



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 at almost 2,500 growing degree days (GDD-base 50) in Sioux Falls. We were at 2,100 the third week of August in 2019! The hot, dry days of summer are getting a little old now and many of us are longing for the cool, crisp weather of fall.

One good thing about the continual heat is that apple maggot development was a little faster than average. We are way beyond peak flight and there are few adult maggots out now. We have had years the flight has continued until early September. Apple maggot sprays can stop now. But any fallen fruit should be collected and destroyed to kill any larvae inside.

Treatments to Continue – Watering!

A little rain would be welcomed. Most of the state is either under severe or extreme drought according to the drought monitor. But almost every tree can tell you that.

It is easy to find trees with leaves that are presenting symptoms of water deficits. The most common symptoms are leaves with yellowing and browning margins, chlorosis, and wilting. Severe water deficits will cause premature leaf drop.



Even if the trees are beginning to drop leaves, they still should be watered. Trees can lose water through their buds and twigs and all parts of the tree, including the roots, and need to have water to survive.

Timely Topics

Emerald ash borer update

The 3rd instar larvae are beginning to dominant the branch sampling. These, and their bigger brothers and sisters, the 4th instar larvae, are the tree killers. They are large enough that they are cutting through large swaths of tissue, from the inner bark where the sugars are moved to a thin strip of the youngest sapwood.



If the tree was injected earlier this year (or last year as treatments are effective for at least two years), the adult insects would have been killed while feeding on leaves before they laid eggs or while they were very young larvae.

Early season treatments and retreating ever two years is the key to keeping a healthy borer-free ash. Note: treatments are only recommended in counties where the insect has been confirmed or for trees within 15 miles of a known infestation.

Remontant flowering

There are a few magnolias starting to bloom (and the Japanese beetles seem to like the taste). What? Blooming now in late summer? This is remontant blooming, blooming twice in the same growing season. This occurs when a few flower buds confuse late summer with late spring and start to open prematurely.



Spring flowering trees and shrubs set their flower buds in the summer the year before they bloom. This way they are ready to flower the following spring. But all it takes is a little stress, such as moisture stress and add a little rain (Brookings has had several inches recently) and some plants will begin to flower.

Some magnolias do this every year, others just now and then when stressed. It does not seem to harm the plant as most flower buds are not so easily fooled and are staying put until spring.

E-samples

Arborvitae strange “growths”

People are sending in pictures of their arborvitae (*Thuja occidentalis*). These are common evergreen shrubs and trees that have scale-like foliage arranged in flattened sprays of branchlets.



Right now, there are small light green “growths” along the tips of these branchlets. These are the immature seed cones. They will soon ripen to form six to eight yellow-green scales that are about 3/8-inch long. Seeds will be present beneath the scales.

The very noticeable appearance of these scales, some plants are covered with them, may be due to the drought conditions. Conifers often produce an abundance of cones during stress.

Herbicide injury to redbud

Now is not the optimum time for weed control. But some homeowners ignore this recommendation, and it has been a common sight to see folks out spraying their lawn on a hot, dry summer afternoon. Not only is this a waste of time better devoted to an afternoon nap on a hammock, but it does also not kill the weed.

Fall is time for treating many broadleaf lawn weeds. The cool fall weather encourages perennial weeds to move carbohydrates to their roots, which serve as storage, before winter begins.

Herbicides applied to the foliage in the fall move with the carbohydrates to the roots. This results in the complete kill of the plants. Herbicides applied in the summer may just kill off the tops but not the roots. Looked at blackened, distorted and wilting weed leaves and stems may make the applicator think they did some good with their midsummer spraying, but the roots still lurk deep within the soil only to shoot up another top the following spring.

But summer applications of lawn herbicides are a great way to injure trees. Tree leaves can also become distorted, a common symptom from exposure to growth regulator herbicides such as 2,4-D and dicamba. Trees can have leaves cup and have distorted margins.



Redbud (pictured), along with boxelder, are our canaries in the bird cage. If there is any drift in a treed area, these are the ones that will show symptoms first.

Oak lace bug

I received several pictures of what appears to be oak lace bug (*Corythucha arcuata*) on swamp white oak. This is a common insect problem with bur oaks as well and I see some injury every year.



The lace bug is a sucking insect that feeds on the underside of the leaves. The feeding causes white to yellow stippling on the upper leaf surface. Severely infested leaves turn yellow, then brown, before falling prematurely. While oaks are rarely killed by the defoliation, repeated attacks can result in enough defoliation that some branch dieback occurs. These stressed trees are also more vulnerable to attack by the two-lined chestnut borer which can kill the tree.

Powdery mildew

Powdery mildew is showing up this summer. This is an unusual disease in that mildew does not require wet weather to drive infection. What it needs is warm, humid weather and we have had plenty of that.

I have received several pictures of the disease on purple leafed ninebarks such as Diabolo® (*Physocarpus opulifolius* 'Monlo'). The disease is characterized by a powdery, almost cloudy, appearance to the leaf surface. Sometimes you can find small black dots in this powder, and these are the cleistothecium, fruiting structures, to the fungi.

There are many different species of powdery mildew fungi, almost 100, and they cover several different genera. These fungi are very specialized and usually a powdery mildew species is limited to a specific plant genus. The one that infects lilacs is not the same as the one that infects ninebarks.

The simplest management of powdery mildew is to alter the growing environment making it less favorable for the development of the disease. This requires pruning to open planting beds to decrease night humidity and improve air flow. Fungicides may be used to manage the disease but are best applied before the problem appears.



The picture shows all the leaves at the time completely white; this usually means the infection grew out of the bud. However, fungicide treatments during the summer can protect the remaining foliage, though expect to see some development even with treatments.

Rough bulletgalls on oaks

These galls are found on the white oaks in our state, bur oak and occasionally swamp white oak. These galls are created by a small gall wasp (*Disholcaspis quercusmamma*). If you look closely, you might see a small hole in these galls and that marks the emergence of the female wasp. She is beginning to come out of the galls now.



The female flies to the leaf bud and lays a single egg. Once the egg hatches in the spring, the larvae stimulate the expanding leaf to form tiny galls along the main vein. During the summer adults emerge from these galls and insert eggs on the current year's shoots and twigs.

Once these eggs hatch, the larval feeding stimulates the tree to form a woody gall around them. This gall forms from the inner bark and cambial tissue but water flow through the sapwood is not interrupted so the twig does not dieback. A closely related wasp form horned oak galls and these do cut off some of the sapwood so the shoot dieback may occur.

The bullet galls leak nectar – also produced by the plant – and this attracts the attention of bigger wasps (the stinging ones we call hornets). The nectar also becomes infected with sooty mold, so the galls develop a dusty black covering. The previous year galls, found on last year's branches, are almost black with age and mold.

Be a little careful walking up to a gall-lined branch right now. You might find you are not the only one looking at the galls, a yellowjacket might be over your shoulder!

Stinkhorn mushroom

There are usually two questions that come with the picture. First, what is this odd-looking structure that seemed to appear overnight and second, can they eat it?



Let's start with the first question; what is it? This is one of the stinkhorns. They are easily recognized by the white stem and dark cap hence the name 'horns'. You might say they look like a part of the anatomy and, yes, that is why they are in the order Phallales.

This fungus depends on its foul, slimy surface to attract flies. The flies, which cover the caps at this time, walk through and ingest the spores and spread the fungus to new locations. They also seem to appear almost overnight and pop up in lawns after a rain.

Second, can you eat them? First who would want to eat something slimy that smells like poop? No, don't eat them either raw or cooked. The "egg" stage which occurs in the soil before the stem forms is considered edible, but I suggest skipping this. NOTE: do not depend on a picture or short description to decide if a mushroom is edible. Only collect mushrooms with experienced hunters who know what is edible and what is deadly.

Velvet-ants

First, this is not an ant. It is a wasp and more specifically the red velvet-ant, also known as the cow killer (*Dasymutilla*). The females are wingless and covered with dense colorful hairs so resemble a fuzzy ant. But don't pet this one – it can sting. The males look similar, but they have wings (as in the picture) and do not sting.



The females look for the chambers of ground-nesting bees. She will crawl into these chambers, tear open the cocoons and deposit an egg in the unsuspecting bee larva. Once hatched, the immature velvet-ant will feed on this host before pupating and emerging as an adult.

The males are nectar feeders and are found flying around flowers.

The name Cow Killer comes from the painful sting the female can inflict if handled (again do not pet the fuzzy female velvet-ant!). It was thought to be so deadly it could kill a cow. Not true. It is not toxic enough to kill a cow or even a person. However, that does not mean it isn't painful!

Samples received/Site visits

Jackson County, Basswood leaf miner

This insect is continuing to cause widespread defoliation of bur oak stands in central South Dakota. The leaves present with brown blotches which are the result of an insect tunneling between the upper and lower tissue of the leaves. The leaves are also skeletonized, with the upper leaf surface tissue chewed but the mesh of veins remains.

This foliage injury is from feeding by the basswood leaf miner (*Baliosus nervosus*). While basswood (*Tilia americana*) is the favorite host, this same insect frequently attacks white oaks including bur oak. We do not have native basswood trees west of the River but there are extensive oak stands lacing the many creeks and rivers in western South Dakota and these are suitable hosts.

The larvae have completed their feeding but now we have the second-generation adults that are adding to the injury. Groups of bur oaks lining the creeks are beginning to turn a reddish-brown from the combined feeding from the larvae and adults.



The population of this insect tends to drop after two or three years of defoliation and the problem disappears for a decade or so. There was an outbreak of this same insect in these draws about 15 years ago and the defoliation was severe on the oaks for about three years and then the insect population crashed. The insect has caused significant injury for about five years now. The population is beginning to decline but combined with the continual drought many oaks are presenting with extensive discolored or falling leaves.

Minnehaha County, Zimmerman pine moth

This was a stop to look at some pines that had broken branches. The young trees, 8 to 12 feet tall, had numerous branches that were broken off near the trunks.

Closer examination showed the large granular pitch masses near the branch whorls. Broken branches and pitch masses means Zimmerman pine moth (*Doryctria zimmermani*) is at work.

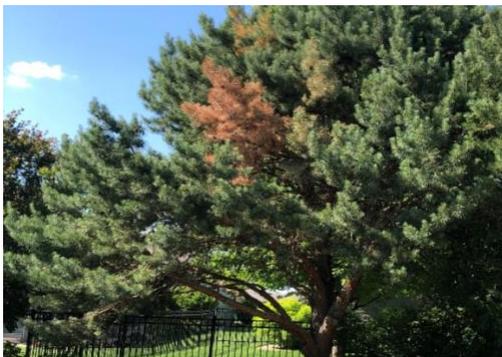


The adult moths started flying several weeks ago and the soon larvae will begin hatching from eggs. They do not harm the tree as they crawl along the bark and this fall will become enclosed in protective webbing beneath bark flakes to spend the winter. Next spring, they will burrow into the wood near where the branches connect to the trunk. This tunneling is where the damage occurs, either killing the branch or weakening the connection causing the branch to break.

Treatment is a bark application of an insecticide containing either bifenthrin or permethrin (and labelled for control of this moth). The application can be made now to kill the young larvae as they are crawling on the bark or next spring before they burrow into the wood.

Yankton County, Pine wilt disease

This involved two stops almost two months apart. The first was back in June to diagnosis why some of the needles were discolored. This was from a pine needle scale infestation. But I received a second email a few weeks ago that the trees looked much worse. Now some were turning completely brown. Scotch pines quickly turning brown in late summer generally means one thing – pine wilt disease.



Sure enough when I arrived the two Scotch pines at either end of the row were completely brown now. The trees were so desiccated that the twigs would snap rather than bend and now the needles were beginning to fall.



The question is what can be done to save the remaining trees in the row. First, pine wilt disease does not usually progress down a row toppling one tree after the other like dominos. The disease may lie dormant in some of the trees for a few years before the symptoms appear. I have seen belts where one or two trees die and no others for several years.

The best action is to remove the two infected, and now dead trees, before April 1 of next year. The sawyer beetles that carry the nematode responsible for the disease will be emerging then. This prevents the sawyers from spreading the nematode to nearby trees. This will help but the disease is so prevalent in Yankton that sawyer beetles can come from any one of the other infected trees in town.

Abamectin can be injected in the trunks to protect trees from becoming infected, but the results have been mixed. Some South Dakota applicators have found good success with smaller diameter trees, less than 10 inches diameter at 4.5 feet above the ground, but much less so for larger diameter trees, those more than 20 inches in diameter.

An article published more than a decade ago (James et al. 2006. *Arboriculture & Urban Forestry* 32: 195-201) found that the survival rate of trees injected with abamectin (96%) was better than those injected with water (71%) or untreated (33%). Why merely injecting with water was more effective than not treating is unknown but might be related to a defense response to the injection wound. Regardless injection for pine wilt should be done with a full awareness that losing the tree is still a possibility.