



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: Carrie Moore and Dawnee Lebeau

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Plant development for the growing season

The growing degree days (GDD-base 50) are still accumulating across the state. It has been a hot summer, but not as warm as last year. We were about 200 GDD ahead last summer at this time in Sioux Falls. Here is the current GDD for communities across the state.

Aberdeen	1,842
Beresford	2,303
Chamberlain	2,301
Rapid City	1,924
Sioux Falls	2,189

All West River is classified as either abnormally dry or moderate drought. The southeast counties are in extreme drought – it is very dry in Clay and Union counties.

Treatments to Continue

Water!

Just a reminder, if you are in a drought area (all but the northeastern part of the state), continue watering your trees and shrubs. Even if the plant has already shed leaves from drought (because you forgot to water), they still need water.

Timely Topics

Emerald ash borer update

The larvae are continuing their development. By mid-August, the 3rd instars are becoming more numerous though 2nd instars still dominate. There are four stages to larval develop and the 4th, the largest, is the overwintering stage. The 2nd instars are about 1/2-inch long (pictured). The 3rd instars are about 3/4-inch long right now.



These 3rd instar are thick enough that they cannot fit entirely in the thin inner bark and cambial tissue and are also etching the outer layer of sapwood. At this size, the larvae are interrupting the movement of sugars and water in the tree – a true one-two punch.

This is the time of year where infested ash trees often begin to have their canopies thin. The roots are declining from the lack of sugars so less water is being transported up the tree. The severing of the vessels (water-conducting tubes) in the sapwood interrupts the movement of limited water up the tree.

New trees to consider for spring

The twin threats of emerald ash borer and pine wilt disease are making people aware of the need to expand our planting horizon. Emerald ash borer, while only confirmed in two counties in eastern South Dakota, will move across the state over the next two decades eliminating ash in its wake. Pine wilt disease has already expanded across the state. We are losing Austrian and Scotch pines from Dakota Dunes to Buffalo.

Ash, mostly green ash, along with Austrian and Scotch pine are common community and windbreak trees. All three species are tough and adapted to much of the state. Tough and adapted often means over-planted and that was the case with these trees. We are going to lose them all over the next couple of decades.

There are other trees we may want to consider, not necessarily as a substitute for ash, but as another deciduous tree. One of these possibilities is the black cherry (*Prunus serotina*). This is a common tree out East, one of the taller trees in the eastern deciduous forest, 80 feet or more. It will not assume the same size and status out here on the prairie.

We have black cherry throughout the eastern half of the state. There may also be a few tucked away in the communities along the edge of the Black Hills. The tree usually reaches a height of 30 feet though there are some trees more than 40 feet tall down in Dakota Dunes. The same trees are much smaller with a mature height on about 25 feet in windbreaks near Faulkton.

Black cherry has few serious pest problems and rarely is afflicted by black knot, a gall-like disease to which that our common chokecherry is highly susceptible. Black cherry does share a problem common to all cherry, it does not perform well on wet or poorly drained soils.

The tree does produce reddish black cherries, though not like the sweet cherries bought in stores. The flavor is closer to the chokecherries found in our area. But they do make a nice wine and are flavorful enough to eat raw.

One important note of caution. Black cherry leaves and twigs produce cyanogenic glycoside (it gives a bitter taste and is found in the seeds too). The wilted foliage concentrates the toxin and these leaves are poisonous to livestock. Consuming about three to four pounds of wilted leaves can kill a cow or horse by cyanide poisoning. The dried fallen leaves are not as toxic.

Unfortunately, there are not a lot of choices for conifers. There are few genera and species that perform well in the state, and most are already being utilized. One we have underutilized is the Rocky Mountain douglas-fir (*Pseudotsuga menziesii* var *glauca*). This tree, which has been frequently mentioned in previous *Pest Alerts* as a substitute, is found in communities throughout the state, often in the older parts of town. It is occasionally used as a windbreak tree, mostly in the southeastern part of the state.



A note of caution: while the Rocky Mountain Douglas-fir is hardy, the coastal Douglas-fir is not. The seed sources from Montana and northern Idaho have been the trees best adapted to our state.

E-samples

Chlorosis in maples and oaks

Chlorosis, leaves with pale yellow blades but green veins, is beginning to appear in maples and oak trees across the state. The silver and freeman maples are most affected by chlorosis, along with swamp white oaks. Our native bur oaks are not affected nor are sugar or Norway maples, at least until the soil pH is greater than 8. Some freeman maples leaves (pictured) are almost bleached!



The reason for chlorosis is the inability of the tree to absorb enough iron, for the oaks, and manganese (and iron) for the maple. Iron and manganese are called microelements (or micronutrients) because plants do not require large quantities, but they still require some.

The reason for the lack of these microelement in the foliage is the soil alkalinity, the elevated pH, limits their solubility and absorption. A way to go around this barrier is to add iron and/or manganese into the tree via trunk injections or implants.

Applications made into the vascular tissue are often effective for two or three years. These are best applied by commercial applicators who have the equipment and knowledge to do this work. The reason iron or manganese are called microelements is the trees need only a small amount; too much is as damaging as too little. As Paracelsus (1538) said "All things are poison, and nothing is without poison; the dosage alone makes it so a thing is not a poison."

Maples turning red – heat/drought stress

Calls and images have been coming in about silver and freeman maples (which includes the popular cultivars such as Autumn Blaze and Sierra Glen) with reddish leaves. The red, a welcome color change in autumn, is a cause of concern when it develops in summer.



Leaves are green from the chlorophyll contained in the tissue. The green begins to fade as chlorophyll production declines. As the green fades, the yellows are unmasked and some trees stressed by drought have their leaves turn yellow.

The reds are produced, not unmasked, and this is a normal, and delightful, color change in the autumn. The same red in the summer is a cause for concern as it signifies a respond to stress. The most common stress is either too much water (we saw this during the flooding a decade ago) or too little water.

The continuing drought is causing young maples, especially those planted this year, to become stressed by water deficits. Watering helps relieve this but in recently transplanted trees the smaller root system as difficulty keeping up with the water

Sawflies defoliating pines in the southern Black Hills

An alarmed resident of Custer County noticed clusters of "worms" hanging from the needles of ponderosa pines. The insects had already defoliated pockets of pines in the nearby forest.

Two images of the worms were sent. The worms were about an inch long, dark olive brown almost black with a dark amber head. The insects were not caterpillars, but

sawfly larvae. They had three pairs of thoracic legs (the legs near the head) as do caterpillars but seven pair of stubby legs called prolegs on the abdomen – more than caterpillars. These are the bull pine sawflies (*Zadiprion townsendi*), one of several pine sawflies found in the Black Hills.



The bull pine sawfly (named after bull pine, a common name for mature ponderosa pines) are found in the southern part of the Black Hills with their range extending into Colorado and western Nebraska. These are also some of the largest sawflies with the larvae becoming 1 1/4-inch long.

The larvae are out in early spring and drop to the ground to pupate by late spring. The adults, small wasp-like insects, are flying in June. The adult females have a saw-like ovipositor that cut slits along the needles to lay eggs. These eggs began hatching in July and now larvae of various lengths can be found on the needles.

The sawfly larvae feed on the new needles (those formed this spring) in groups. High populations can strip a tree of all its needles, a condition that is now occurring in pockets of trees. Healthy trees can survive one year of defoliation, but drought-stressed trees are not healthy. There may be some decline and death to these defoliated trees next year.

Pine sawflies populations rise and fall so we do not see the same level of defoliation every year. There is usually a rise in the population, and subsequent defoliation, then a rapid decline within a year or two.

Squirrels chewing honeylocust bark

Mid-summer is when a call or text comes in about bark being stripped off a honeylocust. The bark is usually removed around a branch collar. It may extend farther up along the branch and then a few patches removed on the trunk just below the branch.

Why squirrels pick on honeylocust in mid-summer is unclear. Some believe they are after the sweet sap, but there is little to indicate the sap flavor is sought after by animals. Other authorities think they are after the calcium in the inner bark, while others think that the tough honeylocust bark is perfect for sharpening teeth.



Regardless, honeylocust bark is a favorite for squirrels during the summer. There is not much that can be done about this. One frequent suggestion is to move any bird feeders from the tree to at least discourage the squirrels from coming to the tree.

Samples received/Site visits

Emmet County IA, tar spot on maple

This was a sample submitted from Iowa. The silver maple leaves have raised hard and black spots with a light halo around them. This is tar spot (*Rhytisma acerinum*), a foliage fungal disease most common to red and silver maples.



We are not seeing much of the disease this year. The infection period occurs in the spring as the leaves are opening. If we have cool, moist weather, the leaves stay moist long enough – a few hours – that the spore germinate and infect the tissue. If its dry, germination does not occur and the disease does not develop.

The spots become large and black on silver maple, so the disease is noticeable. The same disease in Norway and sugar maple results in smaller black spots. These are not as noticeable so rarely have called about the disease.

The disease on silver and red maple can be treated with fungicides – copper or mancozeb – in the spring as the leaves are opening and repeated two more times about three weeks apart. Treatments are rarely performed as the disease does not harm the tree.

There was also the question was this disease the same as tar spot on corn. The answer is no. Tar spot on corn is caused by *Phyllachora maydis*, an unrelated fungus. The two disease share similar symptoms and a common name but that is it. They are not related and the appearance of one does not mean the other will appear as well – completely different organisms.

Minnehaha County – scorch on Korean maple

Korean maple (*Acer pseudosierboldianum*) is one of my favorite small maples. It reminds me of the Japanese maples (*A. palmatum*) we would plant in gardens out East but is not reliably hardy here. The fine foliage of Korean maple is divided into 9 to 11 lobes and turns a bright red or yellow, even gold in autumn.

Unfortunately, it is also prone to leaf tatter and leaf scorch during the hot, windy weather that defines our summers out on the Great Plains. The ideal planting location to keep Korean maple from this stress is a lightly shaded location which protects from the intense sun and the wind.



The Northern Glow maple (*A. x 'Hasselkus'*) is a cross between the Korean maple and the Japanese maple. It has a leaf shape of the Japanese and its red autumn foliage color, but the hardiness of the Korean maple. It still suffers from leaf scorch during our hot summers so lightly shaded site is still best.

Minnehaha County – aphids on red oak

This was a large northern red oak in Sioux Falls that every leaf was drooping. The drooping was not related to the drought. Sioux Falls has not experienced the drought intensity of the rest of the state and the yard has an irrigation system.

There were two reasons for the drooping and curled leaves. First, the underside of the leaves had large aphid colonies. The small insects, known as plant lice, suck sap from the leaves. This feeding can cause the foliage to curl and the surface covered with small white to yellow dots referred to as stippling. The leaves will have a slight sticky film from the honeydew the aphids excrete as they feed.



Aphid populations can expand and contract very quickly. Aphids can give birth to live young, skipping the egg stage, so populations can explode. Fortunately, lots of other insect find aphids tasty and the population can collapse equally fast. The ladybeetle larvae were already at work so no need for any insecticide treatments.

The other issue was herbicide exposure. The drooping leaves had curled and twisted petioles. This is not commonly associated with aphids but is a symptom found with exposure to growth-regulator herbicides.



The lawn was perfect, not a weed in sight, and this was the result of frequent herbicides. While this makes a great lawn, herbicides can be absorbed by the tree roots in the lawn and moved up into their canopy. Dicamba, a common active ingredient in lawn herbicides, can cause the symptoms presented on the oak.

The label says not to use under trees. Many applicators take this to mean do not apply directly beneath the tree's crown. But tree roots extend out a distance equal to their height so a large oak, such as this tree, had its roots throughout the entire front yard.