Pest Update (June 1, 2016)

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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 particular 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

The mockoranges are just beginning to bloom in Brookings along with the pagoda dogwoods. These have flowered anywhere from the middle of May to the middle of June so it seems the year is turning out to be average. We were a little warmer earlier and that helped speed up development but the recent cooling has seen flowering stall a bit.

Tasks to complete now

Now that buckeyes are blooming, bronze birch borers are emerging from infested trees. **Bronze birch borer** (*Agrilus anxius*) is a native insect that attacks birch. It is a close relative to the emerald ash borer so they both make the characteristic D-shaped hole as the adult emerges from the tree. The time to treat trees is now as the female beetles are finding places on the bark (usually near a branch union) to lay their eggs. The bark can be sprayed with an insecticide containing permethrin as the active ingredient with a second application in about three weeks. Insecticides containing imidacloprid can also be used as a soil drench in the fall to kill newly hatched larvae the following year. If the canopy has dieback back more than about 40% the tree too far gone for treatments.

We should begin shearing pines now. Pines set only terminal buds, not along the new shoots as do spruce and fir, so the only time to shear them, removing a portion of the current season's shoot growth, is during the candle phase where the expanding new shoot is still tender. Removal of a portion of the shoot during this time period will allow the new shoot to set buds. If the pine is sheared after the new growth has completed expansion and hardened, no new buds will be set and the shoot will dieback after the older needles are shed, usually in a couple of years. Shearing can begin now and can be performed until the new needles along the candle are about ½ the size of the older needles. After that time, probably in a few more weeks, it

will be too late. I also had a question about the need to shear pines. This is only necessary if shaping an ornamental pine such as a mugo pine. Other than Christmas trees (and mugo pines) we do not usually shear pines for a particular shape.

Timely topics

Here is an unusual tree pest that pictures were sent in and then I stopped to see, a **treehopper** (*Atymna*). The nymphs were all over the twigs and foliage of some large bur oaks. Treehoppers are interesting insect, the adults have a very unique hood covering the body that almost looks like a small thorn. The nymphs (pictured) have small spines on the back of the abdomen. The adults and nymphs are very active and can jump if disturbed. They also suck the sap from shoots and while this damage is minimal, the insects also produce honeydew and this substance may support the growth of sooty mold which blackens twigs and leaves. The more serious damage from treehoppers is mechanical injury to the shoots from the numerous slits or punctures the females make to lay eggs. This causes the bark to roughen and can result in twig and branch dieback. Treatments are rarely necessary but high populations of treehoppers can be reduces with insecticidal soap or summer horticultural oils.

Armillaria root disease is common in ponderosa pine stands in the Black Hills. Ponderosa pine is highly susceptible to infection by *Armillaria ostoyae*, the only species of this fungus found on pine in the Black Hills. The disease is found throughout most of the Black Hills, though more prevalent in the northern Hills. Armillaria is both parasitic (gaining nourishment from a living host) and saprotrophic (obtaining their nutrients from non-living organic material). Since it can survive on dead or declining roots, the fungus can persist for up to 30 years in stumps. The fungus is clonal and spreads out via infected roots and fungi rhizomorphs, thin rope-like structures. Expansion out from an infection center may be several feet per year and clones have been dated in the Western United States at more than 400 years old!

Infected pines often have their foliage thin for several years so only two years of needles may be present. Often the new needles will be discolored, appearing almost chlorotic. The wood near the base of the trees may be resin soaked White mycelia mats may be present beneath the bark at the base of infected trees.

The mats often have the consistency of latex paint and can be peeled from the wood. This is the most common diagnostic tool to separation Armillaria from other root decay fungi. The fruiting bodies, honey-colored mushrooms, may be found in the autumn during wet years. Infected trees will fall over once the roots have died and decayed. Young trees are more often affected by the pathogen and another common symptom for the disease is patches of dead seedlings around a few dying mature trees.

Since the fungus can persist as a saprophyte it is not practical to eliminate it from a location. Armellaria is referred to as an opportunist as it can persist for years to then take advantage of a stressed host. Fortunately healthy trees are able to resist infection so keeping the tree healthy is a key to management in the urban-wildland interface. The disease is more common on sites that have been disturbed by home construction which can damage the remaining trees and contribute to a lot of organic debris from the trees cut for the development. A recommendation from one of the few urban studies is to avoid leaving woody roots and debris in any fill soils as this provides the organic material to allow the fungus to persist. Stump removals is also recommended. If the stump cannot be removed, cut the stump flush with ground and, if the soil is not too rocky, grind the stump down another 6 inches with a stump grinder. These measures will hasten the deterioration of the roots and provide less of a food source for the fungus to live as a saprophyte. Healthy trees should be protected from further stresses such as defoliating insects and foliage diseases. However, keeping trees healthy does not mean providing an abundance of water and fertilizer. The disease can become more of a problem in former forest land converted to lush lawns; too much water and fertilizer can be just as damaging as too little.

White pine blister rust is an exotic disease of 5-needle pines in North America. The origin of the disease is believed to be central Eurasia. The disease was first identified in North American in the 1890s most likely arriving on infected nursery stock from Europe. The disease was found in Vancouver, BC in 1910, again from a shipment of white pines from Europe, with the disease spreading eastward to Montana by 1940 and Wyoming by the 1960s. The disease was found in the limber pines (*Pinus flexilis*) along the Cathedral Spires in Custer State Park in 1992. Since that time it has persisted with about a quarter of the trees infected.

The disease, as with many rust diseases, requires an alternate host, in this case, currants and gooseberries (*Ribes*). The hosts in the Black Hills are the limber

pines and the wax currant (*Ribes cereum*). Management was once centered on removing currants, the alternate host, but this has not proven practical for most situations. Spores erupt through the bark of the pine in the spring and these can be spread long distances to infect the foliage of the currants. In the autumn spores are released from the currant to infect the pine. The spores from the currants do not travel as far, perhaps only a mile or two.

The disease is managed by pruning branches with cankers and excising cankers from the trunks. Since most of the infection occurs on lower branches, though in the first 10 feet or so, pruning can be practical means of slowing the spread of the disease in a tree.

E-samples

Common buckthorn (*Rhamnus cathartica*). This is an invasive woody plant that has crowded out the native vegetation in our hardwood forests and also has invaded just about every East River shelterbelt. The plant was introduced to South Dakota in the 1880's as a hedge plant for homes. It is a tough hedge plant but the birds "plant" the seeds everywhere and buckthorn comes up in all the places you don't want it to grow.

Emerald ash borer (*Agrilus planipennis*) (picture NOT from South Dakota). I received a picture from Illinois (where emerald ash borer is present) asking if this was the emerald ash borer. The picture shows a D-shaped hole from which emerald ash borer adults emerge and the beetle in the picture is the correct size and shape. The adult emerald ash borer is about 3/8 to 5/8 inches long (a dime by comparison is little more than 5/8 inch diameter), torpedo shaped and has metallic green wing covers. The adults begin emerging when Dames' Rocket is flowering. This plant is in full bloom across South Dakota and we

have already set up sticky traps in the state to monitor for this insect. However, emerald ash borer has NOT been detected yet in South Dakota.

Honeylocust borer (*Agrilus difficilis*). This is a close cousin to the emerald ash borer except this one is native to the United States and attacks only honeylocust. The insect is not a common pest but we do see it in young, stressed honeylocust across the state, though mostly West River where the environment (dry summers, cold winter) are not conducive to growing this tree. We have samples of this insect caught in Kadoka back in 1920 so it has been here for a long time. This infested tree is in Wall South Dakota, a place where bad trees go when they die – it's not the ideal place to be a tree. The borer attacks stressed trees, though already in the process of declining, and hastens the decline by girdling the phloem tissue.

Flatheaded appletree borer (*Chrysobothris femorata*). This insect was found tunneling in an oakleaf mountainash and the concern was that it was the emerald ash borer attacking an oakleaf "ash." The flatheaded apple tree borer creates an oval emergence hole, not quite D-shaped, but it does tunnel through the phloem tissue beneath the bark so I can understand the confusion. However, emerald ash borer does not attack mountainash. Mountainash is not a long-lived species in South Dakota, often a life span less than 30 years, due to our heavy clay, alkaline soils and cold winters. The real problem with the tree is it is declining due to a stress, not the appletree borer. The borer is just finishing the tree off.

Pine male cones are causing some concern across the state. I have received pictures asking what this dust is coming out of these "growth." The most common though is these are the fruiting structures for cedar-apple rust, which they are not. These are the male cones to spruce and pines. They usually are near the base of the tree, the female cones, which forms the woody cone with seeds, are higher up in the canopy. Since most conifers produce both male and female cones, the thought is that having the male cones lower in the tree contributes to cross-pollination with other trees.

Tent caterpillars (*Malacosoma*) nests are appearing everywhere along with the small caterpillars. There are three species of tent caterpillar in South Dakota, the eastern tent caterpillar (*M. americanum*), the western tent caterpillar (*M. californicum*) and the forest tent caterpillar (*M. disstria*). The eastern and western seem to stay on their respective sides of the Missouri River with the forest tent caterpillar generally found in the northeastern part of the state. All three form tents, though the forest tent caterpillar has a lighter and smaller tent. The larvae are leaving the nests and foraging in the canopy of the tree. If the average length of the larvae is less than 1/2 inch long then any insecticide including ones containing spinosad, a product derived from the fermentation of soil microorganisms. If the larvae are between 1/2 and 2 inches long then insecticides such as ones containing carbaryl (Sevin) or malathion should be used. Once the insects are more than 2 inches long they are just about finished with their feeding and spraying is little more than revenge.

Samples received/Site visits

Clay County **What is wrong with this oak tree?**

The leaves were so curled and deformed that it was difficult to even see that it was an oak. This is herbicide injury, probably one of the growth-regulator herbicides such as 2,4-D.

Union County **The leaves wilted on the apricot after they sprayed.**

The fungicide sprayed on the apricot had sulfur as the active ingredient. A common caution made in this Update is to apply sulfur at or before the buds open in the spring. Copper and sulfur may be phytotoxic to many plants when applied once the foliage has expanded, insecticidal oil spray has been applied (within 21 days) or when the temperatures are high (above 85^{o}F). Apricot is sensitive to sulfur fungicides and is easily damaged by application. I checked the label for the spray and it does not include apricot as one of the fruit trees for application.

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