



# Tree Pest Alert



April 6, 2022

Volume 20, Number 7

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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 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: Carrie Moore, and Dawnee Lebeau

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This publication made possible through a grant from the USDA Forest Service.

## Plant development for the growing season

The cold, snowy weather we experienced last week meant we did not increase our growing degree days (GDD – base 50). The 2022 GDD accumulation for these South Dakota cities is currently:

Aberdeen	16
Beresford	108
Chamberlain	124
Rapid City	148
Sioux Falls	68

This means if you live in the northeastern part of the state there is not much pest or plant activity since everything is still dormant. The opposite is true in the southern third of our state and the communities along the edge of the Black Hills where pests are beginning to emerge.

## Treatments to Begin Now

**Pine engraver beetles (*Ips pini*)** are beginning to emerge from the duff beneath trees and trees in the lower elevations of the Black Hills. These overwintering adults are seeking out recently fallen branches and limbs. The adults will burrow into this material to lay eggs. If there is not suitable material, they can also attack weakened pines. Since the Black Hills are still in moderate to severe drought, every pine can be considered weakened. The best time to treat high-value pines surrounding a home or cabin is now. Pesticides labelled for bark beetle control and containing bifenthrin, carbaryl, or permethrin should be applied to the trunk and limbs. Since engraver beetles begin their attacks at the tops of trees, a sprayer with sufficient pressure to reach the top is needed.

**Zimmerman pine moth (*Dioryctria zimmermani*)** larvae begin moving from the winter webbing around 100 GDD so activity has started in many locations surrounding the Black Hills as well as much of southern South Dakota. Now is the time to begin treatments in these areas. The most common treatment is an application of an insecticide containing permethrin and labelled for control of this insect. The application must penetrate to the trunk, not just fog the needles. See the sample under Clay County for more information on this insect.

## Timely Topics

### ***Emerald ash borer update***

We are continuing to monitor insect development this spring. While there are many larvae still in the J-shaped stage (which they entered last fall), some are beginning to transform to the prepupa stage.

During the prepupa stage, the insects are no longer curled into a J-shaped within their chambers but have straightened out and shrunk. These will develop into pupae during May. The pupa that forms in the chambers have a white, cylindrical shape form that gradually takes the appearance and form of an adult.



This process will take several weeks. Once the insect transforms into an adult, it may remain just beneath the bark for a few days to a week or more before chewing a D-shaped hole through the bark and emerging.

Based on the current development of the insects and the long-range weather forecast, emergence is still expected to begin around June 1 in Sioux Falls.

### ***Emerald ash borer beginning to kill windbreaks***

While communities such as Sioux Falls have been receiving most of the attention about emerald ash borer, the insect has also been appearing in windbreaks in Lincoln and Minnehaha Counties. This is one windbreak of smaller diameter green where every ash is dead and beginning to fall over.



The dead trees are sprouting at their base. Every tree in the row has numerous sprouts coming up around the lower trunks; a few sprouts are already five feet tall. This means the ash will survive in these windbreaks but as a shrub row, rather than a tree row. The sprouts will reach about six to eight feet before they are infested and killed by the beetle. The decline and resprouting process will be repeated until the trees finally exhaust all the root reserves.

### ***Apple tree pollination***

Spring means planting and fruit trees are becoming a popular choice. The objective of planting fruit is to harvest it, and that means pollination is required. Here are the pollination requirements for the common apple trees.

Apple trees require pollen transfer between two different cultivars; a Sweet Sixteen and a Zestar! for example. Since there is no botanical difference between an apple and a crabapple (just the size of the fruit), an apple and crabapple can pollinate one another, and no, having a crabapple for a pollinator will not make the apple taste “crabby.”

There are a few considerations to keep in mind when choosing cultivars. First, it is best to have the two cultivars flowering at the same time. There is quite an overlap in bloom periods but to be sure it is best to plant early-season cultivars with each other or mix with mid-season but not early and late fruiting cultivars. The bloom periods might not match. For example, Haralson, a late-season apple, is not an acceptable pollinator choice for Zestar!, an early season apple.

Honeycrisp is not a great pollinator choice for any apple tree. While Honeycrisp is an excellent apple – crisp, sweet, and juicy, yum! – it is not the best pollen source. I recommend planting three cultivars if Honeycrisp is one of the choices so you will have fruit on all trees. If you just have a Honeycrisp and another apple, you might see good fruit set on the Honeycrisp but poor on the other apple cultivar.

Finally, some apple cultivars are too closely related to pollinate one another. Haralson and Haralred are too close as well as Fireside and Connell Red. We also have a few apple trees such as the Dolgo crabapple, a great cider apple from South Dakota, which may sometimes be self-fruitful.

Some conservation districts are offering the following apples for sale this spring. I have included when the fruit ripens on each cultivar. The best pollination is either having the two cultivars within the same ripening season (early, mid, late) though mid-season will be acceptable for either an early or a late season apple.

Fireside – Late season  
Honeycrisp – Mid/late-season  
Honeygold – Late season  
Red Baron – Mid-season

Regent – Late season  
State Fair – Early season  
Zestar! – Early season

Another tree being offered is Hat Trick which has branches that are either Honeycrisp, Zestar! or Sweet Sixteen so only one tree is needed for pollination.

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## E-samples

### ***Not emerald ash borers***

The picture was from a recently felled ash that was declining. When the trunk was being bucked, the owner noticed clean holes and tunnels in the interior of the tree. There were also oval holes in the lower trunk.



These tunnels and holes are not the work of the emerald ash borer but either the ash/lilac borer (*Podosesia syringae*) or the carpenterworm (*Prionoxystus robiniae*). These insects are common moths whose larvae are borer of declining ash in the state. The ash/lilac borer is often found in young or smaller diameter trees (less than 8 inches) while carpenterworms are found deep inside larger diameter ash. These tunnels are carpenterworm tunnels and holes.

### ***Sapsucker injury on Accolade elm***

Accolade elm is one of the most popular hybrid elms for sale in our region. It has a fast growth rate, attractive vase-shaped form and the foliage is a deep, glossy green. While it is not affected by Dutch elm disease (DED), it is a common host to the European elm flea weevil, through less so than other cultivars in our campus plantings. It seems like the cultivars that have Siberian elm in their parentage, such as Vanguard, are the most susceptible but any elm that has Asian roots, which is all the DED-resistant cultivars, can have weevil damage.



Elms also attract sapsuckers and Accolade is a frequent target. These are woodpeckers that drill into tree trunks for the sap that flows into the wound rather than searching for insects. The sap holes drilled by the sapsuckers are round to oval holes made in parallel rows around the trunk.

This injury rarely causes considerable damage to the tree. The holes can serve as an infection site, and they are unsightly. The birds prefer thin barked trees, so these trees are often ignored once they developed furrowed bark.

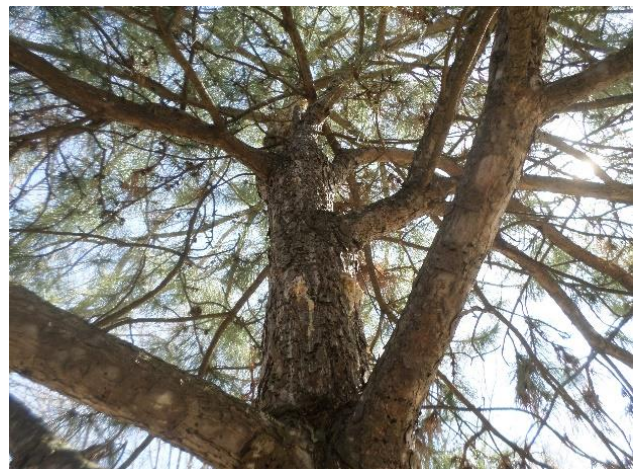
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## Samples received/Site visits

### ***Clay County, Zimmerman pine moth***

This was a visit to see some misshapen Austrian pines with large blobs of yellowish white pitch at the junctions of the branches to the trunks. The problem, as discussed in the past several issues of the *Pest Alert* is Zimmerman pine moth.

This insect is more a disfigurer of pines than a killer. The tunnelling by the larval stage weakens the union between the branch and the trunk causing breakage. The smaller diameter, usually four inches or less, terminal can also be girdled and killed which causes a lateral branch to assume dominance and turn upward to become the new leader.



Branch and top kill are common with Austrian and ponderosa pine. We usually only see top kill with Colorado spruce.

Infested trees should be treated beginning at about 100 GDD. The most common active ingredient used for treatment is permethrin which can be found in many insecticides labelled for control of Zimmerman pine moth.

### **Minnehaha County, Needlecast disease on Colorado spruce**

This is a double row of mature Colorado spruce trees. Some of the trees are thinning on the lower third to half of the canopy. The areas of thinning have some discolored needles, but the loss of needles was more apparent than discoloration.

The needles in the interior were the one being shed, not the tips. The discoloration was also more common in the interior needles; the second year and older foliage. This is usually an indication of a disease or shading (or both). Winterburn usually presents as discoloration of needles on the shoot tips rather than the interior.



Samples were collected from some of the lower branches, more near the tips than the bare interior, and brought back to the diagnostic lab. An examination of the shoots and needles did not show any signs of insects or mites, nor environmental injury. There appeared to be some fruiting structures along the stomatal bands.

Connie moist chambered some of these needles and presto, stigma popped out. This needlecast disease is caused by the fungal pathogen *Stigmata lautii*. This is one of two needlecast disease we see on Colorado spruce, the other being *Rhizosphaera* from the pathogen *Rhizosphaera kalkhoffii*. We have seen *Rhizosphaera* for decades but only in the last decade has *Stigmata*'s role in needlecast been understood.



There are some differences between the two pathogens. *Rhizosphaera* appears on the purplish-brown needles on the lower one-third of the canopy. *Stigmata* is found on green needles as well as discolored needles and may be found on the lower half of the canopy or even higher.

The fruiting structures for both appear as tiny, dark spots within the stomatal bands. The margins of the *Rhizosphaera* structures are smooth and crisp while the *Stigmata* margins have hair-like tendrils. It is possible to find both pathogens on the same tree though I usually see only one.

Management for these needlecast disease begins with pruning out the dead and dying branches to increase air flow and reduce humidity and moisture. High humidity and wet foliage provide the conditions for spore germination and infections. This is one reason we see more disease problems in spruce on tight spacings in windbreaks. These needlecast diseases are most frequently found on the north sides of trees or the shaded area between rows of trees.

These needlecast diseases overwinter in infected needles on the tree. They are also present in the recently fallen needles beneath the tree. A common recommendation is to rake up and dispose of these fallen needles in late winter or early spring to reduce the source of infection. This is usually impractical.

Fungicide applications can be used to protect the first-year needles from becoming infected. If applications are continued for several years, most of the infection can be eliminated but the trees may be infected again in a few years. The applications will need to be repeated.

Fungicide applications begin when the new shoots have expanded about an inch and repeat in three weeks. A third application may be necessary if wet weather continues.

One challenge with treating *Stigmata* is the pathogen is often missing from fungicide labels. There are many fungicide labels that list *Rhizosphaera* but do not include *Stigmata*. A reminder that the label is the final authority of what plants and pests a pesticide may be used on.

Fungicides labelled for controlling needlecast on spruce may be used for *Stigmina* but there are fewer choices. The most common active ingredient currently offered for ornamental and windbreak spruce and labelled for *Stigmina* is copper.

### **Pennington County, Declining globe spruce**

This is a globe blue spruce (*Picea pungens* 'Globosa') grafted on a blue spruce stem about three feet from the ground. It creates a lollipop tree with a compact steel blue top on a short stem. Some find these attractive, others see them as more of an arboricultural head on a pike.

The trees were losing needles, and some were discolored. The first thought is that it must be disease, but this was not the case here. The problem was planting too deep.



These were container-grown trees, a common means of packaging nursery stock. It is an effective way to grow and sell plants but creates challenges at planting.

The media in the container is light and porous. This creates excellent drainage in the pot but may cause the newly planted tree or shrub to dry out as the water does not move into this media from the surrounding soils.

The other problem is the plants are set deep in the container, mostly for stability, and this is not a problem while in the container. Once planted, however, unless the planting depth is raised to the first permanent root – usually a pencil-diameter root – the plant will be too deep. This is a slow death for many plants.

### **Union County, Maple borer: an emerald ash borer look-a-like**

The picture that was emailed was a little alarming. A close-up of a crisp D-shaped hole on bark. The email mentioned it was found on a dying ash, so a visit was made. Fortunately, once I saw the tree, there was a sigh of relief. It was a silver maple, not an ash.



The tree was infested by an *Agrilus* insect, but not *Agrilus planipennis*, the emerald ash borer, but *Agrilus masculinus*, the maple borer. This is a native borer of maples in our state. The maple borer is smaller than the emerald ash borer so the D-shaped exit holes are a little smaller as well. It is more commonly found in boxelder, but it also can be found in declining silver and red maples. It is found in Norway maple and sugar maple in eastern North America.

The maple borer, as with all *Agrilus*, makes a D-shaped exit hole as the adult borer leaves the tree. The galleries are also frass-filled and serpentine. Since *Agrilus* make similar D-shaped exit holes (though they vary in size) and the galleries are serpentine, knowing the host is important clue as to which insect is responsible for the infestation.