



**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

This past week's weather was typical fall weather – cool with some rain and a few sunny days. While the rain was welcome, it was a lot at once. The forecast is for slightly warmer but dry weather for the coming week.

The growing degree days (GDD-base 50) accumulation. Is up about 100 to 130 GDDs during the past week. Here are the total GDDs for communities across the state.

Aberdeen	2,903
Beresford	3,451
Chamberlain	3,490
Rapid City	3,150
Sioux Falls	3,434

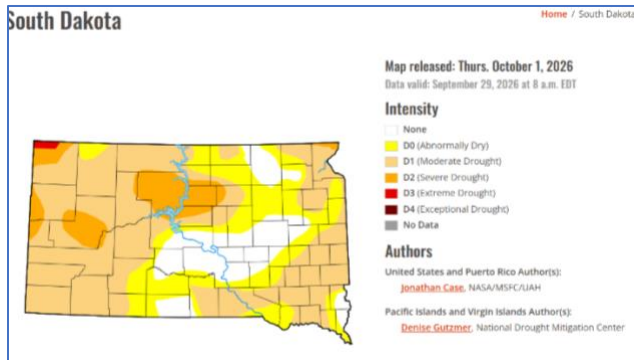
The sunny weather we had towards the end of the week is causing the bright yellow interior needles on the pine trees to stand out. The yellow needles are the three-year-old needles that are being shed from the tree. This is a normal fall occurrence and is not a cause for concern. This is a Scotch pine with its fall color!



Drought monitor

The precipitation is beginning to make a dent in the drought. Now about 15% of the state is drought-free. The area under extreme drought is 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 Now

Good time to mulch trees and shrubs

We may have a few more weeks of mild weather so now might be a good time to replenish the mulch around trees. Mulching is good practice for our ornamental trees. A layer of organic material can keep the soil a little cooler during our hot summer (though dark mulch can raise the air temperature just above the layer) and help hold moisture.



Another benefit is that mulches provide a little more insulation to keep the soil warmer longer into the fall. The insulating layer can also keep the winter soil temperatures from dropping into the teens, a temperature that can kill tree roots.

The best mulch is the organic debris out of a tree company's chipper. This material has everything from

shredded leaves and twigs to bark and wood chips, all in a wide range of sizes – it is perfect. The material can be used fresh out of the chipper. It does not need to be composted as the mulch is placed on the soil, not incorporated into it.

The mulch layer should be about six to eight inches deep. It should be extended out at least four or five feet for mature trees and at least two feet (so four feet diameter) around younger trees. Try to leave an area of bare soil at least six inches around the trunk (but the rain will probably move the mulch into this area). Mulch can provide hiding covers for critters such as voles. These animals can girdle the trunks.

Timely Topics

Emerald ash borer update

We are beginning to see more 4th instar larvae within the sampled branches. These larvae, the largest of the four stages, are an inch long or longer. They are continuing to cut wide tunnels through the inner bark (phloem) and outer sapwood. This tunnelling disrupts the movement of sugars and water through the tree which results in canopy decline and eventual dieback.



While the 4th instars are still feeding, along with some of the smaller 3rd instars, I expect we will see some 4th instar larvae moving deeper into the sapwood within the next two weeks. They will carve an overwintering chamber deeper in sapwood, often 1/2-inch or more and curl into the chamber to spend the winter – snug as a bug in a rug.

Emerald ash borer confirmed in Lincoln and Pipestone Counties in Minnesota

The Minnesota Department of Agriculture confirmed infestations in two new counties. Emerald ash borer was found in a green ash tree in a campground in Lake Benton. An infested tree was found in the Jasper yard waste disposal site.

Minnesota has established quarantines in these two counties. This will restrict the movement of firewood and raw ash products out of the counties. This practice has been effective at slowing the spread of beetles across the state. Emerald ash borer has now been confirmed in 62 of the 87 counties in Minnesota. It was first confirmed in the state in 2009.

E-samples

Galls, not acorns

I receive this question several times each fall, why are the acorns not falling? The reason is they are not acorns. They are oak galls.



The oak rough bullegall is caused by the feeding of a small wasp (*Disholcaspis quercusmamma*). The tiny adult female lays eggs on the shoots. After the eggs hatch the small larva feeds in the shoot. It also secretes a chemical in the shoot, so a woody gall forms around it.

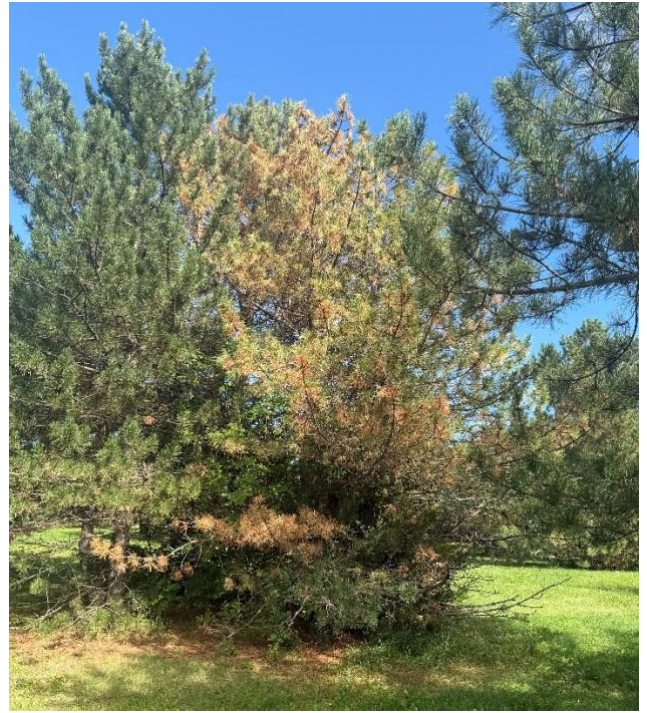
The galls become woody during the growing season, turning brown and hardening. They may also become stained with a dark powdery film. The larva pupates in the gall during late summer with the adults emerging during October.

The empty galls may remain attached to the shoot for several years - hence the acorns that do not fall. The galls do not usually harm the host, but branch dieback can occur during heavy infestations.

Pine wilt disease in Scotch pine

The picture is a Scotch pine (*Pinus sylvestris*). The tree has rapidly declined this year. Some other pines have also suddenly died. This may be pine wilt disease.

The disease is caused by a small nematode, the pinewood nematode. It is carried from a dead, infested tree to a healthy host in the spring by sawyer beetles. The most common management is to cut down and destroy any Austrian (*Pinus nigra*) or Scotch pine that dies quickly this summer or fall. This need to be completed before the sawyer beetles emerge next spring and carry the nematode to new hosts.



Notice the different pattern from the normal needle drop of the Scotch pine on page 1 where the interior needles turned bright yellow. These tan needles are from the tips to the interior on the upper two-thirds. This is the classic

Wetwood in young cottonwood



This white slime and dark liquid oozing from the crack in the tree is called wetwood. It is a bacterial infection in wood that ferments and the liquid is forced out of cracks by the pressure.

The disease is common on elm (*Ulmus*) and cottonwood (*Populus*) in South Dakota but can also be found on mulberries (*Morus*) and willows (*Salix*). Gas builds up in

the trunk of infested trees through fermentation by bacteria, and the high pressure – 60 psi – causes the liquid out through cracks and wounds.

The wetwood did not cause the wound, but it used the opening as a means of infection. There are no effective treatments.

Samples received/Site visits

Codington County, Herbicide drift injury on young trees – a caution on ag products

Herbicide drift and tree injury is not a unique occurrence, particularly in an agriculture state such as South Dakota. The problem is more common in windbreaks as these trees are adjacent to fields.

This stop was to look at a belt of young trees and shrubs that included peashrubs, hackberries, honeylocust, lilacs, Siberian elms, junipers (cedars), and spruces, among others. Hackberries were presenting the most symptoms of stress, but not necessarily due to herbicide.



The herbicide was thought to be 2,4-D and glyphosate, not a common combination (they can and are sometimes mixed but note that the reaction of the two can clog filters). The woody plants were not presenting any of the common symptoms of 2,4-D. There was little curling at the tips, the most common symptom of 2,4-D exposure.

This is a growth-regulator herbicide, so the newest growth is usually curled and the leaves are distorted. But the tips were not curled and only showed a little dieback.

The buds were alive, but the foliage was missing near the tops of the trees and shrubs.



A call to the producer solved the mystery. The herbicide was Enlist. This is a 2,4-D product used in corn and soybeans. The reason for the lack of twisted and curled growth of the trees was due to the concentration of 2,4-D in Enlist. It is used as a burn-down herbicide so contains 55.7% of 2, 4-D. The label cautions not to allow “contact with the foliage or green stems of desirable trees because severe injury or destruction may result.” It does burn the foliage off – no curling.

While this was used as the label permits in an adjacent agricultural field, it is a good time to remind everyone that ag herbicides are best left for crop fields and pastures. I often see homeowners using ag chemicals on their lawn (they get them from a friend – everyone in South Dakota is only one or two degrees away from an ag producer). Not only are these applications off label but the higher concentration of active ingredients will kill or injure the woody plants in the lawn or neighborhood.

The good news for this windbreak is that the buds are still healthy. The inner bark of the twig is green so there is a good chance of recovery next spring. It is not a certainty – especially for every plant – but enough that it is better to wait and see rather than remove everything this fall.

Davison County, Erineum patches on boxelder leaves

The white patches on these boxelder (*Acer negundo*) leaves (next page) are not due to herbicide drift but a mite (*Eriophyes negundi*). The irregular patches are on the underside of the leaf with a corresponding blister-like light-colored area on the upper side. As the season progresses, the white to silver patches turn light green to brown.

The galls the mites create do not harm the leaves. They are still able to photosynthesize. No treatment is necessary.



Minnehaha County, Aphids and sooty mold on elm

This was a Japanese elm (*Ulmus davidiana* var. *japonica*) that had a dark, dusty appearance. The leaves were tacky – like a post-it note. The reason was apparent once the leaves were turned over. They were covered with tiny pear-shaped aphids.



The aphids live by sucking phloem sap from the leaves. It is not truly sucking – like water up a straw – but more drinking from a firehose as the sap is under positive pressure. They are extracting amino acids and protein from the high-pressure sap.

After filtering the sap through their digestive system, they excrete the excess sugars and water as waste into a liquid called honeydew. This leaves a sticky film on leaves and any surface beneath the tree.

The sweet film also provides a food resource for a sooty mold fungus. The fungus growth causes the film to turn almost black and powdery. This film is not harmful to the tree though it can reduce photosynthesis by blocking light.

The tree was also covered with lady beetles. The markings appear to be common to the Asian lady beetle (*Harmonia axyridis*). Regardless of the species, lady

beetles feed on aphids. They were making a quick meal of the aphids.

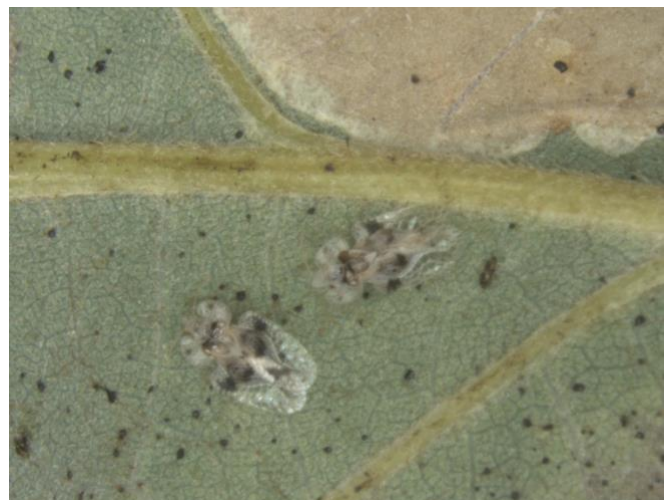


Yankton County, Possible bur oak blight or oak wilt sample – but insects

The sample was submitted with the request to check for two diseases, bur oak blight (*Tubakia iowensis*) and oak wilt (*Bretziella fagacearum*). The fungal disease bur oak blight has been discussed in several *Pest Alert* issues this year. The other common lethal disease of oaks - oak wilt - while a major concern for oaks farther east and south, is rarely confirmed in our state.

When the sample envelope was open, it was clear neither were a possible causal agent. Instead, the leaf symptoms were caused by insects, not fungi. Two of the pests were mentioned in the September 23 issue of the *Pest Alert*, the oak lace bug and the woolly oak gall.

The bronzing on the leaves was caused by the feeding of the oak lace bug (*Corythucha arcuata*). These feed on the underside of the leaf. The bottom of the leaves had numerous flat, dark insects with clear lacy wings. The wings are difficult to see; they are so tiny. These are the lace bug adults. The insects were surrounded by their dark peppery fecal pellets.



These insects are sometimes confused with the minute pirate bug (*Orius*). They can both be found on oaks and are about the same size. The difference is the minute pirate bug adult is black with distinct white patches on their wings.



Minute pirate bug. Photo credit: Ryan Hodnett via Wikipedia, public domain image.

Minute pirate bugs are beneficial as they feed on aphids and mites. But these insects can also be an annoyance as they will attempt to suck fluid out of you.

There were also some woolly oak galls on the leaves. The one inch or smaller woolly "growth" on the bur oak leaves are due to the feeding activity of the larvae of a small cynipid wasp. There are several different species of these little wasps, but they are all responsible for the galls on oak leaves.



The blotches in the leaves were made by an insect, the solitary oak leaf miner (*Cameraria hamadryadella*). This was discussed in the August 26 issue of the *Pest Alert*.

This insect makes its living as a larva by feeding between the upper and lower leaf surface. Each larva carves its own mines, hence the name solitary leaf

miner. The mines are not visible from the underside of the leaf, but the topside will be covered with tan blotches. If you use a knife, you can easily separate the thin layer of leaf tissue from the top of the mines and find the larva or pupa.

