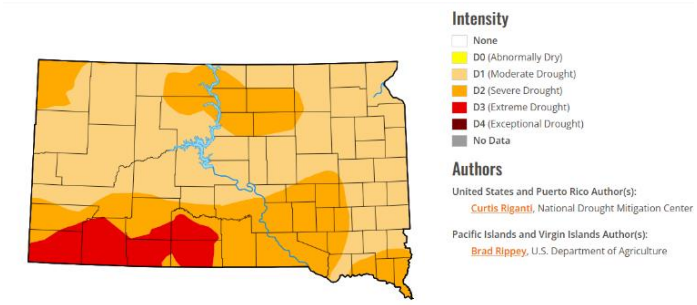
The warm weather this coming week will increase the growing degree day accumulations even more – spring is on the way! This is our current accumulation for communities around the state.

Aberdeen	10
Beresford	45
Chamberlain	58
Rapid City	36
Sioux Falls	35

The robins are returning. They are feeding on crabapples with persistent fruit. While we often select

crabapples for their flower characteristics, fruit should not be overlooked. Crabapples with small fruit that persists until spring provides ornamental interest and food in the spring for the returning robins.

Drought monitoring

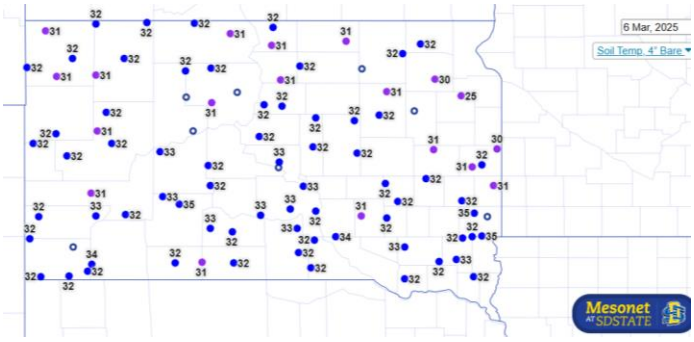


The moisture we received during the past two weeks was not enough to move any part of the state out of the drought. About half the state – mostly north of I-90 - is classified as “Moderate Drought.” The rest of the state is identified as “Severe Drought” with the southwestern counties as “Extreme Drought.”

There will be a lot of mortality in windbreaks planted in 2024 unless we receive precipitation in March and April.

Soil temperatures are near the freezing point

The soil temperature has increased across the state. The entire state is at or near 32ºF at 4-inch depth in bare-soil This will help any moisture we get soak in rather than run off.



The first week of May in 2024 was when soil temperatures reached 50ºF last year – the temperature threshold for good root growth in seedlings. We are about seven or eight weeks away from the tree planting season – get your orders in now with the districts (sooner would have been better).

Treatments to Begin Soon

Pine bark beetle treatments in the Black Hills need to be applied soon

There are two bark beetles in the Black Hills associated with pockets of dying ponderosa pine trees. While the two beetles are attracted to different host conditions and sites, the treatment window is similar.

Pine engraver beetle

Despite the occasional snowstorm, spring is coming fast to the Black Hills. One of our first tree pests to appear is the pine engraver beetle (*Ips pini*). The adult beetles are overwintering in the duff beneath the trees, so it only takes a few warm days of temperatures in the 60s for them to become active.

Once the weather warms to the 60s for a few days – which often as early as late March - the adults will search for fresh green pine material to burrow into for a home. They prefer to infest recently fallen green branches or broken canopy branches during this first flight. They are also attracted to pines that are stressed by drought. But these trees are often attacked during the second flight which occurs in June.

The long-term drought has increased pine engraver beetle populations and subsequent tree damage during the past several years. Last summer it was not hard to find small pockets of pines that were attacked and killed by this beetle. This damage can be found throughout the Black Hills. I see small pockets of trees killed by the pine engraver beetle from Hot Spring to Spearfish.

Mountain pine beetle

The big brother to the pine engraver beetle is the mountain pine beetle (*Dendroctonus ponderosae*). This insect was responsible for the loss of about 20 million pines in the Black Hills between 1997 and 2015. This epidemic ended – as they always do – but that did not mean the beetles went away.

The population dropped due to a combination of factors from reduction in food resources - dense stands of large diameter of tree - to competition from sawyer beetles. There may be other unknown factors.

Regardless of the factors, the population of beetles dropped and with that, a drop in tree mortality. But that does not mean that there will not be a localized buildup of mountain pine beetle population and tree losses. But this does not mean another epidemic has started, just an area where the beetles are becoming common.

This is what is occurring in the northern Black Hills right now. There are pockets of pine killed by mountain pine beetle in the area between Lead and Spearfish. Forest landowners in that area may need to take steps to manage the beetle.

Treatments for bark beetles begin soon

High-value pines, those around homes in areas where tree losses occurred last year from bark beetles – either pine engraver beetle or mountain pine beetle - should be treated with insecticide this spring. The insecticide is applied to the bark and will kill the adults as they search for a tree to make a home.

Pine engraver beetles begin to fly soon but have multiple generations during the summer. The mountain pine beetle does not take flight until late July. A treatment applied soon, with the proper rate and pressure will provide control for the entire growing season killing both pine engraver beetles and mountain pine beetles.

Adult bark beetles burrow through the bark and lay eggs along their galleries. The larvae tunneling through the inner bark are responsible for the decline and death of the host tree. Once the beetles are inside the tree, it is too late for treatment.

There are several different active ingredients used in bark sprays for engraver beetle management. Two of the most common are carbaryl and permethrin. These ingredients are found in a wide range of pesticides. When used to treat bark beetles, this use must be specifically identified on the label of the insecticide.

The insecticides must be applied soon to be sure the bark is thoroughly covered before the adult beetles begin to fly. If the insecticide is labeled for bark beetles, the residue will remain effective for the entire growing season so there is no reason to delay the application.

The application must be applied with sufficient pressure to reach the top of the tree and soak all the branches. This means hiring a commercial service with sprayers with enough pressure to carry the insecticide into the tree canopy. This is not the time for a garden hose sprayer and a ladder.

Call a reputable local company soon to get on their schedule for this spring.

Bark Beetle Public Meeting on March 13 in Spearfish

There will be a public meeting in the multipurpose room at the Spearfish Recreation and Aquatic Center at 6:30 p.m. on Thursday, March 13. Forest Health personnel from the Forest Service and the South Dakota Department of Agriculture and Natural Resources will discuss the increase in mountain pine beetle induced tree morality in the region.

The session will also cover how to identify pine trees infested by either pine engraver beetle or mountain pine beetle. The program will cover insecticide treatment options for managing either insect.

Timely Topics

Emerald ash borer update

Emerald ash borers (EAB) larvae are doing fine. While the temperatures dropped to an overnight low -20ºF in the Sioux Falls area, we did not find many dead EAB larvae. There were a few that had the same color as a banana taken out of the freezer, but not many.

I expect to see good survival this winter. This means lots of adults will be flying come June. We will also see an expansion of tree mortality.

Time to tap the sap

There are two traditional articles in each year's *Tree Pest Alert*, a spring article on tapping maples and a winter article on picking out the perfect Christmas tree. I have been including both in the *Tree Pest Alert* since the beginning of this series back in 2002. This year the maple article focuses not on making syrup, but "sap on tap" the use of sap as a refreshing drink.

Sap really begins to run when the day temperatures are about 45ºF and the nights between 15 to 25ºF. It looks like we will have these conditions across the entire state this 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.

There is a third condition, moist soils. It is even better to have snow covered soil. Unfortunately, neither of these conditions will be met this sap season.

Sugar content of sap by maple species

The best candidates for tapping are sugar maples (*Acer saccharum*) but these trees are 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 (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 7% in some 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 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 boxelder can make a good syrup.

Best trees to tap

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.

How to drill a taphole and install a spile

Commercial spouts, called spiles, can be purchased online. There are metal or plastic ones and they range in diameter from about 5/16- to 5/8-inch diameter. The smaller, 5/16-inch spiles will reduce the amount of sap though, about a 10% reduction.

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 taphole of equal diameter to the spile. The taphole should go about two inches into the tree, slanted slightly upward 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 wood.

The holes should be placed about 2 to 3 feet above ground and the number of tapholes that can be drilled into a tree is based upon the diameter. A 10-inch diameter tree can have a single taphole; a 15-to 20-inch diameter tree two tapholes.

Do not drill tapholes closer than about 8-10 inches between tapholes. 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. Many spiles have a hook to hang the bucket. Some spiles are also attached to a lid. A lid will keep debris from collecting in the sap.

The length of the sap season

The sap flow may be over several hours during a day, usually the morning, and it 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 even some boxelders as they begin to leaf out before sugar 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 a gallon of sap per day, though on cool days none may run and on a sunny day you might get even more than a gallon! 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 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.

What do to with the 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. 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. Now run the raw sap through a cheesecloth.

The sap can be drunk right out of the container. However, it is best to pasteurize it first. While it comes out of the tree sterile, the sap picks up bacteria (*Pseudomonas* and *Rahnella*) from the tapping process. Heat the sap on the stove to 185ºF and hold that temperature for three minutes. Pour the hot sap into a container and seal it. Now it can be stored 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 is becoming a trendy drink! Maple water sells for $25 for a quart bottle. This is becoming a popular market in Minnesota as the producers get to skip the time and expense of boiling and bottle it right from the tree (though it is pasteurized to limit bacteria growth). This is a new market and a good opportunity for someone in South Dakota with a grove of silver maples.

E-samples

Turpentine beetle in a Watertown pine

Turpentine beetles (*Dendroctonus valens*) are common in stressed ponderosa pines in the Black Hills. They are not usually a threat to a tree; it must be stressed before the beetle can successfully attack it. They are common in pines “saved” when forest land is converted into housing developments. I have even seen them attack fresh stumps.

The attacks on stressed pines are evident by the coarse, light-colored frass found at the tree’s base. There will also be small globs of reddish pitch at the base, usually within three feet of the ground. There may be some discoloration and even dieback in the canopy, but this is most likely to be due to the stress – drought for example – that made the tree attractive to the beetle.

The treatment is two-fold; manage the stress and the insect. A major stress to all trees in South Dakota right now is drought. If possible and practical, trees will need to be watered this year. We can hope for spring rain, but we should have a plan to water just in case.

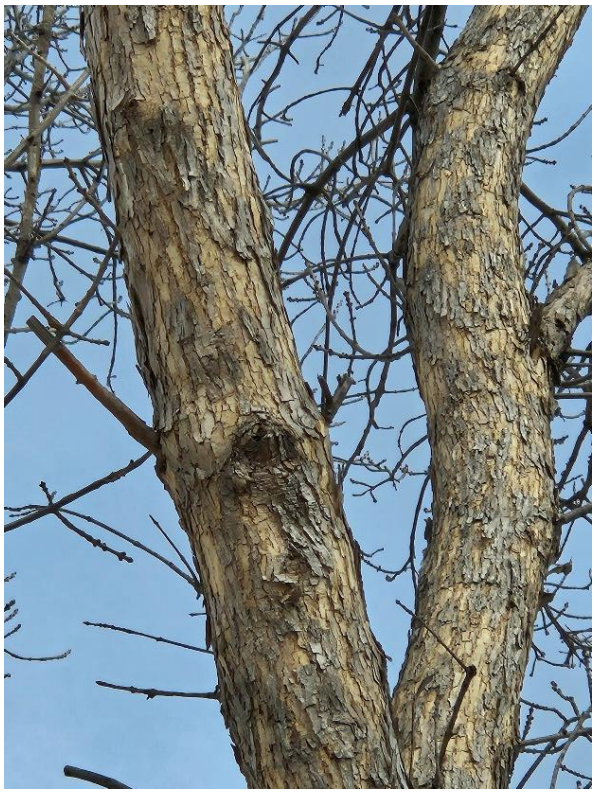
The tree can be sprayed with the same insecticides used for mountain pine beetles and pine engraver beetles. But if spraying for turpentine beetles, only the lower five feet of the trunk needs to be sprayed. This treatment should be applied this spring.

Samples received/Site visits

Davison County, Blonding not associated with emerald ash borer

This visit was to a neighborhood with several ash trees presenting with blonding. The stripping of the outer layer of bark which reveals the smoother, lighter-colored layers beneath is called blonding. It is one of the common symptoms of an emerald ash borer infested tree.

Woodpeckers will blond the bark in their search for emerald ash borer larvae. They are highly effective predators, usually wherever they drill into the wood, a gallery stops. The bird caught its prey.



But this means blonding associated with woodpecker activity will be dotted with drills. No woodpecker drills were found in any of the blonded bark. The blonded bark was also smooth with a gradual transition to the normal bark surrounding the patch. Usually there is an abrupt transition with blonding caused by woodpeckers.

So, what causes blonding other than woodpeckers? A common culprit is squirrels. They will scrap, almost sand, the bark as they run through the tree chasing each other in the spring. These mating chases can rotate around branches and the trunk. This activity can quickly blond the bark and leave fine bark flakes at the base.

Since the bark flakes were recently noticed and the squirrels were chasing each other from tree to tree when I stopped by – squirrels are probably the cause of this blonding.

Drought can also cause the outer layer of ash bark to become separated and flake away. Davison County has been in a drought – as with the rest of the state. I have seen groups of ashes with blonding alongside dried out stock ponds. The blonde bark on these trees did have any woodpecker drills into the wood.

Lincoln County, Common privet fruit

I am often asked about fruit people notice on their shrubs and trees. The common question is, can I eat this? The answer is usually yes. The fruit is small enough to be chewed. A better question is, will eating this fruit have any unpleasant effects?

Yes, in this case. This is the fruit on a common privet (*Ligustrum vulgare*). The small, glossy, black berry-like drupes form clusters near the branch tips. The fruit is eaten by birds but is toxic to humans and animals. Eating the drupes can result in nausea, abdominal pain, vomiting and low blood pressure.

Minnehaha County, Honeysuckle witches'-broom aphid

Tatarian honeysuckle (*Lonicera tatarica*) was a popular ornamental and windbreak shrub until the early 1980s. The shrub was considered pest-free until the witches'-broom aphid (*Hyadaphis tataricae*) arrived from the European homeland of its host.

The aphid feeding results in the proliferation of short shoots that form a broom-like mass filled with distorted twigs and leaves. The brooms are most noticeable in the winter when they stand out against normal growth. These brooms are a puzzle to the shrub owner. The brooms are mistakenly concerned to be herbicide drift.

The brooms do not harm the shrub's health, just its appearance. Tatarian honeysuckle is also considered a weed since it will crowd out native vegetation. These two factors are the reason the shrub is not usually treated with insecticides to kill the aphid. The shrubs is a pest.

Yankton County, Galls on Norway spruce

The call was about these small galls on the base of shoots of a Norway spruce (*Picea abies*). The small pineapple-shaped galls are the work of the eastern spruce gall adelgid (*Adelges abietis*). This is a common insect problem on Norway spruce and white spruce (*Picea glauca*).

Adelgids are small, sucking, aphid-like insects. This insect spends the winter as an immature female. About the time silver maples bloom, 50 GDD, the female lays eggs on the needles. Once the eggs hatch, about 100 GDD, the nymphs feed on the new needles as they begin to form. The nymphs move to the base of the new shoot and resume feeding. This feeding results in the shoot forming a gall around the nymphs.

The woody galls dry and turn brown by mid-summer. The winged adults emerge and fly to a new host. These adults lay eggs on the needles which soon hatch. The female nymphs overwinter on the buds.

The galls rarely harm the host. They also are at the base of the shoots so are not very visible. The adelgid can be treated with canopy insecticide treatment in April as the nymphs are feeding. Acephate is an active ingredient that has products labelled for control of adelgids.