

Pest Update (July 18, 2018)

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Note: samples containing living tissue may only be accepted from South Dakota. Please do not send samples of dying plants or insects from other states. If you live outside of South Dakota and have a question, instead please send a digital picture of the pest or problem.

Available on the net at:

<http://sdda.sd.gov/conservation-forestry/forest-health/tree-pest-alerts/>

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 and 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.

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Plant Development



We are a little ahead of schedule for plant development this year, the hot weather is accelerating plant growth. The weigela are in bloom again. This is a spring flowering shrub, but it will often have a second flush of blooms in mid-summer if we have adequate moisture. Many areas of eastern South Dakota moisture (at least the lack of it) has not been a problem.

Timely Topics



Dutch elm disease (*Ophiostoma novo-ulmi*) reports are starting to come in again as they do every year about now. Unfortunately, South Dakota is struck with managing two exotic threats at the same time, Dutch elm disease and emerald ash borer. Many Eastern communities lost most of their elms back in the 1970s, so they had about a 30-year gap between removing elms and removing ash. We may not be that fortunate as Dutch elm disease was first found in South Dakota in 1967 but did not really become a serious problem until about 10 years later. We still have many American elms in communities across the state and some unfortunate towns may experience elm and ash removals at the same time in the future.

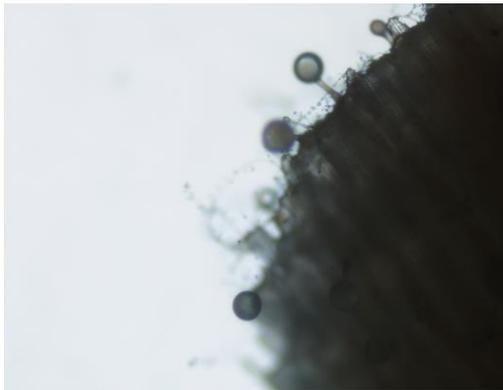
The infected trees have one or more branches with leaves that are curling and turning yellow to brown, symptoms referred to as flagging. While flagging is a common symptom of trees infected by Dutch elm disease, flagging can also be from broken branches, branches girdled by squirrels and sap-sucking insects such as aphids and soft scales. A branch with yellowing leaves must be closely examined to determine if Dutch elm disease is the problem.



If the bark is peeled away from a section of these branches, there may be brown streaks running along the surface of the wood. This streaking is a good indicator of Dutch elm disease and is usually sufficient to determine the presence of the disease and have the tree removed. However, the only way to be certain the tree is infected with Dutch elm disease is to send a sample to our clinic for isolation

and identification to confirm its presences.

The sample should be taken from a branch that is flagging, not dead. The branch should be about 1/2-inch in diameter and the sample piece about 8 inches long. Place the sample in a plastic bag and do NOT add water or moist paper towels. The sample should be mailed on a Monday or Tuesday, so it will arrive before the weekend. If the sample is cut later in the week it may be best to refrigerate it until Monday and mail.



Once they arrive at the SDSU diagnostic lab, a small piece of the streaked sapwood is cut out and placed on a plate for isolating the pathogen. After a short time period the conidia, the asexual fruiting structures, will occur. They look like little lollipops sticking up on the wood. This is positive identification of the pathogen. However, to find the pathogen in the tree, it must be present in the sample so collecting branch samples from recently flagging branches is

the key to positive identification of the pathogen.

The disease is spread from tree-to-tree by bark beetles that carry fungal spores from an infected tree to a healthy one or by root grafts between trees. About a week or two ago I started receiving reports of American elms flagging throughout the canopy. Many of these trees had been close (less than 40 feet) from other elms that died last year from the disease. Elms can root graft, and this is a common means for the disease to move from tree to tree. The root grafts are most common with elms that are standing within 35 to 50 feet of one another. If the disease is spread by root grafts the symptom pattern is often the entire tree flagging (branches with yellow, wilting leaves) almost at once, whereas beetle carried infections start with a branch or two near the top of the canopy flagging and the disease spreads out from there, often taking a month or more before the entire tree flags.



When I was in Pierre earlier in the week I stopped by a home with a line of American elms and you could see the tree at the end that had died a year ago from the disease. Several of the nearby trees – that according to the homeowner looked good last year – had “suddenly” died this early summer. This was root graft infection.

A practice to prevent the spread of the disease from an infected tree to a nearby healthy one is to sever the connecting roots by trenching. The trenches are usually cut to 36 to 40 inches depth and between the infected elm and one to be protected. The trench should be made at least 20 feet away from the healthy tree to avoid severing too many roots and father out is even better. The diseased tree should still be promptly removed, and the stump ground out as soon as possible to reduce the survival of the disease in the roots.



The symptoms of new infections started by beetle-carried spores generally occur beginning in July and are often limited, at least initially, to the leaves at the tips of branches turning yellow and wilting. The smaller European bark beetle (*Scolytus multistratus*) is the most common vector of the disease in South Dakota.

If you look closely at the wood in the originally infested tree you can see the galleries made by this insect. There is a long center adult egg-laying gallery that runs with the grain of the wood and the smaller larval galleries that branch off it.

Obviously, wilting and yellowing can be due to other stressors, but bark beetles and root grafts are how the fungus spreads from host to host. The most effective community-wide effort for DED management is to quickly identify and remove infested trees. The sooner infested trees are removed, the less likely the surrounding healthy elms will become infected. Individual healthy trees can be protected from the disease by root-flare injections of either Arbortect or Alamo fungicides though these must be repeated every two to three years. The injections must be done by commercial tree companies.

Emerald ash borer Update

Currently of year, we are concentrating at looking at larval development in infested trees. The adults are still out flying and laying eggs but some of the eggs laid earlier in June have hatched and the young larvae are beginning to tunnel beneath the bark. We are also finding mature larvae that hatch from eggs in 2017, last summer, so there is apparently a two-year life cycle for at least some of the emerald ash borers. This is a common characteristic of relatively young infestations with the one-year life cycle becoming dominant as the infestation progresses.



However, we are not finding a lot of either yet in our canopy sampling. The larval population is smaller than the population that infested the trees in 2016 and 2017 (based on examination of the older galleries). This may mean that most of eggs have yet to hatch and I suspect this is the case. We will continue to do weekly sampling and report in the *Update*.

Regardless, the density of the infestation is low in most of our ash. They appear to have been infested for only a few years. It usually takes four or five years of repeated attacks to kill an ash and I have found only a small number of trees that have been

infested that long.

E-samples



Birchleaf spirea (*Spiraea betulifolia*) is one of my favorite shrubs. It has attractive white flowers in late spring followed by autumn foliage of gold, red, and purple. However, it does seem to have one pest problem that detracts from its otherwise near perfect appearance – **the fruittree leaf roller** (*Archips argyospila*). I received a fuzzy picture of the curled leaves and made a visit

when I was crossing the state last week. When I stopped in Huron, I saw entire bed of these spireas with many tips curled by this insect.

The fruittree leaf roller infests a wide range of hosts from ash to willow but seems to really like birchleaf spirea (as well as apple trees). The insect gets its name from the habit of the larvae to feed inside a protective shelter of rolled up leaves that are webbed together. If you peel the webbing open now you can find this small, about 1/2-inch greenish larva with a brown head. While the fruittree leaf roller causes much of this damage in South Dakota, a similar appearing insect, the obliquebanded leaf roller (*Chorisonera roseaceana*), can also roll the leaves of spirea.



Treating this insect on spirea is difficult as the larvae are protected by the webbed foliage. Systemic insecticides can be used as a soil drench, but these chemicals are also taken up by the flowers and can kill pollinators. The simplest

is to spray the plant with an insecticide containing Spinosad (commonly sold as Captain Jack's Dead Bug Brew, no kidding) just as you start seeing the larvae. This will be sometime in late June.



Powdery mildew appears during wet, hot, humid summers – just like this year. The most common host is lilac (*Syringa vulgaris*). If the lilac is growing in a shaded area with poor air circulation the appearance of the disease is almost a certainty, especially if we are experiencing a humid summer. The other common ornamental shrubs susceptible to powdery mildew are the purple-leaved ninebarks such as Diabolo^R (*Physocarpus opulifolius* 'Monlo'). The infected leaves on these plants can turn almost white.

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 mildew colonies continue to enlarge through the summer and by early autumn most of the leaves on the plant may be covered with a white powdery material. While the leaf surface appears powdery, the foliage itself may turn yellow.

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 up 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 above shows all the leaves at the time powdered in white Fungicide treatments during the summer can protect the remaining foliage, though expect to see some development even with treatments.

Guignardia leaf blotch is appearing on buckeyes in the state.

This is a common disease of horsechestnut (but we have few of these trees) and can also occur on buckeyes (which we have a lot of). The disease first appears as small water-soaked blotches in the leaves. These quickly develop into reddish-brown spots with a yellow margin. Eventually the blotches expand and coalesce in one another. The entire leaf may become one big blotch and these infected leaves curl, become dry and brittle and fall prematurely.



The browning and curling – the final symptoms – may be confused with scorching. This environmental problem, the result of drying summer winds, is usually concentrated on the south side of the tree while Guignardia blotch will be throughout the tree.



Guignardia leaf blotch is common on Ohio buckeye, *Aesculus glabra*, but not on the two common hybrids planted in the state, 'Autumn Splendor' (pictured) and the 'Homestead' buckeyes. These two trees are noted for their attractive spring flowers, the sparse nut production, and autumn foliage color. The lack of leaf blotch is just another reason to plant these hybrids rather than the species.

Sample received/site visits

Lawrence County

Is this the emerald ash borer?



No, this green ash tree was just severely damaged by Atlas, the October snow/ice storm from several years ago and native ash boring insects are taking advantage of the stressed tree.

The watersprouts that are throughout the canopy are common symptoms of an emerald ash borer infestation but also appear when a tree loses branches to a storm. The holes in the lower trunk are more oval than D-shaped and are slightly larger than the 1/8-inch holes made



by the emerald ash borer. These are most likely made by emerging banded or redheaded ash borer.

Lake County

What is wrong with this spruce?

The needles are slightly smaller than normal, so I suspect there is more wrong with this tree than the sample reveals. I was able to find spruce bud scale and spruce needle miner on the sample. I will address spruce needle miner in the next sample.



The spruce bud scale (*Physokermes piceae*) resembles a small round, reddish bud and they can be found on near the tips of the branches where the side branches attach to the shoot. They, and their mobile young called crawlers, suck the sap from the shoots resulting in dieback and decline of the lower branches. Since these are soft scales they produce honeydew that results in a black, sooty appearance to the needles and

twigs. The scales have one generation per year and the crawlers' hatch about the time littleleaf lindens bloom which has already passed. The best treatments are insecticides containing Carbaryl as the active ingredient and applied on the foliage and shoots near the tips. However, insecticides containing Imidacloprid can be effective as a soil drench and can be applied this fall for control the following year.

Lincoln County

What is wrong with this spruce?



Does everyone see the pattern? Colorado spruce has lots of problems. This one was covered with spruce needle miner! The needleminer (*Endothenia albolineana*) gets its name from it's the fact that the young larvae are so tiny they can live inside the needle, mining it as they feed. They eventually outgrow their home and then create a nest of webbed, detached needles to live in. The larvae usually feed on the lower, exterior needles, almost

stripping the tips of needles but they can also be found in the interior of the tree and even the tops of young trees. The adults are small moths that will begin flying soon and depositing eggs on the needles. The treatment is usually with a

pesticide containing carbaryl as the active ingredient and labeled for this use. Infested tree should have been treated earlier but it still might be possible to kill some adults now.



**Minnehaha County
Does this Scotch pine
have pine wilt disease?**

No, pine wilt disease generally results in the entire canopy of the tree presenting wilt symptoms and the dying within the same summer. The gradual decline of a tree is usually due to other stressors. While the tree is infected with Diplodia tip blight, a fungal disease more commonly seen in Austrian and ponderosa pine, this disease does not explain the dieback in the canopy. This is usually related to environmental conditions or even age.

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