

Pest Update (January 23, 2019)

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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 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

It looks like we are in for several days of very cold weather. The overnight temperatures will tip to the -20s for many areas including Sioux Falls. While that is cold to us, it's not cold enough to kill all the emerald ash borers that are snug beneath the bark – see Timely Topics.

Timely Topics



Emerald ash borer is in the larval stage during the winter.

Emerald ash borer must survive our winters like any other insect that wants to make South Dakota home. The trick for many insects is not hibernating like bears or head south like many birds and the monarch butterflies, instead they supercool in last autumn (which sounds kind of cool!). This is the ability to cool liquids, like water, below their normal freezing point without forming ice. Ice crystals forming in a cell is a killer for any life.

Your car radiator also has liquid that better not freeze as the ice will damage the radiator much like ice formation damages a living cell. We use an antifreeze in our car radiators to keep the liquid from freezing. Insects make their own antifreeze out of alcohol, proteins, and sugars. Much like the antifreeze in your car, this allows the insect to survive a lower temperature than 32°F, but there is still a limit to supercooling. Once the temperature drops below the specific threshold for an insect, the liquid will quickly freeze, and the insect die.

The supercooling ability for emerald ash borer differs throughout its natural range in Asia. Those from the southern part of the range, central China, may not be able to supercool as deeply as those from northeastern China. It appears that the introduction of emerald ash borer to this country came from more of the middle of its range – we got lucky – they might not be as tolerant to cold as ones from the north.

Studies in Minnesota and Ontario have found that emerald ash borer as a larva can supercool to about -25°F in midwinter. This does not mean every larva dies once the temperature dips that low. Some will be protected by thicker bark (and bark can provide about 5°F of insulation) while others survive in lower trunks covered by the snow.



Snow can provide some additional insulation to protect the larvae.

But all the larvae up in high branches, which have thinner bark and are exposed to the cold, may not be so lucky. If the temperature drops overnight to -25°F for several hours or longer, we might kill more a third of the population. If we have the temperatures drop to -35°F we might kill almost all of them as well as most of our car batteries.

This past spring while we were stripping bark from infested trees, about one-third of the larvae found were dead. Many had that shriveled and black appearance like a banana set in the freezer for a while (bananas do not supercool). While we can count on our cold winters to kill a lot of larvae, it is not cold enough, long enough to stop the numbers from growing each year. The population will grow each year, along with ash mortality, just slower than more southern communities.

We will be sampling the emerald ash borer larva population in two weeks to see if the cold had any affect on survival. This will be reported in the Update.



E-samples

Discolored needles on ponderosa pine

I received a picture and a follow up sample of some ponderosa pines in the Spearfish area. The declining trees have a host of problems including red turpentine beetles and gall rust. These are not usually tree-killers but are found on susceptible hosts. The needles appear to be off-color, a lighter green and the needles submitted as a sample are covered with fruiting bodies. We will be looking at these closer this week and hope to have an answer to the mystery next week – stay tune.

Squirrels chewing on hackberry branches

I also received a picture of a hackberry with the bark being stripped from smaller branches throughout the tree. The hackberry next to it was also being stripped but none of the other nearby trees, elms and oaks.

This is the work of squirrels. They seem to like to chew on the inner bark of hackberries and maples during the winter. The inner bark is where the sugars are transported through the tree during the growing season and this thin band of tissue that surrounds the twigs just beneath the outer bark must still be tasty.



Squirrels can strip the bark completely off small branches in hackberries.

There is not much that can be done to prevent this damage nor does the feeding become so widespread that the tree is harmed. The squirrels seem to chew on specific branches within the tree rather than every branch in the tree. These branches may die, however, particularly if they are chewed on for several years in a row.

Samples received/Site visits

Brookings County

Is this the emerald ash borer?



I had a tree company contact me believe they had found emerald ash borers in some rotten ash stumps. The key word is rotten, as the wood was so punky that it was hard to separate wood fibers from soil particles. The material was so loose it was shoveled out. It was filled with insects, but they were not emerald ash borers only the large C-shaped larvae known as white grubs.

These white grubs, a generic term for many soil-inhabiting beetle larvae might just be June beetles, also know as May beetles (*Phyllophaga*). These insects spend most of their life as a grub feeding in soil and decayed organic matter such as rotted tree stumps.

They had no role in the death of these trees many years ago but are just taking advantage of the habitat.

Yankton County

What are these bags hanging in our trees?

I stopped and looked at these on some Colorado blue spruce near a home. These are bagworms (*Theridopteryx ephermaeformis*). They are native to much of the East and are common in eastern Nebraska. Occasionally I find a few spruce trees in Clay, Union and Yankton County with a few bags hanging from the branch ends of spruce and even redcedar trees.



The bags are constructed by the larvae as they feed during the summer. They spin a case around themselves from a streamer of silk and add needle fragments to the covering as the season progresses. They pupae in the bag sometime in the fall and the males, which can fly, mate with the wingless females who remain with their bag. The insects overwinter as eggs within these bags that are fastened to the twigs.

Since the insect is more of a novelty, rather than a problem, in South Dakota the easiest treatment is just to pick the bags during the winter, crush them, and discard in the trash. Do not just pick them and

throw them on the ground as the eggs will still hatch this spring.

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