

Pest Update (June 14, 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/>

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.

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Plant development for the growing season

We seem to be still a little ahead for plant development. The catalpa (*Catalpa speciosa*) are blooming in southern South Dakota (as can be seen from this picture sent in by Union County extension). The bristly locust (*Robinia hispida*), an old-fashion favorite, is also in full bloom in Brookings. This means that some of our treatments performed at the end of June may be applied a little earlier.

Treatments to do now



The first Dothistroma treatment should be done by now. This is a very common disease of Austrian pines this year (also ponderosa pines in East River shelterbelts and the Black Hills) and is responsible for some of the discolored needles we are seeing on pines this year. The symptoms are dead needle tips beyond the yellow to tan spots. The spots have now enlarged to form brown to reddish brown bands

and sometimes fruiting structures can be seen in the bands. The infection this year is so bad that the entire needle may be discolored. The treatment is a copper fungicide applied now as the candles are expanding and repeated in late June and again in mid-July. There are a number of copper containing fungicides available such as Camelot for those individuals who have to spray several or more trees.

Tasks to complete in another week



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 should be in another week. The best treatments are insecticides containing carbaryl as the active ingredient and applied on the foliage and shoots near the tips.

Products containing imidacloprid 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 is a little earlier than normal as some years the treatment is applied at the beginning of July.

Timely Topics

The wide-spread drought is intensifying across much of central and western South Dakota. We are now beginning to see trees and shrubs under moderate to severe drought stress, particularly newly planted ones.

The most common symptoms for moderate moisture stress are leaves turning a lighter green than is typical for the species. Affected leaves also are showing brown and crisp margins and often the browning dips in from the margins between the veins. Some trees in the west-central part of the state are already having the leaves curl and fall, a symptom of severe stress. Eventually trees showing severe moisture stress will begin to dieback.

The symptoms for drought-stressed conifers, particularly seedlings, is yellow to almost purple needle tips. Some of the older needles on drought-stressed trees, those that formed three to five years ago, are beginning to drop prematurely. Since the drought really began last summer, many stressed conifers are also producing an abundant cone crop as a response to the moisture stress.

The only treatment now is WATER. This is particularly important for new planting, whether they are seedlings in a new windbreak or a tree just planted in a yard. A seedling will need between a pint and quart of water per day while a newly planted 10 to 12 foot tall tree will need about 2 gallons per day at this time. Most young tree belts are probably not receiving anywhere close to this amount and I suspect there will be a lot of replanting next spring particularly in the western part of the state.

Established trees will not need daily watering, but still require weekly watering to survive this dry, hot summer. A 2-inch diameter tree (measured at 6-inches above the ground) should be receiving about 20 gallons of water a week and this is best applied slowly with a soaker hose placed near the tree. Tree roots typically extend out as far as the tree is tall but the critical watering zone is a distance out about 2/3's the height. As an example, if the tree is about 24 feet tall, the watering should occur within 16 feet of the trunk.

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. We typically see these symptoms appearing on Amur maple (*Acer tataricum* var *ginnala*), red maple (*Acer rubrum*), swamp white oak (*Quercus bicolor*), river birch (*Betula nigra*), and silver maple (*Acer saccharinum*). 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 from soils with inadequate amounts of these microelements, but alkaline soils rendering these elements into forms not available to the tree. Any soil with a pH greater than 7.2, and that includes many 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, 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 microelement.

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.

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 placed 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.

Chelated forms of iron and manganese can be applied to the soil and these applications provide benefits for usually a year, perhaps two, but may take several months before the leaves lose 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 contain FeEDDHA and this one should be on the label. Chelated iron and manganese is available at many garden centers and farm supply store but you still may 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 lower or will stay lowered 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



Apple scab (*Venturia inaequalis*) symptoms are appearing on the foliage of apple and crabapple trees across the state. This common fungal disease results in infected leaves developing olive-colored, irregularly shaped lesions. The leaves then begin to turn yellow and start to fall prematurely. There are already trees with the first

symptoms of the disease appearing; small, circular spots that are a lighter shade than the rest of the leaf. While we see the disease symptoms every year, this year, we may seem more of the disease in some locations as we had the perfect spring weather for spore germination in eastern South Dakota. These spores germinate very quickly when we have humid, wet weather (meaning little of the disease will appear West River). The disease overwinters on the fallen, infected leaves and the spores are released from these in the spring. It's too late for effective treatment at this time as the disease as already entered the leaves.



Ash rust pictures are coming in and this may become a bad year for the disease in the few portions of the state that received rain this spring. The disease begins as bright orange spots on the petioles and undersurface of the leaves. These enlarge during the season, becoming almost gall-like and

further distorting the leaves. These infected leaves usually drop prematurely resulting in another round of telephone calls and emails from alarmed tree owners as their yards become filled with fallen leaves in July and August. The disease can also affect the young twigs and shoots though this is rarely seen (except back in 2008). However, this year the conditions were just right along

the eastern edge of the state for the development of the disease, cool and wet, and I have received numerous reports and pictures of this infection. The disease, as with many other rust diseases, has two hosts, one is the ash and the other is a number of grasses. The disease can be managed with a single application of a fungicide containing myclobutanil made just as the leaves come out so it's too late for treatment this year. Treatments are not usually recommended anyway since the disease is not a tree-killer.



Blister beetles are beginning to appear.

I received this picture of them from Dave, one of the forestry interns with the South Dakota Department of Agriculture. 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. 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.



Cereal rust (*Punccunia coronata*) is showing up on common buckthorn. The disease is resulting in highly colorful fruiting structures that will release aeciospores that infect barley, quackgrass and other grasses. These infected plants will produce basidiospores next spring to infect the buckthorn. There are no recommended treatments for the

buckthorn since this is an invasive weed which everyone would be happy if the disease just killed it. Unfortunately the rust disease just discolors the leaves. Quackgrass, another weed, is one of the most important, and frequent, overwinter sources for the disease so we have a unique pathogen that actually spreads back and forth between two weeds without killing either. Too bad.



I am receiving questions about aspens and cottonwood shedding small branches and twigs.

A common reason for this abscission, a process called cladoptosis, is usually in response to changes in the environment, typically the weather changing from moist to hot and dry. If you look closely at the base of these fallen branches you'll notice there is a well-defined abscission zone almost like a ball and socket, rather than a shredded tear that would characterize

a branch or twig broken off by strong winds. The phenomenon is most common on mature aspen and cottonwoods that are stressed by drought. Usually the twigs start falling in June and this can continue through September. Just a little more raking.



May beetles (*Phyllophaga*), also known as June bugs, are causing some defoliation this year though not to the extent of last year when entire trees were defoliated. These beetles are called May or June as these are the months the adults are flying about. The adults are shiny reddish-brown and about an inch long and stout. The insect spends most of its life underground as a C-shaped larvae, about 1 to 1 ½ inches long, feeding on the roots of grasses,

crops and other plants. The larvae take about three years to complete their life cycle in the soil and emerge in the spring (May) as adults. The adults feed on the young leaves of many tree species, but seem to have a fondness for ash and oak (see oak picture to the right). The adults are nocturnal so many people cannot figure out what has been chewing on the tree's leaves since they never see the insect. The adults are also a nuisance as they buzz around light fixtures at night so you can find them in the parking lots of gas stations.



Since the foliage damage is not noticed until the insects are almost done feeding, there is little value in treatments. Unless the tree has already been severely stressed (e.g. new planting, construction damage, other defoliators), they will soon have a new flush of leaves.

Samples received/site visits

Minnehaha County

Do these two trees in Sioux Falls, a Norway maple and sugar maple have verticillium wilt?

No, the trees are negative for the disease. Stem-girdling roots are a common problem on maples and the symptoms for this abiotic problem are similar to those expressed by the wilt disease, wilting foliage and dying branches. The trees should be checked for the possibility of this disorder.

Pennington County

Bright yellow galls on pine.



This is a branch gall of the western gall rust that is beginning to release spores. The yellow-orange spores form in the cracks of the galls and are spread during moist, late spring weather. This is an unusual rust disease as it does not require an alternate host to complete its life cycle, instead spreading from the branch galls to the new needles and from there producing a new gall on the current year's shoots. Western gall rust affects mostly ponderosa pines though can infect most other 2- and 3-needled pines. The disease results in woody cankers that can cause branch dieback and deformities. Seedling and saplings can be killed by the disease. Management is focused on removing small trees with galls, as a tree once infected will continue to become infected even if the galls are removed.

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