Pest Update (June 12, 2017)

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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/

Plant development for the growing season

We are quickly catching up in plant development this season. The catalpa (*Catalpa speciosa*) are blooming in southern South Dakota as well as the Tatarian honeysuckles (*Lonicera tatarica*) which are now flowering throughout the state (pictured). The bristly locust (*Robinia hispida*), an old-fashion favorite, was in full bloom in Huron last week. This means that some of our treatments we perform in mid to late June are coming up maybe sooner than expected.

Tasks to complete in another week (or so)

Spruce bud scale crawlers will soon be hatching. The scale 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 are in bloom which may be in another week. The best treatments are insecticides containing carbaryl as the active ingredient and these should be applied on the foliage and shoots near the tips of the branches. Products containing imidapcloprid can be effective as a soil drench but need to be applied in the fall for control the following year.

We are also coming up to the time to treat for spruce needleminer. 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 be treated in another week as the adults should be flying by then. This may be a little earlier than normal as some years the treatment is applied as late as early July.

Timely Topics

Treating for emerald ash borer (and this only applies to ash tree in Sioux Falls or within 15 miles of northern Sioux Falls)

We are now in the season for emerald ash borer treatments and, as a reminder, ash tree owners need to hire a commercial service to protect their trees from this boring insect. The pesticides available for homeowners are not effective for larger trees. A good rule-of-thumb is if you cannot put your hand around the trunk at about chest level (see picture to the left), it's too large to treat for emerald ash borer with products homeowners can buy. There is not much value in treating trees this small anyway. If the tree is less than 10 inches in diameter, at chest high, it probably does not make sense to start a regime of treatments that can extend out indefinitely when you can easily remove and replace it.

However, if the tree is more than 20 inches in diameter, and in good health, it makes sense to treat the tree. If you compare the cost of removing the tree now verses treating the tree (every two years for five times and then every three or four years after that) it can take 20 to 25 years before these costs – removal vs treatment – equal. And you had the benefits of a mature tree.

But it only makes sense if the tree is injected properly. Tree owners should not use price as the sole criteria for who to hire. The first step to selecting an applicator is review the City of Sioux Fall's list of licensed arborists which is available from the city's website. Any applicator in the city must be licensed by the city in addition to having a South Dakota commercial pesticide applicator turf and ornamental certification.

Next, it might sound strange – but can the applicator identify ash trees? It is not a common problem but we have had applicators misidentify hackberries, maples, and walnuts as ash trees. Emerald ash borer only infests ash (and not mountainash) so be sure these are the only trees injected.

Ash trees can be identified by their leaves. The leaves occur opposite to one another on the shoots and they are compound leaves. The pinnately compound leaves have between 5 to 9 leaflets, with an even-number arranged along the stalk and a single leaflet at the tip. Hackberry and most maples do not produce compound leaves. The only maple to produce a compound leaf is the boxelder and it has leaflets in 3's and occasionally 5's. Walnut has compound leaves but usually between 17 to 23 leaflets.

Finally, ash tree owners in Sioux Falls should not procrastinate in deciding which ash to treat this summer and which to remove this fall. Emerald ash borer will be expanding across the city over the coming years and you don't want to wait until it's too late.

Chlorosis - tree leaves turning yellow

Chlorosis, a foliage condition where the leaf veins remain green but the surrounding tissue turns pale green or yellow, is a common occurrence at this time of year but this year seems to be worse. The wet weather may have slowed root growth and this can increase the problem with chlorosis.

Chlorotic Amur maple leaves.

We typically see these symptoms appearing on Amur maple (*Acer tataricum* var *ginnala*), red maple (*Acer rubrum*), freeman maples (*Acer x freemanii*) swamp white oak (*Quercus bicolor*), river birch (*Betula nigra*), and silver maple (*Acer saccharinium*). This year I am also seeing symptoms appearing on the Heritage oak (*Quercus robur* x *macrocarpa* 'Clemons').

The reason for chlorotic leaves is not a fungus or other pathogen, but the lack of iron (FE) or manganese (MN) in the foliage. The lack of iron or manganese is not due to soils containing inadequate amounts of these microelements, but alkaline soils rendering these microelements into forms not available to the tree. Any soil with a pH greater than 7.2, and that includes most of the soils in our communities, can result in these trees turning almost a golden yellow by mid-summer. Severely affected leaves can turn completely yellow, fall prematurely and leave the canopy bare by autumn. Some trees may decline and die if these symptoms appear for several years in a row.

Not all yellowing leaves are due to a microelement deficiency. Trees may have yellowing leaves due to drought, flooding, aphids or any number of other stresses. Some tree cultivars such as the 'Princeton Gold' Norway maple (*Acer platanoides* 'Princeton Gold') produce yellow leaves, hence it is important to rule out other reasons for the yellowing foliage before assuming it's the lack of iron or manganese. Generally, the other stresses will have yellowing leaves, but not necessarily chlorotic leaves where the leaf veins remain green.

If it is chlorosis due to a deficiency of either iron or manganese, the next step is to determine which microelement may be missing. Iron chlorosis is usually the missing microelement if the newest foliage, the leaves on the tips, are turning yellow with the veins remaining green. If the older, interior foliage is turning chlorotic then it most likely is manganese. It is also possible for a tree to be lacking both micro-elements.

Chlorotic swamp white oak leaves.

It is also species related with oaks and birch generally suffering from iron chlorosis and maples, manganese. However, maples may also have iron chlorosis and its possible that a maple will respond to the improvement in availability of both micro-elements.

Since the problem is not the lack of iron or manganese, merely adding these microelements as a fertilizer to the soil will usually not solve the problem. Pounding nails into the trunks is not helpful as this is a poor way of getting iron in the tree and most nails do not contain a lot of extractable iron. The solution is either spray the foliage with a solution containing iron or manganese, implanting FE or MN capsules into the trunk, fertilizing with a chelated form of iron or manganese or reducing the soil pH so the microelements already in the soil become available. All these treatments work best if applied early in the growing season, as the leaves are expanding. Once the leaves are fully expanded, the treatments will not be as effective and the leaves will be a pale yellow-green rather than the normal green.

Spraying the foliage with a ferrous or manganese sulfate will provide a quick green-up but only if the application is made just after the foliage fully expands. If done late in the season, the leaves may not color well. The application is also only a temporary fix and the leaves that come out after the treatment will become yellow. Misapplication of these sprays can also damage foliage and stain concrete and stucco. The applications should also be made in the evening, while temperatures are cooler, as these microelement solutions can result in leaf injury.

Implanting iron or manganese in the trunk can provide a green-up within a few weeks of application and the benefits may last two years. There are implants that are available for homeowner use, but these are rarely carried in local garden

centers and department stores. The implants should be place low on the trunk and a sharp drill bit used to make the holes. The products are easy to apply but the directions should be carefully followed to avoid any unnecessary injury to the tree. Drilling holes into the tree creates wounds that may result in decay.

Injecting iron or manganese into the trunk is also a means of managing chlorosis but these treatments are applied by commercial applicators. Interestingly, some of the same pressurized systems used by to treat for emerald ash borer are used for chlorosis. The treatments can turn the leaves green fairly quickly but will need to be repeated every few years.

Chelated forms of iron and manganese can be applied to the soil and these applications provide benefits for usually a year, perhaps two, but it may take several months before the leaves loss their chlorotic appearance. The chelating agent keeps the iron or manganese in a form available to the tree but not all chelating agents are effective in our slightly to moderate alkaline soils. The best chelating agent for our soils contains FeEDDHA and this one should be on the label. Chelated iron and manganese are available at garden centers but you still have to do some looking as it is not a common product.

Altering the pH so that the iron and manganese in the soil is available to the tree is the best solution, but is not easily done. The alkaline soils in our state are well-buffered meaning the pH is not easily lowered or will stay lower for very long. However, it is worth a try and the most common acidifying agent is elemental sulfur (sold as organic soil acidifier). This can be easily purchased in the garden section of most garden centers. When applying this product, carefully read and follow the label directions. Also do not expect the results to be 'overnight', the greener foliage may not occur until the next growing season, if at all.

E-samples

Blister beetles are beginning to appear. Blister beetles are about 1/2 to 1 inch long with a slender body and long antennae. The ash grey blister beetle (*Epicauta fabricii*) is completely gray. But there are other species that are almost black.

The larvae of blister beetles are beneficial to us as they eat grasshopper eggs. Many of the adult blister beetles feed on flowers and pollen but some, such as the ash gray blister beetles, also feed on leaves. They generally feed on legumes, so Siberian peashrub and honeylocust are their favorite woody plant food. I have seen them completely strip a peashrub hedge of leaves in three days.

The other problem is blister beetles are capable of spraying out a caustic substance called cantharidin which can cause skin to blister (hence the name blister beetle). The adults are fairly slow moving and you can even pick them up but I wouldn't suggest it (you don't pick up skunks either). A more serious problem is the beetles can be a contaminant in baled alfalfa and if a horse or cow feeds on this hay and either eat the beetles or the fluid from crushed beetles, they can suffer excessive salivation, sweating, cramps and even death.

Oak leaf blister (*Taphina caerulescens*) appears to be what is in the picture recently sent to me. I will have to await the sample but the symptoms, raised, blistered, greenish-yellow spots on the upper leaf surface and a sunken area on the lower surface. The fungus spread by spores that "rain" down in the early spring from infected twigs and buds. This foliar disease develops best in cool, wet weather, precisely the weather we have had this year across much of the state.

The disease is related to peach leaf curl which is caused by the fungus, *Taphrina deformans*, a pathogen that deforms the leaves on stone fruits and *Taphrina communis* which causes plum pockets, a disease that causes spongy and hollow plum fruit. Fortunately, oak leaf blister is not as serious and there is no need for concern though there may be substantial leaf fall of the infected foliage later this summer.

Pine engraver beetles (*Ips pini*) are flying in the Black Hills. I received a picture of the beetles that appeared to "raining" from the sky on a cabin in the southern Black Hills. The pine engraver beetle is the little cousin of the mountain pine beetle. While the mountain pine beetle epidemic is finally finished, we still have the pine engraver beetle to contend with. This insect colonizes green logging slash and fallen broken branches. It will also attach stressed trees and the stress can be anything from drought (which was the problem back in the 2000s) to ice and snow snapping the tops from pines (which happened a few weeks ago).

The best solution to managing pine engraver beetles at this time of year is to remove infested trees and brush and destroy the wood. Don't, as several landowners have done, cut the infested

trees and stack the wood between healthy pine trees. The adult beetles can still emerge from them and attack nearby stressed trees.

Samples received/site visits

Beadle County **Why is this one linden curling its leaves?**

The Master Gardeners were conducting a street tree inventory in Huron and they came across these trees. If you look at these two little-leaf lindens, they are about the same size but the one on the left has a much thinner canopy and the leaves are beginning to dry and curl. What might be the problem? If you look at the base of this tree, note the large stem-girdling root that is constricting the development of the stem. This is a common problem on lindens and is associated with two related problems; 1) girdling roots in the container and 2) planting too deep.

While any tree can have circling roots form in the containers since they reach the pot wall and have no where else to go but around, it seems that certain species, of which lindens are one, are very susceptible to this problem. It should be corrected at planting by cutting in about an inch or two around the entire root ball with a sharp spade once it is removed by from the pot. This action will shave off all the circling roots. Then be sure to plant the tree so that none of the stem is buried beneath the surface – you cannot have stem-girdling roots unless some of the stem is beneath the soil.

Once the damage is done it is hard to correct. Cutting away the girdling root may be of some benefit but too often its too late for corrective action.

Grant County **What is causing this discoloration on the apple leaves?**

I started receiving samples of apple (and crabapple) leaves infected by apple scab last week (see the *Update*). It seems once the light brown, irregular blotches and slight distortions begin to appear, homeowners notice something is wrong with their tree. They will probably notice it even more in a couple of weeks as the leaves begin to drop prematurely. Unfortunately, the management for this disease is not now when you see the symptoms but back in May when the buds were first

beginning to expand. The fungicide treatments start then and are repeated about every 10 days until about now when the weather turns dry. It is too late to do much now.

Harding County **What is this hard growth on this cedar branch?**

This is the fruiting body of the cedar-apple rust. The galls become very hard and can remain on the tree for several years. Occasionally the galls will cause the branch to become girdled and the tips beyond the galls will then die and turn brown. However, generally these galls are more a curiosity than a problem for the junipers.

Lake County **What is causing the bumps to appear at the base of these cottonwood leaves? There are small white bugs inside them.**

The bumps at the base of the leaf blade are the galls formed by the poplar gall aphid. The aphids will begin to emerge from these galls in another week and migrate to their other host for the remainder of the summer. The feeding done by these aphids on and in the cottonwood leaves will sometimes cause the leaves to drop prematurely. There is no effective control for this insect.

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