



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 3,300 Growing Degree Days (GDD-base 50) in Sioux Falls. This has been a very long growing season! It has also been a dry one with only the northeast (Roberts to Codington Counties) and Lincoln County currently not in a drought.

This is impacting fall color for many of our trees. But not all species are equally affected. The trees with yellow fall foliage color still are putting on a good show, but not the maples noted for their red fall colors.



Some of the white ash cultivars known for their red fall foliage are still having an attractive display. This is an Autumn Applause white ash (*Fraxinus americana* 'Autumn Applause') on the campus of South Dakota State University. This cultivar is noted for its early, dependable, and stunning fall foliage color, even this year. Too bad it's an ash.

Treatments to Begin Now

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

Another benefit is mulches provide a little more insulation to keep the soils 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's perfect. The material can be

used fresh out of the chipper. It does not need to be composted as the mulch is being placed on the soil, not incorporated into it.



The mulch layer should be about 6 to 8 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 6 inches around the trunk. Mulch can provide hiding cover for critters such as voles. These animals can girdle the trunks.

Timely Topics

Emerald ash borer update

Most larvae are in the 3rd instar and are more than one inch long. They are still winding their way through the tree, feeding just beneath the bark in the phloem and outer sapwood. There are also some 4th instar present. These become the J-shaped larvae that overwinter deeper into the sapwood. The warmer weather has apparently extended the feeding season; we have not yet found any larvae that have settled down for the winter.



Where is emerald ash borer?

I spoke on emerald ash borer at an extension workshop in Marshall, Minnesota on Saturday. There is a little more interest in the beetle there now, as it is only 60 miles away. Emerald ash borer was confirmed in Comfrey Minnesota earlier this year. Trees with the telltale symptoms of an infestation – woodpecker blanding and drills - were found and emerald ash borer larvae were extracted from these trees.

The confirmed locations of emerald ash borer in Minnesota nearest to South Dakota are in Cottonwood and Nobles Counties. It has also been confirmed in Lyon County in Iowa on the border of Lincoln County. It is farther away from our Nebraska border with the closest counties being Platte, Dodge, and Washington. Emerald ash borer has not yet been found in North Dakota, Montana, or Wyoming.

We have confirmed infestation in Lincoln and Minnehaha Counties in South Dakota. Sioux Falls is the largest South Dakota community with a confirmed infestation. This infestation was concentrated in the northern part of the city back in 2018 but we can find it now throughout the town.

However, that does not mean that the density of infested trees is the same throughout the community. We are working on a survey of all ash – both public and private trees – that are presenting symptoms of emerald ash borer attacks in Sioux Falls. The survey will miss recently infested trees. Trees do not usually present symptoms of an attack – thinning canopy, epicormic shoots, suckers, and woodpecker activity – until the second year. These same symptoms can also sometimes appear on trees that are suffering from other stresses and insects so some false positive may occur.

The survey is on-going, but the results to-date are interesting. While we can find infested trees in the southwestern area of town, it appears to be only a few small pockets so less than one infested tree per 200 ash trees. Contrast that with the northcentral part of town where there are blocks with almost all the ash infested.

E-samples

Bullet galls

Bullet galls are the round, 1/4-inch to 1/2-inch, woody “growths” found on the shoots of oaks. The galls are the work of small cynipid wasps. These wasps produce a chemical that causes the plant cells to multiple and create these unusual growths along the twigs.



If a gall on the shoots were cut open during the summer there was a very tiny worm in the center. This is the larva of the gall wasp. They are empty now. The adult female wasps emerged in September and they have already laid eggs on a dormant buds. The galls are

beginning to shrivel and darken but may remain attached to the branch for several years.

Bullet galls may include an extrafloral nectaries (sugary fluid produced by plant glands) that exuded droplets. These sweet droplets attract hornets (just like an open soda can). The purpose of this sweet ooze is not known but maybe attracted hornets might ward off any insect that might try to attack the developing cynipid wasp in the gall.

Linden leaf blotch

Calls about lindens increased a little in early fall. This is a common occurrence at this time of year, and there are several possible reasons for the discoloration and premature falling of these leaves. However, one of the more common is a fungal disease called linden leaf blotch (*Didymosphaeria petrakiana*). The blotches begin in late summer, often as small specks that expand to larger blotches. A common feature of the dark brown blotches is a feathery margin. The disease can result in complete defoliation of the tree by mid-September.



There really is no treatment other than remove and destroy the fallen leaves, which is often impractical and has limited value unless it is a community effort. If the spring is relatively dry the disease is often minor and only results in some late season leaf discoloration. This is the case this year. We have only seen a few trees with significant symptoms.

Samples received/Site visits

Miner County, Dying cranberrybush

This was a sample of a dead cranberrybush viburnum. There is not much that can be determined from dead samples. It is best, if possible, to include some alive or dying tissue along with the dead.



The shrubs were planted in a windbreak this spring. They leafed out as expected but the leaves dried up in July. A possible cause for the quick decline is the hot, dry conditions this summer. Cranberrybush viburnum tolerates wet/moist soils but not dry ones. It is considered drought tolerant but notice that this statement always has a qualifier *when established*. I have had calls on cranberrybush viburnums and redosier dogwoods that were planted bare-root this spring and have since died. It did not matter whether you watered or not, it was just too hot and dry for these shrubs to establish this year.

Minnehaha County, Dying pines

The call was about dying spruce, which seems to be the catch-all term for all evergreens. The trees were Scotch pine and in long rows around the property. About 90% of the trees were dead, many with the bark already fallen off. There were some that had gray hanging needles and brittle twigs. Some were still alive, but I am sure panicked about their fate.



This is pine wilt disease, caused by a complex of organisms but the pinewood nematode (*Bursaphelenchus xylophilus*) and bluestain fungi are the key pathogens. The nematode and fungus are carried from healthy pines in the spring by sawyer beetles

(*Monochamus*). Once at their new home the nematodes infest the cells around resin ducts and the tracheids (which carry water throughout the tree) so the tree quickly dehydrates to a Pringle potato chip. A key symptom that a tree had the disease is that the wood is extreme light and no sticky sap is exuded from the cut wood.

The wood is also stained blue by the fungus. The fungus also blocks the movement of water and was once thought to be the primary causal agent for the disease, not the nematode (see Himelick. 1982. Pine blue-stain associated with the pine wilt syndrome. *Journal of Arboriculture* 8: 212-216). The fungus also serves as food for the nematode after they kill the tree.

Sanitation is the primary means of managing this disease. Recently killed pines must be removed and the wood destroyed by April 1 of next year. The infested trees must be cut flush with the ground as even a short stump can harbor the nematode.

Going forward do not plant the tree species most susceptible to pine wilt, Austrian and Scotch pine. While these are attractive and tough trees, they are very susceptible to pine wilt and since the disease can be found statewide no planting is safe. Ponderosa pine is not susceptible to pine wilt and we probably will see more use of this pine in windbreaks.

Minnehaha County, decayed tree

This call was about the stability and safety of a big silver maple. The tree has three large wounds where codominant leaders were removed some years ago. The wounds extend into the heartwood and this wood is soft and spongy. The extend of decay is such that the likelihood of a failure is probable – meaning a failure may occur even under normal weather conditions. It may not take a storm event for the tree to fail.



The tree is more than 60 feet tall and a failure would likely strike either the tree owner's house or the neighbors. The consequences of a failure of one or more of the leaders is severe as it is likely that one or more will fail and the failure will impact one of the homes.

The tree should be removed, a conclusion the tree owner had already reached but wanted confirmation. It is always good to check as we do not want to remove trees

that are not a hazard but we do want to remove hazardous trees (or mitigate the hazard).

Yankton County, Flatheaded appletree borer

Purple prism traps have been placed around the state for more than a decade. These traps are part of the monitoring effect to detect new infestations of emerald ash borer. The traps have a lure attached inside the panel that attracts the adult beetles to the traps where they become stuck to the glue.

But these traps catch more than just emerald ash borer. Any insect can bumble into the traps and even a few might be attracted to the color. One of these is the flathead appletree borer (*Chrysobothris femorata*).

The flatheaded appletree borer is a native insect. We find it infesting a wide range of deciduous trees, including apple and crabapple. It usually attacks young, stressed trees, so recently planted trees are a common target, but can infest mature trees during drought. It is not a major threat to our urban and windbreak trees, but we find some infested trees every year.

The insect does bear a close resemblance to emerald ash borer – its distant cousin in the family Buprestidae – particularly when looking at an insect stuck to a gooey trap. When one was found in a trap in Vermillion it raised some justifiable concern.



The volunteers collecting the traps noticed an insect stuck on the panel that looked like emerald ash borer. They notified the South Dakota Department of Agriculture and Natural Resource. I looked at the picture and though it looked a little wide to be emerald ash borer but best to error on the side of caution so made a stop.

Fortunately, it was the flatheaded appletree borer (or a closely related species – the insect is a complex of about nine insects that are difficult to separate). The adult has a metallic colored, tapered body that is about 1/3 inch to 2/3 inch long. This is roughly the size and shape of emerald ash borer.

The emerald ash borer has a metallic colored, tapered body that is about 3/8 inch to 3/4 inch long. While the flatheaded appletree borer is described as bullet-shaped, the emerald ash borer is more torpedo-shaped. It has a narrower body, about 1/6 inch wide while the

flatheaded appletree borer is about 1/4 inch wide. The flatheaded appletree borer is in the below picture.



The emerald ash borer has a brilliant metallic green body, and the elytra (the wing covers) are long and smooth. The flatheaded apple tree is a dark greenish bronze, and its wing covers have wavy, indented light bands.