

# Pest Update (March 17, 2021)

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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.

## 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 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.

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## Plant development for the growing season

What a roller-coaster this past week! We went from warm, sunny, and dry to cold, cloudy, and snowy in about two days! Many areas of the state received more than six inches of



heavy, wet snow. While the snow was unwelcomed, the moisture left as the snow slowly melts is much needed.

This heavy snow blanketed evergreens throughout the state, bending branches so one layer rested on the next. I received many calls last week from folks concerned about bent evergreens and wondering what to do to help. This is one of those situations where doing something can be worse than doing nothing. Attempting to knock off the snow may cause the snow laden branches to snap. Best is to either let the sun do its job and melt the snow away or take a broom and gently sweep the snow away.

## Timely Topics

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

Emerald ash borer is native to East Asia where it is no more than a minor annoyance to foresters but provides a valuable environmental service to the forests. Emerald ash borer, as with many of its *Agrilus* cousins, feeds on the weak and dying. It hastens their death, which opens space for healthy trees and recycles the dying ones even faster. If a tree is healthy it has defenses to prevent colonization.



That is until the insects move to a new continent and hosts. Ash species that never have been exposed to emerald ash borer, our North American ash, lack the defenses, or at least the capability to activate them, so are easily killed regardless of their health. It does not matter much whether a green or white ash is healthy or not, the end is never in doubt – the borer wins.

Well, usually wins. The borer arrived on the North American continent, without its natural enemies. This was a great opportunity for the beetle to rapidly expand their population thanks to hosts that could not defend themselves and no (or few) natural enemies. The borer is prey for many insects back in East Asia and these natural enemies help to reduce their population in their native lands.

While the borer arrived here by accident, this is not true for its natural enemies. These have been intentionally brought here. Entomologists scoured the native lands of the emerald ash borer and found several natural enemies to bring back to the US to help dampen the borer population growth. These were carefully investigated before being released in the US (no one wanted to bring an insect over that fed on another, perhaps beneficial, insect!). These natural enemies are now established in eastern states and are aiding to slow (but not stop) the beetle population expansion.

Natural enemies of the emerald ash borer have been released in Sioux Falls during the past two years. These are parasitoids, insects that feed on emerald ash borer eggs or larvae. However, these parasitoid adults do not munch on the emerald ash borer eggs or larvae, but instead lay eggs in them. Once their eggs hatch, the parasitoid larvae feed within the emerald ash borer egg or larvae and emerge as adults – think of the scene in the sci-fi classic *Alien* when the creature bursts out of Kane. It's not a pretty sight!



*The adult egg parasitoid Obuius agrili*

The adult parasitoids are very tiny (1/8-inch) non-stinging wasp. They have a “stinger”, called an ovipositor, but it is designed to be threaded into the egg on the bark or even drill into a larva burrowed in the wood. Two larval parasitoids have been released in the Sioux Falls area for the past several years, *Tetrastichus planipennisi* and *Spathius galinae*. An egg parasitoid, *Obuius agrili*, has also been released.

We are evaluating the establishment of these insects through several means. Pan traps were placed on the trunks of infested trees near the parasitoid release site last summer to capture the adults. Unfortunately, not a single adult wasp was collected from any of the traps. This is not unique to the Sioux Falls trapping efforts. Other locations have also found the traps ineffective at capturing adults, though this method has been successful in other locations.



*A parasitized EAB.*

We are now branch scraping to find parasitized larvae in logs or evidence of parasitized insects from even the previous year. A close examination of smooth barked infested shoots will sometimes reveal the small pin-size hole cut by the emerging parasitoid adult. Once the bark is scrapped always from that area, an emerald ash borer prepupa cells with a few parts of the larvae can be found – an indication that the parasitoid did its job.

We are also placing logs cut from infested trees in tubes to collect any adult parasitoids. These parasitoids will emerge as adults in the next few weeks and move into the glass tube to be collected and identified.

A more tedious task is examining the bark of infested ash trees for parasitized emerald ash borer eggs. The eggs are often laid in bark crevices or flaps and are common along the rough ridge found where branches attach to stems. The rough and



*Parasitoid trap*

flaky bark provides protection for the eggs. Emerald ash borer eggs are about 1 mm diameter and any egg found now should have hatched last summer.



*A dark parasitized egg with a lighter normal egg behind it.*

The hatched eggs are usually amber colored and have a small hole in their base where the young emerald ash borer larvae burrowed directly from the egg into the tree. There will usually be some small dark powder in the egg. The parasitized eggs are often darker, a reddish brown, and may have an exit hole on the top where the parasitoid adult emerged or in some the parasitoid can still be extracted.

It appears that at least one of the larval parasitoids has become established as well as the egg parasitoid. We will provide an update in a few weeks as more survey results are available.

***A new shrub to consider: seven-son flower.***



We need to increase the diversity of our shrub plantings as much as our trees. We depend upon too few genera and barberry, potentilla, and spirea among others seem to populate every home landscape. One we do not see very often is the seven-son flower (*Heptacodium miconioides*). First, there is a good reason we do not see it very often. It is a shrub hardy to plant hardiness zone 5, so it is limited to southeastern South Dakota along with Pierre and Rapid City. However, it can tolerate at least -24°F, and even this temperature may only

result in tip dieback.

Seven-son flower is noted for its late summer fragrant white flowers with the sepals turning red in September (the sepals are as showy as the petals). The individual flowers are small, but they occur in clusters composed of a whorl of six with a seventh at the terminal. We do not have many late summer flowering shrubs so that alone makes it worthy of consideration. But the shrub is also attractive during the entire winter. The bark exfoliates to reveal a light gray brown, almost resembles a crapemyrtle.

This is a picture of three mature seven-son flower shrubs outside of Sioux Falls. The shrubs have performed well for many years. It is often found on moist, acid soils in the southeastern US, but it seems to be at home in our drier, slightly alkaline soils. The shrub is native to eastern China and was introduced in the US in the 1980s.

The tolerance of this shrub to South Dakota is unknown. It is hard to draw any definite conclusions from a few plants scattered throughout the southeastern part of the state. However, it is worthy of more widespread trial in zone 5 locations so hopefully some adventuresome gardeners will consider adding this to their collection.

## **E-samples**

### ***Japanese beetle as a house guest.***



This picture was sent in of a Japanese beetle on house plants. This may be an early wake up due to the warm home environment. Normally the beetles are in their grub (larval) stage deep in the soils. They pupate in the spring and become adults beginning in June.

These plants were set outside during the summer and perhaps some adults laid eggs on the soil. Japanese beetle adults have a wide host range, feeding on leaves of many plant species, but the larvae typically feed on grass roots. I am not sure if they survived on house plant roots and this adult emerged early or if it just managed to overwinter in the house. Usually, the adults die out by fall so this is either a newly emerged (and surprised) adult or a very old (in Japanese beetle years) adult who is just enjoying a warm house in its retirement.

### ***Pine tips littering the ground: squirrels at work.***

I have been receiving emails and texts, many with pictures, showing lawns littered with pine or spruce tips. Usually these are only about three to six inches long, but the ground can be covered with them. A close examination of the pine tips will show a 45° angle cut to the base and the terminal bud will be missing. The culprit? Our friend the squirrel.



This is the same squirrel that chatters away when you walk beneath “their” tree. They do not like you or your dog to invade their space. They also like to munch on spruce and pine buds in late Winter. For some reason known only to squirrels, they will bite off the tip, eat the buds, and then discard the tips.

There is not much anyone can do to stop this behavior but fortunately it tends to occur between mid- to late winter. Just rake up the discarded tips as the annoyed squirrel barks and chatters at you and hope that spring comes soon.

### ***Wetwood (slime flux) appearing on an elm.***



I received a picture of an elm tree that was oozing fluid. This is not the same as the sweet sap that come from maples. This is a darker, foul smelling, alkaline liquid that drains from old pruning wounds and bark barks. The liquid is so alkaline that it will bleach the bark of the tree as it runs down the wood – nothing anyone would want use to make syrup!

The disease is common on elm (*Ulmus*) and cottonwood (*Populus*) in South Dakota but can also be found on mulberry (*Morus*) and willows (*Salix*). Gas builds up in the trunk of infested trees through fermentation by bacteria, and the high pressure – 60 psi – causes the liquid out through cracks and wounds.

The disease may result some minor dieback in a tree, but usually the only symptom is the bleached bark and the appearance of the dark liquid. An old, recommended practice was to drill holes into infected trees and install tubes to drain the liquid from the tree, but this is no longer advised. Drilling into the tree will result in more decay, not less. It is best just to leave the tree alone.

### **Samples received/Site visits**

#### **Brookings County**

This was a Colorado spruce (*Picea pungens*) sample with the question; “Is this needlecast?” Needlecast diseases, either *Rhizosphaera* or *Stigminia*, are common problem with this spruce species. The typical symptoms are the loss of the older needles, second year and older, so infected trees may have only the current year’s needles present on shoots. The symptoms are most severe on the lower canopy.

While many of the older needles were missing from the sample, the color of the remaining needles was a reddish brown. The fruiting bodies of either fungi were not present on any needles. This discoloration is often seen when there is a root-related problem. The tree has been removed and they found that the landscape fabric had partially girdled the tree.

#### **Discolored spruce**



## Day County

## Possible pine wilt



The sample is from a discolored Scotch pine (*Pinus sylvestris*) growing along a crop field. The mature tree was presenting with patches of discolored needles. This is not the typical symptom pattern for pines infected with the disease pine wilt. The disease is caused by a small nematode, the pine wood nematode (*Bursaphelenchus xylophilus*) and its bacterial associates.

We have not found the disease yet north of Codington County. Cooler summers inhibit the development of the disease, so it is not found in North Dakota and northern Minnesota but is widespread in Iowa and Nebraska. The pattern of discoloration from the pictures of this pine is not typical, and the wood samples submitted do not have the blue stain that we also find associated with the nematode (and the nematode feeds on the blue stain fungus during part of its life cycle).

However, we did find a single pine wood nematode in the sample (and yes, it is possible to find other nematode species in wood, so identification is important). This is puzzling and warrants a site visit. A follow-up will be in a future *Update*.

## Minnehaha County

## Pine wilt disease

This is a typical presentation of a pine infected by pine wilt. The entire tree looked fine last summer but by early fall the tree quickly turned brown and died. Last week when I inspected the tree the dry shoots snapped off in my hand. While no samples were taken, the most likely cause of the sudden death was pine wilt disease. The property has many Scotch pines that already died of the disease (and nematodes were collected from these trees a few years ago).

Now that most of the Scotch pines are dead, the Austrian pine (*Pinus nigra*) is dying of the disease. This is a common pattern. First the Scotch pine goes and then the Austrian. Unfortunately, there is not much that can be done other than get the chain saw out and dispose of the dead trees before April 1. This is the time that the vector for the disease, the sawyer beetle, begin to emerge and carry the nematode to new, healthy hosts. Still this only slows the spread, not stop it. There are treatments to



prevent the disease, not cure it, and these seem to be effective only on the smaller trees – less than 15 inches (at 4.5 feet), not the majestic large ones that people want to save.

Minnehaha County

### **Spruce bud scale**



This was another Colorado spruce sample where needlecast was the suspected problem. No symptoms or signs of needlecast were found on the sample. Instead, several of the branches were covered with spruce bud scales (*Physokermes piceae*). These are small, round, reddish-brown, sessile insects found in clusters at branch whorls. They look so much like buds they are often overlooked.

These scales produce honeydew as they suck sap from the shoots. This sticky material will drip down on lower branches and

heavily infested trees will almost glisten from the coating. The honeydew often becomes infected with a sooty mold, so the foliage can develop a dark appearance.

The insect usually does not require any management, but high populations may warrant treatment. The treatments are applied in late June (about the time lindens are finishing their flowering) as foliage sprays to kill the newly hatched crawlers or as a systemic soil drench done in the spring to kill the adult females.

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

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