



Tree Pest Alert



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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 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.

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

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Plant development for the growing season

We are now at about 870 growing degree days GDD (base 50) in Sioux Falls. We are ahead from last year in GDDs but similar in precipitation amount. This means that so far 2021 is hotter than last year and just as dry. Not good news for our trees.



Our summer flowering shrubs such as Japanese spirea and Ural false-spirea are already in bloom. Many years we do not see these shrubs flower until another week or two. They are also wilting – every woody plant needs water!

Treatments to Begin Now



Spruce needleminer larvae dropped from their webbed nests several weeks ago and formed cocoons in the soil. They begin emerging as adults at about 800 GDD in South Dakota so the small gray moths are beginning to fly. Previously infested spruce trees can be sprayed with Carbaryl now to kill the adult moths before they lay eggs.

Timely Topics

Emerald ash borer update

There are still some pupae in cells beneath the bark of infested ash trees. Some of these emerald ash borers will not emerge as adults until late June. However, most of the cells are empty as the adults have already emerged (or in this picture – emerging). The peak to the flight is about the third week of June.



The adult females need to feed on leaves for a while before laying eggs, so egg laying should start next week. I expect to start finding new larvae in trees within a couple of weeks.

There is still time for ash tree owners in Sioux Falls, Canton and surrounding communities to have their trees treated.

Water, water, water!



Every tree in the state needs a drink right now. When temperatures hover in the 90s and low 100s, mature trees need a good drink about every five days.

Assuming it does not rain during a five-day period, mature trees may require about 500 gallons of water. An often cited rule-of-thumb for mature trees – those more than 10 inches in diameter at 4.5 feet above the ground – 15 gallons per inch per watering is needed. This means a 20-inch diameter tree needs about 300 gallons per watering.

This is a good approximation. The amount of water may be less than what the tree requires but trees store water and so do soils. A tree would receive about 900 gallons over a two-week period following the irrigation rule-of-

thumb and a little rain during this same time would balance it out the 1,500 gallon requirement.

A 1/2-inch garden hose delivers about 10 gallons a minute, so a lawn sprinkler needs to be on about 30 minutes to deliver 300 gallons. The sprinkler should be set near the trunk of the tree and then moved a few times to soak an area equal to about half the height of the tree. This is the area where the tree's root density is the highest.

The watering needs for younger, smaller trees is as critical but the amount of water needed is less. However, since they have a smaller trunk and the roots occupy a smaller volume of soil, they cannot store as much water so the frequency increases. They need to be watered about every three days.

Tree seedlings should receive about a quart of water each watering. Saplings – trees about one to two inches in diameter at 6 inches above the ground (referred to as caliper) – need about two gallons each watering. Young trees, those larger than saplings but less than 10 inches in diameter at 4.5 feet above the ground need about 5 to 10 gallons per diameter inch each watering.

Tree size	Water quantity/watering
Tree seedlings	1 quart
1 inch caliper tree	2 gallons
5 inch diameter tree	50 gallons
20 inch diameter tree	300 gallons

Rules-of-thumbs are only approximations and these watering recommendations should be compared against soil moisture levels. After watering, check the moisture in the soil to a 12-inch depth with a probe. An old screw driver will work. Push it into the soil and pull it out and see if it is damp for its entire length. Before watering the next time, push the probe in and see if the soil is still moist (note if the ground is so hard the probe cannot be pushed down, it is dry!). If the probe is still moist because it rained during the last few days or the ground is poorly drained, skip the watering.

Most tree owners are not going to water their trees as much or as frequent as recommended here. Nor are people likely to monitor the soil moisture before watering. This is a lot of time and expense but don't be surprised if a tree is dropping leaves, wilting or has discolored needles if it is not being watered properly this summer.

While trees need watering now, they do not need to be fertilized. Surprisingly this is a common question. But trees do not need fertilizer, what they lack is water.

Will water droplets on a leaf cause it to burn?

There are two common myths regarding watering trees in South Dakota. One, that evergreens absorb 85% of water needs through the needles, is mostly wrong.

Spruce and pines can absorb very small quantities of water through their needles during droughts but only under high relative humidity so not a likely event in South Dakota.

The other myth is that if a water droplet sits on the needles during a sunny day, the sun's rays can be magnified through the drop and burn the foliage. This is also wrong. However as with almost all myths there is a glimmer of truth.

Rhoda, a horticulture extension specialist at SDSU, told me about an interesting article on this question (Egri et al. 2010. *New Phytologist* 185: 979-987). The researchers looked at whether a water drop could burn a leaf through the magnifying rays of the sun.

First it is not likely. Leaves with smooth surfaces, maples were their example, will not burn as the water simply evaporates. However, they found that it may be possible to have a water drop scorch a leaf if the water droplet is held above the leaf – like a tiny magnifying glass.



What would hold the water droplet just off the surface? Leaves with a hairy surface. But before everyone panics about a sprinkler causing the landscape to combust on a sunny day, there are a few important considerations. First, a large enough water droplet to magnify the sun's rays before evaporating is going to be shaken off by even a slight breeze. Second, some of the experiments used glass spheres to simulate water drops which do not evaporate.

The authors concluded under the right conditions – the sun's rays entering a large water drop held at the precise distance from the leaf's surface – it is possible to scorch a leaf but not very likely. No need to panic if your trees have water dripping from the foliage after watering.

Still water is a valuable resource, it is best to water the soil, where the roots are and water can be stored, rather than wetting the foliage.

E-samples

Alcohol flux in willows

I have received numerous emails and texts with questions about bubbly reddish sap oozing out of fissures and cracks in willows. Many tree owners also

mention that the flies are attracted to the ooze. I also stopped to inspect some of these trees.



First, the flies are happy. The sap they are sponging up is called alcohol flux. The sap does smell a little like beer and it is the product of fermentation but don't compete with the flies for the sap.

Alcohol flux is the result of microorganisms fermenting sap in bark cracks and shallow wounds. The disease often occurs during hot, dry weather and is common on willows and elms.

The disease rarely causes the tree to die. However, willows that suffered dieback due to the winter cold or drought are susceptible to this disease. The best management for the oozing is watering.

Honeylocusts defoliated by blister beetles

I received pictures of honeylocust trees that are almost completely defoliated. The leaflets are missing but the long petioles is still attached to the twigs. Another similarity among the defoliated trees is that they are all adjacent to a grass/alfalfa field. Why were the leaflets missing? Blister beetles.



We have several species of blister beetles in the state including the ash-gray blister beetle (*Epicauta fabricii*) which was the culprit on these trees. These beetles are about 1/2-inch long, gray, with long soft wing covers and long legs.

The adult beetle feed on legumes and they are a problem in alfalfa. It is not that they eat a lot of leaves – they are more often flower feeder – but that they can become incorporated into bales. Blister beetles get their name from an oily substance, cantharidin, that is contained in their bodies. A crushed beetle will release this material which can makes the bale unpalatable to

livestock (even deadly to horses). If you smack one on your neck, the fluid will leave large watery blisters that can become infected.



The blister beetles also like to feed on foliage of many woody legumes, especially peashrub and honeylocust. I have seen them defoliate a honeylocust tree in three days! Usually they are not noticed until the plant is almost completely defoliated and by then it is too late for control. They also feed in large swarms so it is common to see two or three trees in a row defoliated yet the adjacent trees completely free of their feeding.

Treatments may not always be helpful as the larvae of the blister beetle is beneficial since they feed on grasshopper egg pods.

Jewel beetles, colorful cousins to the emerald ash borer

Each summer I receive insect samples and pictures from around the state that are sent in for confirmation that its emerald ash borer. Fortunately all the insect samples submitted to date this year have NOT been emerald ash borer. The most common “look-a-like” is the metallic wood boring beetle (*Buprestis confluenta*).



This shiny, colorful beetle is one of the jewel beetles. It is little more than 1/2-inch long and very stout. The larvae of this beetle infests dying cottonwoods and poplars and is not a threat to healthy trees.

Samples received/Site visits

Brown County, Ash infested with lecanium scale

There are numerous ash in eastern South Dakota with dead branches and thin canopies but most of these trees

are not infested by the emerald ash borer. The May frost caused some of these problems and the drought is only adding to these symptoms.



The drought is also causing an increase in scale insect populations and there are many ash trees that are infested with scales such as the lecanium scale. As mentioned in the last issue of the *Pest Alert*, lecanium scales (*Parthenolecanium* spp) are sessile as adults. They remain stationary and suck the sap from the tree's twigs and branches.



The young, called crawlers, are mobile and are just beginning to wander along the twigs. Now is the time for treatment; more discussion on management can be found in last week's issue.

Codington County, Herbicide injury on lilac

A landowner has some herbicide drift come across their common lilac hedge along property border. The herbicide used was a combination of glyphosate and 2,4-D. The shrubs are presenting symptoms of exposure.

Glyphosate is a non-selective, systemic herbicide. Woody plant leaves exposed to drift develop yellow blotches on their newest foliage. These injured leaves may drop prematurely. Lilacs are very susceptible to glyphosate injury and the herbicide can be stored in tissue over the winter and cause further injury the following year.



2,4-D is a growth regulator, phenoxy herbicide. It causes exposed foliage to become twisted and curled. A common symptom for lilac exposed to 2,4-D drift is the distinctively curled petiole supporting a cupped leaf.

While these are the symptoms commonly associated with exposure to these two herbicides, the only way to be certain is foliage testing.

Custer County, Engraver beetles infested trees downed by tornado.

The tornado that touched down east of Custer on May 26th left a trail of uprooted ponderosa pine trees. The downed trees are so numerous there are some acreages with almost as many fallen as standing trees.



An inspection of some of these downed trees last week revealed numerous small patches of reddish dust. This dust is from the boring of pine engraver beetles (*Ips* spp) as they burrow into the wood to mate and lay eggs.

Once the bark was pulled away, the characteristic X and Y pattern of galleries was visible on the wood. Where the galleries meet is the nuptial chamber where the male mates with three or four females. Each female creates a branch tunnel out from this chamber which results in the X or Y pattern to the galleries.



Many of these galleries have tiny larvae tunneling out from them. The larvae will feed for about two or three weeks before becoming pupae and then emerging as adults. The adult emergence should begin in about three weeks to a month from now.



The adults prefer to attack fresh downed trees or fallen branches but if this material is not available they will move to standing trees that are stressed. Since every pine is stressed right now due to the continuing drought, we might see many trees becoming infested in this area.

Custer area landowners with fallen pines on their property should cut the branches of these trees into three foot long pieces and scatter them so they dry quickly. This action may reduce the number of beetles that emerge from them later this summer.

The trunks of these same trees should be cut into two or three foot sections and the logs pushed together and covered with 6-mil clear plastic that is sealed to the ground. The plastic covering will heat up the logs and degrade the food source for the larvae. This action will also reduce the number of emerging adults.

Custer County, Oaks infested with fall cankerworm

Many of the bur oak groves in the county are presenting thin canopies. A closer examination of the trees will reveal the leaves have shot holes with some leaves more severely affected, sometime having only a few veins remaining.



The insect creating this defoliation is the fall cankerworm (*Alsophila pometaria*). The larvae are about one-inch long and are a light green with white stripes running along the body. There are three pairs of legs near the head and another three pair of legs at the end of the abdomen.

The insect move along the leaf in a series of motions where the caterpillar will arch up with this forward legs while gripped with the rear ones. They then pull the rear legs up while gripping with the forward legs. This strange means of locomotion give the other name to these insects – loopers.

The caterpillars are still small and can be treated to prevent widespread defoliation of the host trees. One increasingly popular treatment is Spinosad, an insecticide derived from the fermentation of a naturally occurring soil bacteria. This active ingredient can be found in many insecticides.

Stanley County, Stem girdling root on maple

This stop was to inspect a maple that had suddenly died. The trees was fine last year but was now completely dead. There can be numerous reasons for a rapid decline of a maple from winterkill to verticillium wilt but a common one is stem girdling roots.

The first clue here that the problem may be a stem girdling root was that the trunk was going into the ground without the usual flare. This is an indication that the tree was set too deep, a prerequisite for a root to girdle the trunk.



The second clue was that the trunk along one side was flat, as though something was impeding its expansion. When the ground was dug into along this side, a root was exposed pressing into the trunk.

Stem girdling roots are a common problem with maples and lindens. They can be avoided by always planting the tree so the upper most root is just beneath the surface and the entire trunk is above ground. The other management option is to sever any roots that is circling a portion of the trunk before it begins to compress it.

While the problem with stem girdling roots is common with maples and lindens, girdling by fabric can occur with almost any other species. Rachel, the South Dakota Department of Agriculture and Natural Resource's Urban and Community Forestry Specialist took this picture of a declining cottonwood in Pierre. The tree was also set too deep and had fabric imbedded in it.

