Pest Update (July 29, 2020)

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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, 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.

Plant development for the growing season

The summer continues to be hot with spotty rains. When rain does come, it seems to pour with some storms producing a couple of inches of rain in a few hours. The Amur maackias have already set seed, many years they are just blooming at this time so we are clearly ahead in plant development for the year.

Timely Topics

Emerald ash borer update

Life stages detected in sampling

Emerald ash borer sampling continues in Sioux Falls and Canton. The majority of larvae are still second instar though some first instar have also been found in the branch sampling. The galleries (tunnels) for both are very short and not yet significantly disrupting transport of photosynthates (sugars manufactured by the leaves) to the roots.

This is another reason we recommend injecting trees early in the growing season (late May just after the leaves are expanding). It does not take a lot of pesticide to kill these small larvae and they are killed before they do much damage. If the treatment are delayed till now by the time the chemicals are distributed throughout the tree the larvae will be larger. This means more chemical is required to kill them and they will have already damaged this year's transport (phloem) tissue.

Last year's mature galleries and this year's new ones.

Other borers collected during sampling

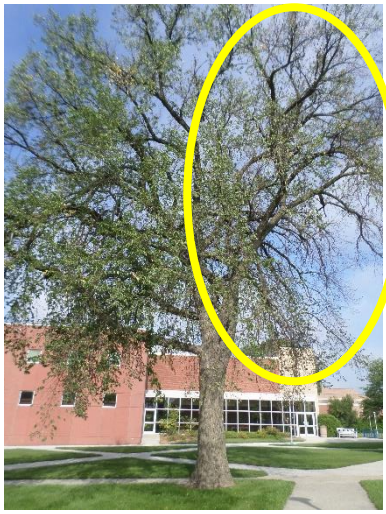
Emerald ash borers are not very lonely in their trees. They have lot of friends that have always made ash their home. I was also able to extract native ash-lilac borer larvae from the same branch samples. These are easy to separate from emerald ash borer as the native ash-lilac borers have three pair of tiny legs (emerald ash borer has zero), they have rounded abdominal segments (emerald ash borer has bell-shaped segments) and the ash-lilac borer lacks small pincher-like appendages at the end of their abdomen.

Some of the trees were also infested with the native ash bark beetle and there were lots of these adult beetle landing on the branch samples as I was stripping the bark.

Verticillium wilt

Verticillium wilt (*Verticillium dahliae*) is appearing again in eastern South Dakota. We seem to have years where we see only a few trees presenting symptoms and then a year or two where many trees are wilting from the disease. The symptoms can be missed as many other stresses will cause similar patterns. The most common symptoms associated with verticillium wilt is wilting and scorched leaves appearing during the hottest and driest time of the summer. The leaves in the affected area of the canopy may also be stunted.

The reason for the wilting is the sapwood becomes plugged by the fungus and the tree's reaction to the infection. The affected branches will often have green (in maples) or brown (catalpas and elms) streaking in the sapwood. The streaking is often found farther down the branch than the wilting so check for the browning nearer the base of a wilting branch, not the tips. Ash infected by verticillium wilt rarely show any streaking.



American elm is susceptible to this disease and I am certain there are trees marked for Dutch elm disease this year that are infected with verticillium wilt instead. The initial symptoms will look about the same. One difference is that verticillium wilt infected elms will often present wilting on one complete side of the tree, rather than wilting in one branch or a small portion of the canopy as we see with elms infected with Dutch elm disease. However, elms infected with Dutch elm disease via root grafts may also present symptoms on one side of the canopy. The only way to be sure which disease is causing the symptoms is to test.

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 branch samples need to be cut from 1 to 2 inch diameter branches and should be about six inches. The branches must be showing symptoms but not have yet died from the disease. Do not send in samples without contacting me first via the email at the top of the *Update*.

The presence of the disease does not necessarily mean the tree must be removed. Some trees, mostly ash and maples, live for decades with the disease, having only

a branch or two die every now or then. Other trees, usually catalpa and elms, may die the same season symptoms first appear.

Verticillium is soil-borne so an infected tree cannot be cured 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. The disease often enters the host tree through wounds near the ground – weed whips create perfect wounds.

Cicada killers on the loose

No, those are not 'murder' hornets buzzing around trees this year. These are the cicada killers (*Sphecius speciosus*). These large (1-inch or longer) digger wasp are flying now in search of cicadas buzzing in the trees. If you don't like listening to the buzzing every night, the cicada killers are your friends.

The wasp is black to reddish brown with yellow stripes on the abdomen. The color pattern makes them look like a big yellowjacket. However, unless you are a cicada, you have little to fear from this insect. The female does have a stinger but unless you handle them roughly or they accidentally get in a shirt (and this has occurred to some motorcyclists), you are not likely to be stung and the sting is not that bad, more of a pin-prick.

But if you are a cicada, look out! Once the female find you, you will be stung, not to kill but to paralysis and now the real nightmare begins! She flies you back to her nest (and since you are bigger, she makes a few rest stops along the way), places you in the burrow and lays a single eggs next to the stinger puncture. Once the egg hatches, the young wasp larva burrows in to the still living cicada and eats it from the inside out then bursting out to become an adults (just like the scene in *Alien* where the creature burst out of Kane). Sometimes the females leaves a couple of paralyzed cicadas as a snack for her larvae.

The adult male cicada killers are very territorial and aerial combat is common. If you find yourself in a middle of a dogfight, just keep walking away. They will not bother you, they are just fighting among themselves.

E-samples

Cottony ash psyllid

As if ash does not have enough problem, there is another exotic threat. We are seeing defoliation and foliage distortion on black ash (*Fraxinus nigra*), Manchurian

ash (*F. mandshurica*) and their hybrids, 'Northern Gem' and 'Northern Treasure' from Brookings to Rapid City The culprit is a small psyllid called the cottony ash psyllid (*Psyllopsis disrcepans*). This sucking insect was discovered in the early 2000s feeding on black ash in Alberta, though it may have appeared earlier in the United States. The insect is native to southern Europe.

The adults are slightly smaller than 1/8-inch and resemble miniature cicadas as they fold their wings roof-like over their body. The nymphs are a little smaller, wingless and flatter. The nymphs are responsible for most of the damage, extreme leaf curling, it almost appears as severe herbicide injury. There are two generations per year, with the first generation of nymphs out in mid-June, hence the appearance of the damage in July. Another generation of nymphs will be out in mid-August, but this second generation is not as damaging as most of the foliage has harden off by then and is not as susceptible to injury. Eggs are the overwintering stage.

We have seen this insect in our state for at least eight years and it has been discussed in past *Updates*. Fortunately, the cottony ash psyllid does not attack green ash (*F. pennsylvanica*) or white ash (*F. americana*). These ash, particularly green ash, are often attacked by the ash leaf curl aphid (*Prociphilus fraxinifolii*) an insect that causes leaves to loosely curl into clumps.

Once you see the damage it is too late to treat. If you catch the damage just as its starts, an insecticide containing Acephate, and labelled for this use, can be applied. This insecticide is a foliage systemic treatment and will kill the insects as they feed (but not remove the damage). A soil drench systemic insecticide will not be absorbed fast enough to provide any control for the aphids this year, but a spring application next year can prevent the problem from occurring next summer.

Pouchgall on boxelder

I received this picture of pouchgalls from Josh, one of the South Dakota Department of Agriculture foresters stationed in Rapid City. These blister-like bumps on the boxelder leaves are due to a small (7/1000-inch!) mite (*Aceria negundi*). If you flip these leaves over, you'll notice a white velvety growth. The galls are harmless, and the infested leaves still manufacture enough food to service the tree. There is no need to treat for these mite (first, most people do not care what their boxelder

looks like) since they do not harm the tree. The natural enemies of these mites (predatory mites and thrips) usually keep the population low and any spray may kill too many of them.

Walnut caterpillar

Walnut caterpillars (*Datana integerrima*) is out feeding on walnut leaves. The insect is a picky feeder and only feeds on members of the Juglandaceae family, black walnut, butternut and shagbark hickory in our state. There are mature larvae out there now so most are nearly 2 inches long, black with many long white hairs along their bodies. If you disturb them they will rear up as a group – a reaction that discourages birds from feeding on them.

The caterpillars feed in groups and they are can devour a tremendous amount of foliage in a very short time. They feed the entire leaflet so only the petiole (leaf stalk) remains. Many people do not notice them until the infested tree is almost completely defoliated. By then its too late for control but fortunately walnuts can survive a year or two defoliation.

Farther south there are two generations per year. In South Dakota, we often see only one. The larvae will be dropping to the ground soon to pupae in the soil. They emerge in late spring as adult moths and eggs are laid on the underside of the leaves.

Samples received/Site visit

Brookings County **Death by a thousand cuts**

There are a lot of tree killers out there but one of the most common walks on two legs – you guessed it people. One way we kill trees, young and old, is with a grass whip (weed whacker). It may not seem that the rapidly rotating plastic strings or blades can harm a tree but it's the repeated practice that is the problem. As the string or blades nick and cut the bark, eventually the underlying wood is exposed. This means the tree is open to infection (bark is a tree's skin) and it also girdles the tree, severing the flow of food produced by the leaves to the roots.

A young tree has thin bark and it might take only a year or two to kill it. A mature tree can take years but eventually it will fail as well. However, since it takes years most people miss the real cause of the decline and instead search for a bug.

Hughes County **Fall webworm**

Fall is just around the corner as fall webworm is beginning to appear (though a little early) You can see the nests starting on trees throughout the state. If you tear open one of these nests you'll find fall webworm larvae. The yellow to brown, tufted, larvae are about 1/2-inch long and actively moving within, and beyond, the nest at this time.

The webworm differs from tent caterpillars in time of feeding (spring for tent caterpillars and late summer for webworms) and where they form their nests (interior, near branch crotches, for tent caterpillars and exterior, out on the branches for webworms). The fall webworm favorite foods are cottonwoods, chokecherries, and walnut, but almost any hardwood tree species will do. It is a myth that since they are feeding on leaves that will soon drop anyway that no damage is caused – the next month or so is a time of high productive for these leaves and the loss of them will leave the tree going into winter with fewer reserves. If you catch them now, an insecticide containing Carbaryl or Malathion sprayed on the foliage can reduce the defoliation.

Moody County **Blue spruce with about everything**

I stopped by a windbreak of Colorado blue spruce that were beginning to decline. The trees are about 25 years old, a time we often see problems beginning to appear on these trees. Unfortunately there was not a problem, there were problems; cytospora canker, rhizosphaera needlecast, spruce bud scale (picture to right), and spruce needleminer.

While these pests can appear on almost any spruce, we start to see multiple problems once the trees reach their 20s and 30s and they are starting to crowd one another. There was an interesting study in *Agriculture,*

Ecosystems & Environments (1988) that discussed how windbreaks can concentrate pests and permit populations to increase due to still air and increased humidity. Spacing can help and too many belts go in on 12 foot spacing which means problems start appearing when the trees are in their teens. This belt was planted on 16-foot spacing and that delated the crowded conditions until the 20s.

Pennington County **Defoliating willow**

I have made a couple of stops to look at willows with as many leaves on the ground as in the tree. This is willow scab (*Venturia saliciperda*). This is a very common foliage disease that appears in late summer on willow trees across the state. The disease is closely related to apple and pear scab and the typical symptoms are discolored and falling leaves as well as tip dieback. This disease has similar symptoms to black canker (*Glomerella miyabeana*), a willow twig disease that can also cause the leaves to wilt and the shoot tips to die back. The two diseases are difficult to separate but the willow scab infected leaves will usually have "tufts" of spores on the underside of the leaf, generally along the midvein. These two diseases are often found in association with one another and when they occur together the disease is just simply called willow blight. There two disease are common problems when the spring weather is moist, a condition typically of a few areas in eastern South Dakota this year.

Pennington County **Water is the best medicine**

Let's end the *Update* on a good note. I stopped by an acreage (5-acres) just outside of Rapid City where the landowner was converting a meadow into a forest. They had been working on it for the past 20 years and the results are amazing. The property has a very high fence surrounding it to discourage deer from browsing down the trees and, most important, every tree receives drip irrigation, every tree!

While flooding and poorly drained soils are tree-killers, the lack of water is the biggest reason for low survival and slow growth. A common "pest" call is to one or two year old windbreak where the trees are doing poorly and the landowner wants me to find the "bug" or blame the nursery (for growing poor stock) or the district (for planting them wrong). When I ask if they watered the tree during the dry summer, the answer is usually no, it's not practical. Humm – see next page.

Here is what you get when you do. This is a five year old (planted on a seedling) bur oak on drip irrigation. It is now more than 15 feet tall and putting out 3 feet of growth a year. All the oaks on the property look like this – water is truly the best medicine for trees!

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