South Dakota State University Extension

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 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

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Plant development for the growing season

October weather was mild – warm day and cool nights. Frosts have been rare, so gardens and flower beds are still filled with produce and flowers. The average frost date in Sioux Falls is September 30th.

The growing degree days (GDD-base 50) accumulation is up about 70 to100 GDDs during the past two weeks. Here are the total GDDs for communities across the state.

Aberdeen	3,129
Beresford	3,742
Chamberlain	3,774
Rapid City	3,394
Sioux Falls	3,697

The long frost-free fall is resulting in some fall foliage color we do not get to see in South Dakota. Trees noted for brilliant fall foliage color east of our state rarely color here as our first frost appears before their leaves begin to change. But not this year!



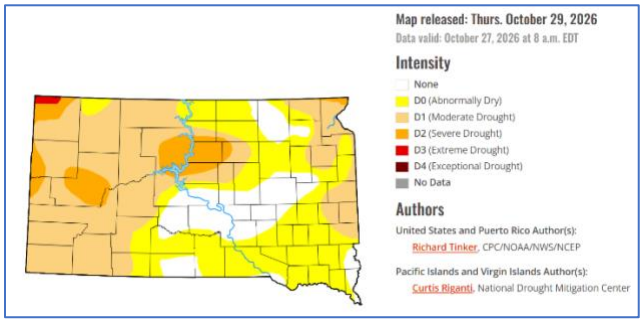
The late fall has resulted in beautiful color on our campus 'Legacy' black maples (*Acer nigrum* 'Legacy'). The leaves on this cultivar usually turn brown in the fall as our first frost comes before the leaves begin to color. Since we have not yet had a hard frost in Brookings, these trees have had time to develop their color. This is also true of ginkgo (*Ginkgo biloba*), another tree that is

late to develop fall color. We see good fall colors on these trees about every ten years so enjoy the warm weather and fall color while you can!

Drought monitor

The precipitation we have received during the past two weeks has not made much of a dent in the drought. We have about 16% of the state as drought-free, not any change from early October. A year ago, about 61% of the state was drought free! The area under extreme drought is still less than 1%. About three quarters of the state is classified as either “Abnormally Dry” or “Moderate Drought.”

Here is the current map from the National Drought Mitigation Center at the University of Nebraska-Lincoln.



Treatments to Start Soon

To rake or not to rake fallen leaves

Not much to do now but continue raking as the leaves fall. Mowing, rather than raking, is a good substitute for trees with small leaves such as crabapples or the fallen leaves are a single layer and cover less than half the lawn.



The mowing will shred the leaves into small fragments that degrade quicker. If the fallen leaves created layers that cover the entire lawn, raking may be needed. Since many of our common leaf diseases overwinter on fallen leaves, this can be a good strategy to reduce infection of diseases such as apple scab next year.

But there is value in leaving the fallen leaves if they are a light layer that covers less than a quarter of the lawn. A light layer of leaves provides habitat for overwintering beneficial insects along with butterfly chrysalis and pupae of other caterpillars.

This is a concept known as ‘soft landing’ allowing fallen leaves and twigs to remain beneath trees to provide the critical habitat – even better to replace this space with ferns and wildflowers. You can use this as an excuse not to rake!

Timely Topics

Emerald ash borer update

We are beginning to see 4th instar larvae burrowing into the sapwood to spend the winter. They will be carving a small chamber in the wood for their winter residence. Once in this chamber, the larva curl to become J-shaped larvae. Once curled, they synthesize antifreeze agents, so their bodily fluids do not freeze. At least not until temperatures drop to about -22^{o}F.



But this is -22^{o}F in the chamber, not the air temperature. The chambers are within the wood, so they have the insulation of the bark to moderate their interior temperatures. Not a lot, of course, but enough that we need air temperatures closer to -40^{o}F to kill many larvae.

Pine beetle update

Black Hills pine trees that were infested this year by pine engraver beetles (*Ips pini*) now have yellow needles throughout their canopies. But they do not have any, or at least not many, pine engraver beetles in their trunks. The trunks of these trees are peppered with small BB size holes where the adults left this fall to overwinter in the duff layer of the soil.

They will spend the winter in this insulating litter to emerge next spring when the temperatures reach into the 60s. The spring generation of adults typically attack recently fallen branches. The branches that snap off during wind and snowstorms are still green come spring,

so they provide the food the beetles need for their larvae to develop.

Mountain pine beetles (*Dendroctonus ponderosae*), on the other hand, infested trees in mid to late summer. These trees are now filled rice grain size larvae that have been feeding in the inner bark all fall (see below). The host pines do not yet present any canopy symptoms of the infestation. The canopies are still filled with green needles. These will turn red next summer about the time the adult mountain pine beetles leave to attack nearby pines. The only outward indication of the attack now are pitch masses – globs of whitish pitch – along the trunk.



Pine trees with mountain pine beetles should be cut during the winter to kill the larvae. Ideally this wood is processed which will kill the larvae as they live just beneath the bark. Other options are to fell the infested tree and debark the trunk to a minimum diameter of 5 inches (a very laborious task) or just cut the trunk into two-foot lengths up to a 5-inch diameter and, if possible, rotate the logs every couple of weeks this spring.

The sun heats the drying bark which can increase the inner bark temperatures (where the larvae live) to 110^{o}F which kills many of the larvae. Do not just stack the logs as firewood – the beetle will continue to develop to adults and emerge next summer.

E-samples

Declining cottonwood

The picture shows a tall, upright cottonwood that is declining. The upper limbs have died on this tree and the other two cottonwoods. The surrounding trees – other broadleaf species – appear to be healthy. The most probable cause of the decline is one of the many stem canker diseases that infect cottonwood.

The cottonwoods are about thirty years old according to the owner. If the trees are one of the seedless cultivars, such as Siouxland, the short life may be normal. Many of these cultivars are noted for their rapid growth but that often means a short life. The allocation of resources to growth means less is available for defense against canker diseases and other pathogens.



Needle drop on white spruce

The question was about the needles turning yellow. The older needles are turning color and shedding. This is normal. But there is also some loss of younger needles such as the two-year-old ones. This is not normal. This is a symptom of stress. The stress may be shading or drought or a needlecast pathogen among other possibilities. A site visit will be needed to determine the causal agent.



Not emerald ash borer

This picture was sent in by a park manager wondering if the holes were from emerald ash borer. No, the emerald ash borer emerges from crisp D-shaped holes about 1/8 inch. If you are not sure if the hole is D shaped, then it is not emerald ash borer. The exit holes are that crisp for EAB.

The holes in the bark of this ash are larger and round. The bark is also flaking away around the holes. It is difficult to determine the size of the holes, but they appear to be about ½ inch diameter. A dime or quarter – common objects used as a scale – would have helped.



These may be woodpecker drill if they are a little less than ½ inch diameter. The tree may be decayed enough that the soft wood is easy to drill for borer larvae. There are numerous borers that feed in decaying wood. These are food sources for birds. Emerald ash borer feed in living wood through they are also attractive to woodpeckers.

If the holes are slight larger than ½ inch diameter they may be the exit holes for the carpenterworm (*Prionoxystus robiniae*). This is a large larva – about two to three inches long at maturity – that tunnel through the sapwood and heartwood of its host. There usually is fine powder near the base of the tree where the larva has pushed frass out of the hole. Carpenterworms attack dying or recently dead trees.

Pine wilt disease in Pierre pines



The pictures that were sent show Scotch pines (*Pinus sylvestris*) that rapidly had their bluish green foliage turn yellow to tan. When one was bucked up, the wood showed blue stain. The rapid foliage color change and blue stained wood are the most common symptoms associated with pine wilt disease.



The primary causal agent for pine wilt disease is a small nematode – the pinewood nematode (*Bursaphelechus xylophilus*) - which is carried to the host by sawyer beetles. The beetles also carry bluestain fungi (*Ophiostoma*) to the host along with the nematode. The combined action of the nematode and fungus causes the

host to quickly wilt. The tree is infected in the summer but is dead by fall.

The best management is to destroy any infected Scotch pine before April 1. The sawyer beetles leave their now dead host in the spring carrying the nematode and fungus to a heathy pine.

Samples received/Site visits

Aurora County, Dusty appearing pine needles

The dusty, and slightly sticky, needles were from the honeydew excreted by the pine tortoise scale. The pine tortoise scale is common on Scotch pine (*Pinus sylvestris*), but it can also be found on Austrian (*Pinus nigra*) and mugo pines (*Pinus mugo*).



Pine tortoise scale is a soft scale. They suck the sap directly from the phloem and excrete the excess as honeydew. The sticky honeydew is often colonized by sooty mold which gives the needles a powdery black appearance.

The adult female scales can be found within the sooty mold. They have a dome shaped shell (like a turtle shell) that is reddish brown with black stripes. The adult scale is stationary. They and their mobile nymphs, called crawlers, feed on the new shoots of their host.

The insects overwinter as adults with eggs laid beneath the shells in early spring. The eggs hatch over an extended period, beginning at 450 GDD (about when black locust starts to bloom) till 1,000 to 1,200 GDD (when littleleaf linden is blooming). This long hatch period means insecticide spraying is not always effective. The best option for a foliage spray is horticultural oil in early spring to kills the adults before they complete their shell.

The best option is soil injection of an insecticide such as Imidacloprid applied in late autumn or early spring. Dinotefuran as a soil drench is also effective. These applications have minor impact on their natural enemies.

Davison County – Cotoneaster leaf crumpler

The concern was all the crumbled masses of dead leaves at the tips of their hedge. The reason was – and the name is descriptive – the cotoneaster leaf crumpler. The cotoneaster leaf crumpler (*Acrobasis indigenella*) is a common pest of hedge cotoneasters (*Cotoneaster lucida*). I can find these caterpillars, and their damage, on cotoneasters across the state.



This insect is a common pest of cotoneaster but often goes unnoticed until fall leaf drop when blackened masses of dried leaves are visible. These cases can be two inches long. The larvae consume the foliage in mid to late summer and constructs a home from the dead leaf fragments, silk, and frass pellets (insect poop with a little fiber). They live in this “house” but venture out to feed on foliage. The insect does not feed on enough foliage to harm the plant; the real problem is these “homes” detract from the appearance of the plant.

The crumpler has only one generation per year in South Dakota with the adult moths flying in early July and laying eggs on the foliage. Once hatched the larvae begin to clump leaves together. They overwinter before resuming feeding in the spring (but you must look carefully when you unfold the leaves – they are small!).

Insecticides containing carbaryl as an active ingredient, and labelled for this use, are effective in late summer to kill the young larvae before they are hidden in their clumps. Spinosad, an insecticide formed from a bacterium (*Saccharopolyspora pinosa*), is also available under various labels. Unfortunately, nothing will remove the clumps that have already formed.

Lyon County, Dark honey mushrooms appearing on fallen tree

These mushrooms were coming up on the fallen trunk of a basswood tree that fell during one of the past windstorms. This is armillaria, also known as the dark honey fungus (*Armillaria ostoyae*). The fungus is found near the bases of fallen and stumps of hardwoods and

pines. The fungus causes a white, pulpy rot. The decaying wood is often laced with stringy, black rhizomorphs hence the other name, shoestring root rot.



The fruiting structures, the mushrooms, appear in large clusters in autumn usually following some rain. The caps are about 1.5 to 4 inches across, broadly convex and reddish brown. The stalks are two to five inches long and usually white but can be brown. The fungus is also one of the bioluminescent fungi – think of Avatar – but the blue-green glow is very dim.

Minnehaha County, Pine needle scale on mugo pine

The white bumps on dark green needles of this mugo pine (*Pinus mugo*) are the immobile stage of the pine needle scale (*Chionaspis pinifoliae*). This is a common pest of mugo pines but can also be found on other pines and even spruce.



All the scales seen on the needles are dead. But the scales that are on the newest needles, the ones formed this year, have live eggs beneath the shell of their dead mom.

Next spring, the first-generation pine needle scale will begin hatching at 300 GDD, about the time common lilac is in full bloom. The first-generation hatches over a brief period, only about a week or two so only one treatment is needed to kill most of the crawlers. A horticultural oil can be applied at this time to kill the young crawlers. The oil only kills what it contacts so the treatments must be timed to after the eggs have hatched. Insecticides containing dinotefuran as the active ingredient may also be used.

Union County, Death by wire

We had a sample sent in of spruce branches that were losing needles. There were no signs or symptoms on the twigs or needles that fit a biotic stressor such as an insect, mite, or fungus. These samples require a site visit to figure out the causal agent.



Once on site, the problem was easy to figure out. There were two spruces about fifteen feet tall near the end of the driveway. One looked fine but the other, only the lower one-third was alive. The top had died recently based upon the previous growth and recollection from the owner.

At the point on the trunk separating live from dead there was heavy gauge electrical wire wrapped tight around it. The wire was attached to a chain that ran down to a stake. The chain was hidden from view as the branches had grown over it. The owner mention it had been installed to right the tree after the 2022 windstorm.



Unfortunately, the wire girdled the trunk, killing over all the canopy above it. There was even a slight indentation in the trunk beneath the wire. This is a good opportunity to remind everyone that tree trunks grow and wire does not. Never leave wire support on a trunk for more than a year.