



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

We are about to enter the dog days of summer (July 3 to August 11); the hot, humid time of the year; an enjoyable time of year to get a good book, find some trees and set up a hammock. The growing degree day (GDD – base 50) accumulation for cities across the state:

Aberdeen	918
Beresford	1232
Chamberlain	1162
Rapid City	869
Sioux Falls	1150

The summer flowering shrubs are now in full bloom. The falsespireas (*Sorbaria sorbifolia*) are covered in their long white panicle. The cultivar Sem is an excellent choice for a small (about 3 feet tall) shrub but a reminder that it suckers profusely and will expand into the surrounding space.



Most of East River is no longer in a drought but the southern edge of this region; the counties along the Missouri River are still under moderate to severe drought. Much of West River is still under abnormally dry to moderate drought.



My West River rain gauge, the Wall Drug billboard off exit 132 on I-90, is showing drought. Many years the billboard posts are standing in the pond. A few wet years, the base of the sign is covered in water. This year the pond is almost gone.

Treatments to Begin Now

Apple maggot treatments should continue (see *Pest Alert* June 22 issue). Fungicide injections to protect American elms from Dutch elm disease should be started or repeated (they are done every three years (also more information in the last *Pest Alert*).

The second generation of pine needle scale will be hatching in another week or two. Treatments will be covered in the next *Pest Alert*.

The one treatment most of our trees need right now is a surface application of H₂O; they need a drink.

Timely Topics

Emerald ash borer update

We have passed the peak emergence of the beetle. The adults began to emerge about a month ago. They live for about three or four weeks, so some have already died of old age. But most adults that will emerge this year are out right now munching on leaves and laying eggs. I expect that I will see the first larvae of the year during next week's sampling.

The larvae are small when they first hatch and the damage they do is minimum. As they become larger and their tunnels widen and deepen, the larvae begin to interrupt the circulation of water and sugars in the tree. This is when the tree starts to decline.

Cladogenesis and cottonwoods

Cottonwoods are a familiar sight on the prairie horizon. The tall, wide spreading canopy is hard to miss. It is hard to miss the amount of canopy raining to the ground at this time of year. The ground beneath many large cottonwoods is littered with twigs and small branches.

While some of this fall is due to breakage during the numerous storms crossing our state, many are the result of a natural phenomenon known as cladogenesis. The word comes from the Greek *clados* meaning branch and *ptosis* falling.



Pick up one of the fallen twigs and you might notice that there is a clean cut around a rounded, raised center. If you climb the tree and find where it was connected, you notice the stub forms a crater. Put the two together and you have a ball and socket. There is no tear or break as would be found if the twig broke in the wind or was chewed by a squirrel.

Why cottonwoods and some other tree species such as willows shed twigs during the summer is not completely understood. It is considered a response to stresses such as drought, so we see shedding more during dry years, but it occurs every year on many cottonwoods. I think they do it just to annoy us.

Update on pine engraver beetle

I reported on the first-generation adults burrowing into down trees and branches back in the May 25 issue of the *Pest Alert*. I mentioned that these adults were burrowing into the green material to mate and lay eggs. The eggs would soon hatch into larvae that would burrow out in the material, become pupae, and emerge as adults in about 35 to 45 days.

They are right on schedule as I am finding white pupae beneath the bark along with callow adults – the new pale-yellow adults that will be emerging soon. The second-generation adults will be content to fly to newly fallen trees to burrow into for their new home. They need fresh green material as a food source for their developing young, but it needs to be dead (or dying) as the sap flow could suffocate them (as well as impede the movement of the adults into the wood).



The problem is if there is not fresh, green material and the standing trees are stressed, the adults will attack live trees. We may have the perfect storm this year again. There were many adult beetles that survived the winter. There was also a lot of fresh, fallen trees and branches this spring so plenty of potential homes.

We are still in a drought. The average April to June precipitation in central Black Hills is about 8.5 inches. If the precipitation during this period is less than 75 percent average, the standing pines are drought-stressed and susceptible to attack by the engraver beetles. The April to June precipitation this year was 6.5 inches, about 76 percent average, so close to this threshold.

I expect we may see trees killed by these beetles again this year. Many of these trees may be around tree thinnings where slash (fresh branches and tree tops) were piled last spring. This material attracted the beetles and they happily lived in it all spring. The same material has dried out now and the second generation will be forced to move to the surrounding live trees.

A final note on the pine engraver beetle life cycle. The beetle does not have discrete generations where all are adults at the same time. It is more of an ebb and flow with more adults out at some times and fewer in others. Adults can be found almost any time of the year.

E-samples

Chlorosis in maples

Maples with yellowing leaves are a common sight right now. Yellow leaf blades with the interior veins remaining green is known as chlorosis. This is usually due to the lack of iron and/or manganese in the leaf.



Chlorosis is not common to all maples. We rarely see chlorosis in Norway or sugar maple nor boxelder. It is common in red and silver maple along with their hybrid, the freeman maple, and its many cultivars.

The lack of iron and manganese in the foliage is not due to their absence in the soil. Our South Dakota soils have adequate amounts of these microelements. The problem is our alkaline soils render them unavailable to the trees, at least in the quantities they need to maintain green leaves.

Merely adding iron to the soil will not help unless it is the chelated form of iron FE-EDDHA (Ethylenediamine dihydroxyphenyl acetate ferric). This is available in water-soluble iron chelate products. Chelated forms of manganese are not effective and can make the problem worse.

The best solution is either injecting the needed microelement directly into the tree or using implants containing iron or manganese. These provide several years of green foliage. The injectable products are available from commercial applicators. The implantable products are sold in many garden centers.

Note: chlorosis in river birch and red oaks and swamp white oak is due to iron deficiencies, not manganese.

Currant aphids

I received this picture of a currant bush with crinkly leaves, appearing like blisters along the veins and margins. I do not have a sample to examine but this may be the work of the currant aphid. These small sucking insects withdraw sap from the network of veins in a leaf. The aphids also inject toxins into the leaf which results in the distortions. The leaves may also develop a reddish tint. The aphids infest currants and gooseberries.



The aphid population seem to come and go. There are lots of insects that find aphids tasty, and they are easy prey. Ants also like the aphids but for their honeydew so will protect and herd them. Usually when you find the small (1/16 inch) green, pear-shaped aphids, you will find the herding ants.

Samples received/Site visits

Custer County, Leaf curl on chokecherry

This is leaf curl on chokecherry caused by the pathogen *Taphrina wiesneri*. This was also reported as an e-sample in the May 25 issue of the *Pest Alert*. I was asked to look at curled and deformed leaves in a native chokecherry thicket behind a home.

Leaf curl on chokecherry results in thickened, curled or puckered leaves that often have a slight reddish tint. Infected leaves may fall prematurely but are replaced by new leaves. The disease can weaken the chokecherry but is rarely a killer. The thicket will just produce more shoots.



Davison County, Cedar-hawthorn rust on downy hawthorn

We saw the orange gelatinous horns or cones on the cedar (juniper) galls a few weeks ago. These produced the spores that infect the apples and hawthorns. The spores drift through the air at night and germinate if they are fortunate to land on an apple or hawthorn leaf that was wet for at least four to six hours.

The spores infected the foliage and now the diseased leaves are beginning to form tiny yellow dots. These dots will become raised and enlarged over the next few weeks. About three weeks from now on the underside of the leaves, beneath the yellow-orange spots there will be small light-colored threads. These are the fruiting structures that will produce spores that carry the disease back to the cedars.



The disease causes leaf discoloration and premature defoliation. It can also affect shoots and fruit (and the infected fruit will also become covered with the thread-like threads). Infected trees may be more susceptible to other stressors, and they just look ugly – nothing ornamental about them!

We see the disease most often on the Arnold (*Crataegus arnoldiana*) and downy hawthorn (*C. mollis*) (pictured). We see a closely related rust disease, the cedar-quince rust, on cockspur hawthorn (*C. crus-galli*). The hawthorns least affected by rust diseases are the cultivars of the Morden hawthorn (*C. x mordenensis*), the Toba and Snowbird hawthorns. These are not free of problem either; they suffer from a leaf blight. Hawthorns are not pest-free plants!

Fall River County, Leafcutter bees

I had this call about ash and lilacs on a property that it looked like someone had taken a hole puncher to the leaves. The leaf margins were deeply cut with smooth semicircle shapes, some more than 3/4 inch in size. The holes are most found in South Dakota cut in ash, lilac, oak, and woodbine.



These are the work of leafcutter bees (*Megachile* spp). These are solitary bees that do not feed on the cut leaf tissue but instead carry it back to build nest cells to rear their young.

The leaf damage is more cosmetic than a serious threat to the plant's health. Insecticides are not usually effective, and we do not want to be killing pollinators. If the damage is objectionable, the best means to reduce the problem is to remove nesting sites. These are typically made in nearby old rotten boards or thick, pithy stems of wild roses.

Hamlin County, Shothole disease in cherry

This was another stop to look at hole punched leaves but instead of the holes being along the margins these were throughout the leaves. This is not the work of a leafcutter bee (see the Fall River sample), nor any other insect. This is the work of a pathogen.



The neat round (1/8-inch diameter) holes in the leaf blade are the work of the disease cherry leaf spot (*Blumeriella jaapii*). There is also a bacterium that causes similar spots. The disease begins in the spring as reddish-brown spots. This tissue dies and rounds out of the leaf blade by early summer. Later this season severely infected leaves will turn yellow and begin to fall prematurely.

The disease is not a severe problem in South Dakota as our summers are usually dry and this limits the expansion of the disease. Shothole disease can be

managed by foliar applications of a fungicide beginning as the leaves open and repeated every two weeks while the spring weather remains wet.

Minnehaha County, Herbicide injury on Douglas-fir

This was a sad stop. It is a windbreak of Douglas-fir, a tree we would like to see used more in eastern South Dakota. This conifer has a moderate growth rate and few pest problems.

The windbreak was planted about 15 years ago from seedling stock and many trees are now about 15 to 18 feet tall. There were a few trees in the belt that had yellow, brittle needles or has already shed. The buds were partially open, but the expanding needles appeared distorted.



Winter-burn is a possibility. It was a dry winter and combined with the warm April temperatures, many conifers suffered winter desiccation injury. But this would not cause the buds to be distorted. The problem is soil-related and the agent an herbicide.

The owner had applied a "little" (I have never had anyone say they used a lot) herbicide around the trees to control weeds. The herbicide was purchased at a feed store and he was told be careful using it around trees.

The active ingredient in the herbicide was aminopyralid. This is a good herbicide to control many broadleaf weeds. It is also good at controlling legume trees and shrubs such as honeylocust and peashrub as well as conifers (if not carefully applied).

Aminopyralid should not be directly applied to conifer foliage – hard to do when spreading on weeds beneath and near the trees. It also has soil activity so applications near conifer roots can be absorbed and carried into the tree. A reminder: conifer roots can extend out to a distance equal to the height of the tree.

Pennington County, Ash bark beetles

I stopped to look at ash trees that had the outward appearance of an emerald ash borer infestation. The trees were in decline and there were numerous watersprouts and suckers.

The trunks were riddled with holes, but the round holes were about the size of a bb. These are the wrong shape, not D-shaped, and too small, less than 1/8 inch, to be the work of the emerald ash borer.



When the bark was pulled away it revealed a network of tunnels. The tunnels, galleries as they are often called, made by the borers that infest ash are very characteristic and can be used to identify their makers. Emerald ash borer adults remain on the bark surface to lay eggs. The larvae which burrow through the bark once the eggs hatch creates winding serpentine tunnels just beneath the bark.



These tunnels have a single long wider tunnel with smaller tunnels radiating out from the sides of this tunnel. This is the work of the ash bark beetle (*Hylesinus* spp), a native borer that infests recently dead and dying ash. I am seeing a lot more infested ash in the state, including the Black Hills, due to the years of drought. While ash is drought tolerant, two years of dry weather has taken its toll. Those in parking lots, campgrounds and other harsh sites have begun to decline and become susceptible to attack by this insect.