

Pest Update (April 15, 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.....	1
Treatments to do now.....	2
Timely topic	
The difference in symptoms between COVID-19 and tree pollen.....	3
More on winter-burn and conifers.....	5
E-samples	
Cars as pests.....	5
Willow scale.....	6
Samples received/site visit	
Hughes County (cytospora canker on Colorado spruce).....	7
Hughes County (Diplodia tip blight on Austrian pine).....	8
Lawrence County (pine wilt disease).....	8
Pennington County (bleeding canker on aspen).....	9

Plant development for the growing season

Spring is coming despite the snow and cold temperatures that most of the state experienced this past week. Silver maples are beginning to bloom in the southern



half of the state. This is one of our earliest flowering trees. The flowers are either staminate (male) or pistillate (female). The sepals for both flowers can be red to a yellow-green and the male stamens red. The individual flowers are not attractive but since they are nearly synchronous on a tree, the overall appearance of the red flowers can be stunning.

Treatments to do soon

There are two major foliage and fruit diseases of apples in our area, apple scab and cedar-apple rust. These diseases result in leaf discoloration, olive-drab blotches for apple scab and orange spots for cedar-apple rust. The fruit can also be affected.



Apple scab infected leaves become discolored by midsummer. These leaves may fall by mid-August if the infection is severe. The fruit may also develop scabby lesions.

The early spring management of scab begins with raking up and burning or otherwise destroying all the fallen apple leaves within a few hundred feet of the trees. Apple scab overwinters on the fallen leaves and during the wet spring weather spores are released from these leaves to infect the newly developing foliage in the canopy. Raking and burning has limited value, and is not a substitute for fungicide applications, but can help with management for isolated trees. Even mowing right now (if the snow is off the lawn) to break down the fallen leaves can help with the deterioration of the tissue.



Cedar-apple rust management begins with the removal of infected “cedars”, more properly referred to as junipers, near the apple trees. This disease needs to alternate between two hosts, the apple (or crabapple) and junipers. Removing one of the hosts is a means of breaking the disease cycle. Rocky Mountain junipers and eastern redcedars with the small hard “apples” surrounding twigs (these are the fruiting bodies to the fungus) should be removed before spring. However, removing the cedars may have limited value as this will still not prevent infection from more distance trees, up to a mile away, so fungicide applications will still be needed.

Fungicide treatments for apple cultivars susceptible to apple scab start with the first application applied as the buds are *just* beginning to expand, less than a 1/2-inch of leaf showing. Cedar-apple rust fungicide applications start when the new leaves are about one week old, though treating the expanding leaf can also be beneficial. **These first applications are critical to the successful management**

of these diseases and if missed cannot be made up with applications later in the spring and summer.

The most common fungicides used for preventative treatments of apple scab have Captan or Myclobutanil listed as the active ingredient. Captan is effective on apple scab, but not cedar-apple rust. Fungicides containing myclobutanil are effective for both these diseases. If the apple scab treatment is for an ornamental crabapple, one in which the fruit will not be harvested, Chlorothalonil, may also be used.

Applications of the fungicide are made about 7 to 10 days apart from the green tip stage until after petal fall. The weather usually turns a little drier by then and a 10 to 14 day interval can be used until the end of June when applications generally stop.

Timely Topics

The difference in symptoms between COVID-19 and tree pollen.

Everyone is concerned about COVID-19 and many are alert to any symptoms that may mean they have been infected. Unfortunately, the spring pollen season is almost upon us and people may confuse symptoms for pollen allergies with COVID-19.

The most common symptoms for COVID-19 are fever, dry cough, and shortness of breath. These are not common symptoms for pollen allergies. Instead, the symptoms are sneezing, running nose, watery eyes and itchy eyes. Another important note is if you have these symptoms every spring, it's probably the pollen.

Every spring some unlucky people greet the warm weather with a sneeze rather than a sign of relief that the winter is over. The spring pollen problems are not the same as the summer when "hay fever" becomes the issue. Hay fever is not associated with hay, but ragweed, a common weed that flowers during late summer. Ragweed and many grasses are responsible for most of the plant pollen problems for people living in South Dakota but these occur from May through September.

Trees are one of the first seasonal allergens and these are the ones that will be causing "hay fever" beginning this month. But the problem is not the trees with colorful flowers that will be blooming in May. Trees and shrubs that have colorful flowers that attract bees and other pollinators are rarely the pollen source for allergies. The pollen is too sticky to be carried by the wind. It's designed to be carried by an insect. So, unless you are sticking your nose into these flowers, you are not likely to pick up much pollen.

Some of these plants are blamed for itchy noses and running eyes in May but are not the problems (blame grasses at that time of year). The best-known example is lilac (*Syringa*). The flowers on common lilac are very fragrant, but there is a low frequency of sensitive to the pollen. Lilac, along with privet (*Ligustrum*), are insect-pollinated but not especially attractive to most insect so there is some transfer via wind. The pollen is relative heavy so can only travel a short distance. If a person is sensitive to lilacs, they almost need to be standing in the grove, rather than viewing from a distance.

The problem over the next month or so will be the trees that do not have attractive flowers. These plants depend on wind to carry the pollen rather than bees. This means the pollen is very light and can be carried for miles by the wind. While the pollen should fall upon the receptive female flowers, the fine, light grains fall everywhere including into your body.

There are two woody plants responsible for many allergies in South Dakota. One is the bur oak. The long “tassels” that will soon be hanging from these oak trees are the catkins, the male flowers. These will be shedding pollen during most of May.



A flowering bur oak.

The other tree surprisingly is the common evergreen tree and shrub juniper, often referred to as “cedars”. Junipers do not produce flowers and fruit but cones.



A “flowering” eastern redcedar.

The female cones are the colorful “berries” that appear on the plant by midseason. The male cones are the yellow-brown overlapping filaments that appear on the shoot tips at this time of year. I often receive calls in the spring from people wondering what these bumps are at the tips of their evergreens.

The fine grains of junipers are responsible for “juniper fever”, an allergic reaction common in the Southwest where pinon pine-juniper forests occur. Junipers are very powerful allergens. Some Southwestern communities have junipers on the banned tree list for this reason.

The most common trees and shrubs that produce pollen that results in an allergic reaction for sensitive people are the wind-pollinated plants:

- Ash (*Fraxinus*)
- Birch (*Betula*)
- Boxelder (*Acer negundo*)
- Cottonwood (*Populus deltoides*)

- Juniper (*Juniperus*)
- Oak (*Quercus*)
- Pine (*Pinus*)
- Poplar (*Populus*)
- Walnut (*Juglans*)

And not all members of these genera or species are a problem. Many of these trees are dioecious, meaning they have either male or female flowers on a tree. Only the males produce pollen so it's the guys that are the problem.

More on winter-burn and conifers



We are still seeing injury appearing on conifers that is related to winter injury. We are seeing injury, browning and straw-colored needles, on junipers, pines and spruce across the state. Much of the winter-burn damage is really winter drying. This occurs in the early spring when the soils are cold or frozen but the air temperatures are in the 50s and 60s. The trees are losing moisture through their needles but the water cannot be replaced through the cold or frozen roots.

Drying winds can add to the problem and strong winds are common during South Dakota's springs. I received the above picture of a browning Colorado spruce near Spearfish. The symptoms did not appear until a week or two ago, a common timing for winter drying. Often these trees will have the needles turn green again once the soils warm.

Sometimes the damage is permanent. I also took some pictures of winter drying on ponderosa pines in the Black Hills. These are sapling trees in a bowl near the Cathedral Spires. The bowl is face southwest and traps the afternoon heat. Almost every tree presented needles near their tops with straw-colored tips. These tips are dead and will not recover. The trees will survive but just have these discolored needles until they fall off in a year or so.



E-samples

Cars as a pest

You usually do not think of cars as a tree pest but just think of spending your life standing stationary next to a road. Welcome to the life of a street tree. This tree was struck by a car and the question was what is the potential for survival. First, it's a green ash tree so it's life expectancy is already limited by the eventual spread

of emerald ash borer into the community (unless the tree is treated once the beetle does appear in the town).



The usual criteria is a wound is considered serious if more than a third of the bark circumference is missing. Bark is like skin, it protects the tree from infection. The bark loss provides an opening that allows fungi to penetrate the sapwood and eventually decay the wood which reduces the stability of the tree.

This wound exceed that threshold so the tree is now vulnerable to decay. The wounding was described as deep, extending into the sapwood which may allow the decay to spread faster.

Unfortunately, there is not much that can be done to correct the damage. Painting the wood surface, a traditional treatment, is not effective nor does cleaning out the damaged wood and filling the space with auto-body fill or concrete. Removing the tree, especially since its an ash, and replacing with another tree is probably the best option.

Willow scale

I received this picture of these whitish bumps on the stem of an Austree. Readers might remember the interest 20 years ago in these trees, a cross between the white willow and the corkscrew willow. They were the wonder trees that would grow at an incredible speed in almost any soil. Seemed a little too good to be true and it was. The trees live for a decade or two before succumbing to canker disease such as *Cryptosphaeria* and *Cytospora*.



This tree does not have these diseases (or at least that was not the concern), but it was covered with these white bumps. These appear to be the willow scale (*Chionaspis salicis*) though identification of scale insects to the species often requires microscopic examination. This European scale has been in the Midwest for more than a century and infests willows and closely related species. The insect lives by sucking sap from the trunks and branches. Usually they do not remove enough sap to harm the host but large populations can cause the tree to wilt and decline.

The insect overwinters as eggs beneath the sessile female shell. The eggs hatch in late May and the young, called crawlers, scurry

along the shoots and find a place to piece the bark to begin sucking sap. The females lose their leg and form a hard shell. There is second generation later in the summer but the first generation causes most of the damage.

The insect is easily confused with a related insect, the oystershell scale, *Lepidosaphes ulmi*. The willow scale is broadly mussel-shaped, white with a small yellow tip. The oystershell scale is shaped like an oyster, brown or gray. There is also the poplar sale, *Quadraspidiotus gigas*, which is circular, gray with a orange-yellow center.

Management is similar for the three. A dormant oil spray can be applied in late winter/early spring to kill the eggs but since these are under the protective shell of mom, many will survive. A spray with oil or soap when the crawlers are out is usually necessary. These are applied about the time lilacs are in bloom.

The other treatment is just remove the plant which is what the tree owner plans to do.

Samples received/site visits

Hughes County

Cytospora canker on Colorado spruce



I received a call to stop by to look at a declining row of Colorado spruce (AKA blue spruce) north of Pierre. The trees were just beginning to have their lower branches loss needles. The trees were about 20 years old, just beginning to touch and were the perfect screen.

One of the most common problems on mature spruces, those more than 20 years old, is cytospora canker (*Leucocytospora kunzei*). The symptoms are twig dieback that progresses to branch dieback, most commonly beginning at the base of the tree and then continuing upward to perhaps half the height on a mature tree. Since the disease does not affect the top of the tree spruces often survive the disease, but their appearance suffers. The best means of identifying the disease is to look back along a branch that is suffering from twig dieback and check for these bluish-white resin blisters. Beneath these blisters the branch is often sunken and if the bark is removed it may reveal the canker.



Unfortunately, there is no effective means of managing this disease in a home windbreak other than maintain the tree's health through watering during our hot, dry summers and prune off infected branches. The infected branches can be removed during periods of dry weather and the pruning saw should be disinfected between cuts by spraying with a disinfectant (but good luck finding one this spring!).

While Colorado spruce, is the most popular evergreen in the state, its planting should be tempered by the fact that it is prone to a multitude of pest problems, accounting for more samples submitted to the *Update* than any other plant, is not well-adapted to our dry climate and has been overused. I like the way Minnesota Extension *Yard and Garden Line News* (Vol 5, number 15) described problems on spruce; "The most common reason for unhealthy [blue] spruce is the simple fact that they should never have been planted in Minnesota in the first place." While that may be stretching it, the point is well made and we should be encouraging people to at least consider other evergreens such as the Black Hills spruce (*P. glauca* var. *densata*) and even the deciduous conifer Siberian larch (*Larix sibirica*).

Hughes County

Diplodia tip blight on Austrian pine



Tip blight is probably the most common disease of pines, particularly Austrian pine. Symptoms in early summer are the new needles turning brown and wilting. The infected shoot tips become stunted. The disease is not usually a tree-killer, but will disfigure it enough you might wish

the tree would die. The disease overwinters in the infected shoot tips and on the cones. Infected trees will gradually become thinner and have numerous dead tips and old, hanging needles.



One old management technique was to collect and destroy all the fallen cones. Sound easy enough but the spores are so light you probably would need to pick up every cone in the neighborhood. The best means of managing the disease is with fungicides. The most common treatment is a foliage spray with a fungicide containing thiophanate-methyl, propiconazole, or chlorothalonil (labeled for control of this disease) applied just before the bud sheaths have opened. Timing is critical, once the bud sheaths have opened and the candle begins to form, it's a little late to begin the first application and this is the one that provides most of the protection. A second application is made about two weeks later.

Lawrence County

Pine wilt disease

This pine is infected with pine wilt, a lethal disease of Austrian and Scotch pines.



This is caused by a nematode, the pine wood nematode (*Bursaphelenchus xylophilus*). The nematode is introduced into the tree by sawyer beetles as they munch on the needles after boring out of an infested tree. Apparently, a single sawyer beetle can transmit thousands of nematodes into its new host. The nematode, and a blue-stain fungus that is also carried by the beetle, can quickly spread throughout the entire tree, clogging the water-conducting tube, which results in its rapid death.

While the symptom pattern is specific – a healthy tree in the spring that has the canopy wilt by late summer and the tree die by spring (though Austrian pines seem to hang on for a second season) - the only way to confirm the disease is isolating the nematode. Samples were collected by Joshua Larson, one of the Department of Agriculture foresters, from branches near their base and the nematodes were identified.

The disease may be prevented by injection, but once the tree is presenting symptoms the only management option is to remove the tree and destroy the wood to prevent a new population of sawyer beetles from emerging and carrying the nematode and fungus to new hosts.

Pennington County

Bleeding aspen



This tree has been weeping and there were orange spots on the trunk (as seen on the lower limb). The orange spots were spore masses from the fruiting bodies of the fungus, *Cytospora (Valsa)*. While most readers are familiar with cytospora canker on spruces, a closely related fungus will infect aspens (and cottonwood) in the Black Hills. The disease is common on aspen but is not

always a tree-killer. It is an opportunistic pathogen and generally kills stressed trees that are already beginning to decline from drought or other stressors.

The trees was still growing at a normal rate so the best option is just keep the tree healthy by watering during dry summers. The other though it begin planning for a replacement. The tree is about 25-years old and the live of an urban aspen is not as long as those in the forest (city life is stressful!). It probably will have to be removed in a decade or so.

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