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Samples

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Note: samples containing living tissue may only be accepted from South Dakota. Please do not send samples of 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.

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 as 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.

Reviewed by Master Gardeners Bess Pallares, Carrie Moore, and Dawness Lebeau

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Plant Development for the Season

Spring seems to have stalled with the arrival of colder temperatures throughout the state last week. Gone are the sunny 70-degree days, replaced by cloudy days with highs in the 30s and 40s. Brrr, a good time to stay inside with a cup of coffee.



Trees and shrubs do not have that choice, so they are forced to wait outside for the warm weather to return. But a few of our more optimistic spring-flowering shrubs are beginning to bloom in Brookings. Some forsythia cultivars start blooming at about 50 growing degree days (GDD-base 50) and we have reached that point on the campus of South Dakota State University.

Many other plants are just waiting to get started and all they need is a little warm weather. This also true for pests and the treatment season will be starting soon. However, there is one pest problem we need to start treating now – apple scab.

Treatments to Begin Now

Apple scab



Protective treatments for apple scab should be started now. Apple scab is a common foliage disease of apples and crabapples. Infection by this fungal pathogen results in leaves with discolored blotches and falling prematurely. The fruit can also become infected.



Fungicide treatments for apple and crabapple cultivars susceptible to apple scab start with the first application applied at “green tip” - when the buds are *just* beginning to open- to “half inch green”, less than 1/2-inch of leaf showing. This is followed by a second treatment 10 days later. **These first applications are critical to the successful management of this disease 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 Mycolobutanil listed as the active ingredient. If the apple scab treatment is for an ornamental crabapple, one in which the fruit will not be harvested, another fungicide, Chlorothalonil, may also be used if labelled for this purpose.

Applications of the fungicide will continue from now and every 7 to 10 days until petal fall. The weather usually turns a little drier then and a 10–14-day interval can be used until the end of June when applications generally stop.

Timely Topics

Pine engraver beetle update

Pine engraver beetle (*Ips pini*) and its bigger cousins, the 5- and 6-spined engraver beetles (*I. grandicollis* and *I. calligraphus*) are becoming a serious problem in the Black Hills and even farther west into central Wyoming.



Engraver beetles are generally satisfied to burrow into recently downed pines and fresh piles of slash. This material provides fresh inner bark for them to feed upon but the tree's defenses against borers, pine pitch, are not functional.

Engraver beetle behavior changes during droughts. Standing live trees are not able to defend themselves and are easier prey for the beetles. When the April to July precipitation is less than 75% average, the pines are susceptible to attack.

The average precipitation for the southern Black Hills from April to July is about 13 inches. Last year it was less than 10 inches, about 75% normal. The last year it was as dry as 2012, a time we also saw an increase in engraver beetle though much of their damage was attributed to mountain pine beetle by the public.

Adult engraver beetles begin to emerge at about 100 GDD and when we have day temperatures stay in the 60s. The temperatures forecast is cool for the next week, so I expect emergence to start at the end of April.

Emerald ash borer update



The development of this insect under the bark has not advanced much in the past week. We can find many J-shaped larvae in the winter cells as well as some that have started their transformation into pupae.

Once in the pupa stage, the insect will take a couple of weeks to form into an adult before emerging. The recent cold weather has slowed development. I expect the emerald ash borer adults to be flying around the first of June.

E-samples

Cottonwood root problems



Cottonwood roots have a reputation for showing up where they are least welcomed. This is a perfect example of their bad behavior: a homeowner found the sump pump pipe completely blocked by the roots! The question was if roots seek out pipes and what to do to prevent future problems.

Tree roots do not seek out water. At least not in the sense we think of where animals see water and walk to it. Root growth is more random but when they reach a patch of soil with high resources – water, elements and/or oxygen – they proliferate.

Sewer and sump pipes, along with pipes in septic drain fields, usually have at least two of these three resources: water and oxygen. This makes them prime sites for tree roots to exploit.

Cottonwoods and silver maples are on the property. The homeowner wanted to know if there is a way to determine which cottonwoods or maples are the problem trees. They might all be. There is no rule that the first one entering the pipe is the only one and tangled roots from many trees are commonly found in pipes.

The first step is to determine if the pipe is within the rooting zone of a tree. Tree roots typically grow out as far as the tree is tall. A 50-foot-tall cottonwood may have roots extending out 50 feet or more.

If only one tree fits this criterion, the choice of removal is easy. However, if several trees do, it will be a difficult task and best approach might just be to remove them all.

The other option is to contact a plumber and see if new piping, ones less susceptible to invasion, can be installed.

Poplar borer

A dying poplar was the concern here. The tree had a been dying back for a few years and now large holes were found in the dead branches that broke off. The insect responsible for the holes is most likely the poplar borer (*Saperda calcarata*) though a larva or adult is needed for positive identification.

This insect attacks mature, and stressed, poplars. There is another related cerambycid beetle - the cottonwood borer (*Plectrodera scalator*) - that also attacks these trees. The cottonwood borer is more commonly found at the base of young trees rather than in the canopies of older trees.



The poplar borer attacks aspens and cottonwoods. They often colonize mature, weakened trees and their extensive tunnels causes branches to break. Woodpeckers will drill deep into these trees searching

for the large, 1-inch or longer, larvae. The woodpecker drills, which can provide an entryway for decay fungi, further weaken branches.

The larvae spend several years burrowing beneath the bark before pupating and emerging as adults. The adults emerge over a long period -June to August - so timing a trunk spray is difficult and will do nothing to kill the larvae already present in the tree.

A bark application of an insecticide with Permethrin as the active ingredient (and one labeled for this pest and plant) can be made in early June. This will kill adults laying eggs during the 2021 season.

Watering the tree is also important during this potentially dry summer. There are larvae already present in the tree that may continue to burrow during 2021 and 2022 causing further damage.

Samples received/Site visits

Custer County, Borers in boards

This question seems to be popping up a lot this year! I was asked to stop by a shop of a woodworker who was finding beetles coming out of some boards. The boards were cut from recently harvested dead ponderosa pine trees. The woodworker wanted to use the 1-inch-thick boards with the bark still attached to the edge.

However, he noticed that the bark was pulling away from the edges and the wood was covered with a fine, flour-like material. He also noticed beetles emerging from the bark.



The bluish black beetles are the blackhorned pine borer (*Callidium antennatum*). This insect inhabits dead and dying pines so they can appear in board cut from this material. The borer overwinters as a larva, pupating in early spring before emerging as an adult. Infested wood stored in a warm house during the winter will accelerate the life cycle and adults are coming out a little earlier.

The appearance of buzzing beetles and pyramids of fine sawdust beneath the board is alarming but is just a temporary nuisance. The adults will not attack finished wood in a home. They are happiest in a dead tree that has intact bark. Removing the bark from the trim is the best means of eliminating this insect as well as making the wood less suitable for others to complete their development.

Lawrence County, Zimmerman pine moth



We have more than engraver beetles to contend with out in the Black Hills, the Zimmerman pine moth is also boring into trees. Infested trees often have their tops turning brown about now and below this discoloration there will be large, yellowish popcorn-like masses of pitch. These pitch masses are found on the trunk near or at where the branches are attached.



The pitch masses are empty right now but beneath nearby bark flakes there are small, less than 1/8-inch long, silky webs called hibernaculum, each with a very small larva inside. These small Zimmerman pine moth larvae will be leaving their webbing by the end of April or early May, at about 100 GDD. Spearfish is only at about 40 GDD right now with the cold weather so it may be a while. When the Norway maples in town are blooming, it is about 100 GDD.

The larvae will crawl along the bark before burrowing into the inner bark to feed for the season. This tunneling can cause branches and trunk to weaken and break. A row of pines with a few misshapen trees where a branch has twisted up to become the new leader is often an indicator of pest attacks.

Treatment is a bark spray of an insecticide label for Zimmerman pine moth and containing Bifenthrin or Permethrin. The first spray is place on the bark before May 1 (100 GDD) to kill the young caterpillars as they move across the bark to find a place to bore into the wood. Another application is made in late July to kill the adult moths as they are laying eggs.

Pennington County, Spruce bud scale

This was a large, 50-foot or more, Norway spruce (*Picea abies*). This is not a tree that is common in our state, but

it is a good choice for many communities. However, this means communities, not necessarily windbreaks. This tree, as with many other, performs fine in the more sheltered environment of a town but the harsh growing conditions in the country limits windbreak use to the southeastern part of the state.



The tree has other problems than our climate, spruce bud scale (*Physokermes piceae*). This is a small (less than 1/8-inch) globular, dark brown insect that can be found in clusters at the base of shoots. This stage of the insect is sessile, it does not move, so it often mistaken for a bud, hence the name spruce bud scale.

Scales suck the sap from the twigs during the crawler stage (the immature mobile stage) during late summer. The settled females resume feeding in the spring. Both produce honeydew, a sticky fluid that can make the infested shoot glisten. While the insect is not considered a tree-killer, infestation can result in the lower shoots declining and dying.

The natural enemies of this scale usually provide adequate control. However, sometimes insecticide treatments are necessary for a year or two to lower the population. Most insecticide treatments target the newly hatched crawlers.

Egg hatch is about the time panicle hydrangeas bloom, 800 GDD so this will be a long time from now. The treatments are foliage sprays within an insecticide containing Acephate, Carbaryl, or Permethrin and labelled for this use.

These insecticides also kill the insects that feed on the scales so they should not be used for more than a year or two, and only when the infestations are present on many of the lower shoots. Summer oils are effective at killing the young crawlers and have far less impact on their natural enemies. However, oils can damage the tree if applied improperly.