

# Pest Update (August 8, 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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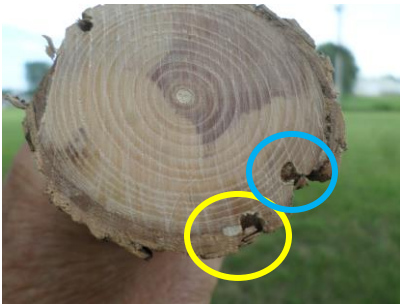
## Plant Development



Plums are ripe now and are ready to pick, both the hybrid plums we grow as fruit trees and the wild plums in thickets throughout the state. The fruit on a tree does not ripen all at once but over a couple of weeks so it's important to know which ones to pick and which ones to leave for later. You can tell if a plum is ripe by applying a little pressure to the skin with a finger. If it yields just a little, it's ripe. If it's still firm, leave it on the tree. The fruit should also come off the tree with just a slight twist – if you must pull it off, it's not ripe yet.

## Timely Topics

### Emerald ash borer update



Larval densities are increasing in infested trees. I am finding more second and third instar larvae tunneling through the branches of infested trees. These larvae are still actively tunneling through the phloem. If you cut an infested branch, you can sometimes find the galleries craved by the larvae as they tunnel through the inner bark of the tree. If you look closely at this picture, the yellow circle shows a gallery made this year, while the blue circle shows a gallery made two years ago which indicates this tree has been infested for several years.

### Parasitoid wasp release in Sioux Falls

Emerald ash borer management is more than removal or treating infested trees. We also can get a little help from nature – the insects that feed on the emerald ash borer. These insects, known as parasitoid wasps, are from Asia where they feed on emerald ash borer in the native forests. The insects were brought to the United States and reared at a special USDA facility in Michigan. They are provided, through the Animal and Plant Health Inspection Service (APHIS) to state cooperators at no charge.

These parasitoid wasps, also known as non-stinging wasps, pose no threat to humans, other animals, and even insects other than the emerald ash borer. The wasps are so tiny, about 1/8-inch, that they are difficult to see and will not be noticed by most people. These insects are being released on infested ash trees in the northern part of Sioux Falls during August and early September 2018.



One of these insects, *Oobius agrili*, inserts an egg into an emerald ash borer egg. The wasp develops in the egg and then emerges as an adult. Each *O. agrili* can parasitize up to about 60 emerald ash borer eggs. Since an emerald ash borer adult typically lays about 80 eggs, this wasp can provide significant control and help slow the spread of an infestation.

There are also two other parasitoids, *Tetrastichus planipennisi* and *Spathius galinae*, that attack emerald ash borer larvae. These wasps can find the larvae as it feeds beneath the bark. Once they locate a larva they thread their ovipositor down into the emerald ash borer and deposit their eggs inside this host insect. After the eggs hatch, the wasp larvae devour their host then emerge as adults.

These insects are released on trees infested by emerald ash borer, but one that are not being treated with insecticides. Some of these wasps are released by attaching small logs containing the insects onto trees, others in cups attached to the tree. The egg wasp is released by shaking them out of small cup.



These releases will be monitored, and data collected on their effectiveness at slowing the spread of emerald ash borer.



### **Dutch elm disease and emerald ash borer**

This week, Jon, a forester from the SD Department of Agriculture, and I completed Dutch elm disease (DED) surveys in a couple of communities. What made this annual task noteworthy is that Jon and I started the summer doing an emerald ash borer survey in Sioux Falls. South Dakota is one of the few states that will be combating these two exotic pests at the same time. Many eastern communities experienced Dutch elm disease in the 50s and 60s and had most of their elms long before emerald ash borer arrived.

Dutch elm disease did not appear in South Dakota until the late 60s and did not become a serious problem in many towns until the 80s. While many South Dakota communities have lost most of their elms, this tree is still a common sight along city streets and in yard.

Most South Dakota and Minnesota communities lost their elms at an increasingly rapid rate following the first confirmation of the pathogen in a community. The Twin Cities of Minnesota lost 421 elms to DED in 1971, 9,792 in 1974 and then almost 200,000 in 1977! Once management was started in the 70s, the rate slowed – Minneapolis lost only 1,200 elms in 2017- and there is still about 25,000 majestic elms dotting the Twin City landscape.

Emerald ash borer (EAB) tree mortality is going to be on a steeper curve and within 10 years of the insect being confirmed in a community, they will lose almost all your untreated ash trees. And along that 10-year 'death curve' you lose about 2/3's of the trees within about 1/3 of the curve. That is a lot of trees to fell, chip, stump grind, and replace in a very short time.

While Jon and I did not find a lot of elms infected with DED, it's because we were driving down streets of mostly ash. Every South Dakota community is going to be impacted by this insect within the next two decades. Every community would be wise to have an EAB plan and be putting it into place today. The key to the plan:

- 1) Determine the number, size, and condition of every public-owned ash and have an estimate of the ones owned by homeowners.
- 2) The city needs to decide which city-owned ash are worth treating once EAB is confirmed in their town, tree owners need to do the same. The average cost of treating a tree over a 10-year period is about \$700 total and the treatments will need to continue, though at a less frequent rate, following this 10-year period. This is life-long care.
- 3) All the ash that no one wants to treat (and treatments DO NOT begin until after EAB is confirmed in the community) should be removed starting this fall.

If every community just planned on cutting out all their ash that will not be treated over the next 10 years, maybe 200 a year for a town with 2,000 ash, the EAB impact will be much less when it does arrive

Like almost everything else in life, its less painful if you start taking care of problems early rather than later.

### **Busted belt**

When I visit a failed windbreak planting the most common reasons the landowner gives for the failure is 1) the nursery gave them bad stock and/or 2) the district

planted the trees wrong. However, the most common reason is the landowner did something wrong, e.g. herbicide applications, or did not do something, e.g. watering. But every now and then they are right – they received poor quality stock and it was planted wrong.

Such was the case this week when Jon and I visited a newly planted belt at the request of the district and the landowner. The belt had a nice diversity, black walnut, bur oak, hackberry, nannyberry, Nanking cherry, among others (and the almost mandatory spruce). The overall survival was about 60%. Some of the failures, were not really failures as the seedlings will recover. The excessive heat that occurred during leaf expansion last spring left some of the *Prunus* with scorch tips, but they were already producing adventitious shoots and should recover yet this season.



However, there were several tree rows where the problems were more serious. The black walnut, bur oaks, and hackberries rows had about 40 to 50% survival and these failures could be attributed to poor planting and, to a much lesser degree, poor stock.

The trees had been planted, overlain with fabric, then pulled through the slits, a common practice. The problem was the trees were barely pulled through fabric and many were at about a 30° angle. The trees that were tubed had been straightened



but when they were pulled up they were also pulled out of the ground. While I rarely see this problem, many of the dead seedlings had at least 1/3 of the roots sticking out of the ground.



Some of these trees should have never been planted to begin with. Some of the trees had excessive damage to the stems, misshapen roots or broken roots. There were also trees that appear to have died before they were planted. While it is not possible to determine whether the fault for most of this damage was poor stock shipped from the nursery or poor care by the district regardless these trees should have been culled before planting.

While planting such as these are rare, they are not unknown. Everyone needs to be sure they are fulfilling their part in the 'green chain', the nursery providing quality stock, the district storing and planting it properly, and the producer caring for the seedlings – a chain is only as strong as its weakest link.

## E-samples



**Bacterial blight on lilac.** The shriveled, water-soaked leaves and blackening tips on lilacs are common symptoms of the bacterium *Pseudomonas syringae*. The disease is appearing throughout the state this late summer, not too surprising as it tends to appear more often in wet years. Bacterial blight can occur on all lilac, but it seems to be most common on Japanese tree lilacs and white-flowered common lilacs (but not the purple). The only treatment is to remove infected branches at least one-foot lower than the symptoms and do this pruning during dry weather. The hand pruners should be sprayed with Lysol Disinfectant, a bleach solution or alcohol between cuts to avoid spreading

the disease. The disease can also be managed with a spray of a copper containing fungicide applied in the spring just before bud break. While the disease is caused by a bacterium, not a fungus, this fungicide treatment seems to reduce the problem. Generally, infected lilac survives the disease, a branch or two may die each year or so but the plant will just grow around it.



I received a picture of **coral spot Nectria canker** (*Nectria cinnabarina*) on honeylocust. This canker produces smooth fungal masses (known as sporodochia) that start as creamy to coral colored pouches that turn brown to black when they mature. The fungus grows in the bark, cambium and sapwood when it kills the cambium which stops further diameter growth in that patch of the trunk and disrupts the movement of water and food. The fruiting bodies appear on these dead patches within a month or two. Eventually enough of the tree loses cambium tissue that the entire tree dies.

The disease needs a weakened host to be successful as a healthy tree can outgrow the pathogen. If the pathogen is confined to a branch, sometime the disease can be stopped by pruning out the infected branch. Once it is found in the trunk you are too late to do much. The best approach at that point is to promptly remove and destroy the infected tree.

The pathogen can live in dead wood so quick removal may help reduce the chance of the disease spreading to nearby trees.



**Cottonwood leaf beetle** (*Chrysomela scripta*) adults are out feeding on the leaves of cottonwood and poplars. There can be several generations per year so sometimes you can find larvae and adults at the same time. The larvae skeletonize the leaves, feeding on one surface and avoiding the veins, while the older larvae and adults feed on the entire leaf except the main veins and petiole. Usually the damage is not

enough to warrant treatments but pesticides containing the active ingredient imidacloprid (and labelled for leaf beetles) can be applied as a foliage spray or soil drench. Pesticides containing carbaryl can also be applied as a foliar spray.

The leaf is also showing symptoms of herbicide drift – the fan-shaped leaves with parallel veins is a common pattern for growth regulator herbicides.



**Marssonina leaf spot** (*Marssonina*) is showing up on aspen (and cottonwood) trees now. The infection occurred last spring during the warm, wet weather. If the weather turns dry, usually the infections are light, but in years where it just keeps raining, the secondary infections develop and these result in the discolored leaves we see now that are beginning to fall.

The disease starts as small dark flecks with yellow halos. As the season progresses, the spots fuse together to form large black patches that are vein-limited so the patches may have angular edges. The infected leaves begin to fall in August.

The disease overwinters on the fallen leaves but raking up and burning all the fallen leaves (a common recommendation) is not very effective as you never get them all. The best strategy is to provide conditions so the leaves dry out quickly – space trees in rows far enough apart that there is good air circulation.

This is only one of many foliage diseases on *Populus* and there are also trees infected with Septoria, Venturia leaf and shoot blight, and Melampsora leaf rust. Management for all these diseases is similar, just live with it. While there are fungicide treatments for these diseases, they are rarely used (three applications spaced 12 days apart beginning when the buds open). These diseases rarely cause serious problems for the tree and if we have a dry spring we see very little of them. This year I only see problems in the eastern edge of South Dakota, the region that had rain last spring.



**Tar spot** (*Rhytisma*) is showing up on Freeman (*Acer x freemanii*), red (*A. rubrum*), and silver maple (*A. saccharinum*). The disease began as greenish-yellow spot in late June and then develops into these black tar-like structures we are seeing now. The remaining leaf tissue is sometimes chlorotic. The treatment for the disease is two-

fold. First, a common recommendation is to remove and destroy the fallen leaves this autumn to reduce the overwintering fungus, usually not a practical treatment unless you are able to go through an entire neighborhood. Next year treat the tree with a copper fungicide as the leaves expand and repeat the application about two weeks later (read and follow the label carefully as copper can be damaging to the plant, do not apply at the high rate on young foliage). However, if we do not have a wet spring next year the disease is not likely to be severe.

## Sample received/site visits

Day County

Spanish moss?



While Jon and I were doing the DED survey in Britton we ran across an interesting 'problem'. There were elms laced with what appeared to be Spanish moss (an epiphytic flowering plant), almost a scene out of the South. Upon closer examination we noticed the elm leaves and twigs were covered with a very sticky honeydew and all the "cotton" from the cottonwoods was stuck to them!

While there were probably lots of aphids in the elms causing the honeydew, another agent was the European elm scale. This is a soft scale that also produces a tremendous amount of



honeydew. The adult female scales look like small grayish sacks sticking to the twigs. The sap-sucking by these insects can cause premature yellowing and shedding of the leaves (and can act as a sticky pad for cotton!).

Davison County

### **Why is this catalpa wilting?**

This is verticillium wilt (*Verticillium dahliae*). We seem to have years where we see few trees presenting symptoms and then a year or two where many trees are wilting from the disease. The symptoms can be confusing as many other stresses will cause similar patterns. The most common symptom is wilting and scorching leaves during the hottest and driest time of the summer. While these symptoms can be due to drought, verticillium many only affect a single branch or portion of the canopy, rather than the entire tree wilting. Leaves in the affected area of the canopy may also be stunted. The most common affected trees are catalpa, elm and maple

The reason for the wilting is the sapwood becomes plugged and the affected branches will often have green (in maples) or brown (most other species) streaking in the sapwood. The streaking is often several feet or more down the branch from the wilting so check for the browning nearer the base of a wilting branch.

Since wilting can be due to many other agents, the only way to conclusively diagnosis verticillium wilt is to culture the pathogen from a branch presenting symptoms of the disease. The samples need to be cut from 1 to 2-inch diameter branches and should be about a foot long. The branches must be showing symptoms but not have died from the disease.

The presence of the disease does not necessarily mean the tree must be removed. Some trees live for decades with the disease, only having a branch or two die every now or then. Other trees may have the entire canopy wilt and the tree die the same season.

Verticillium is soil-borne so you cannot cure an infected tree and once the tree is removed the pathogen can remain up to 15 years in the soil. The only effective treatment is not to plant certain trees in soils where the pathogen is known to exist. The most common hosts in South Dakota are: catalpa, elms and maples. Other hosts include: ash, buckeye, coffeetree, corktree, and Russian-olive.

Davison County

### **Pine wilt**

The pinewood nematode was extracted from the sample cores. Pine wilt disease is caused by a nematode (*Bursaphelenchus xylophilus*) though there may also be bacteria involved as well. The disease is vectored by sawyer beetles that carry the nematode from infected to healthy pines. The disease is most common in Scotch (*Pinus sylvestris*) and Austrian pine (*P. nigra*), but mugo pine (*P. mugo*)

can also die from the disease. Our native ponderosa pine (*P. ponderosa*) appears not to be affected by the disease.

The symptoms of the disease begin with the sudden discoloration and dead of the tree. A common remark from owners of infested trees is that the tree looked fine in the spring but by summer the needles were turning yellow then brown and left hanging. Infested trees are also easy to identify from their dry wood that is almost free of pitch. The logs cut from infested trees are extremely light and there is almost no sticky pitch exuding from them. The wood will also be stained blue by a fungus. While these are all common symptoms of the disease, the only way to be sure this is the disease is to extract the pine wood nematode from the tree. The nematodes are easiest to extract from a “cookie”, a 1-inch thick cross-section of wood cut from the trunk at a lower whorl of branches. The wood should be placed in a plastic bag and mailed so it arrives on campus within a few days (and the same week, do not mail samples on a Thursday or Friday).



The treatment for infected pines is to removal (cut flush to the ground) and destroy the wood before April 1. This kills the sawyer beetles before they can emerge and spread the disease. Healthy Austrian or Scotch pines can be injected with avermectin products, abamectin or emamectin benzoate, by a commercial service. The treatments can be done anytime during the summer but are most effective with a fall application. These treatments only protect a tree from becoming infected, they will not cure an infection.

Turner County

### Why is this hackberry thinning?



I was able to find a lot of cottony maple scales (*Pulvinaria innumerabilis*) on the twigs. This sucking insect and remove enough sap to weaken the tree and result in the thinning of the canopy and branch dieback. The insect is best managed by its own natural enemies, but the canopy can be sprayed with an insecticide containing dinotefuron as the active ingredient or insecticidal soap when little leaf linden is in full bloom (mid-June) and 10 days later.

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