

Pest Update (February 17, 2021)

Vol. 19, no. 4

John Ball, Forest Health Specialist SD Department of Agriculture, Extension
Forester SD Cooperative Extension

Email: john.ball@sdsu.edu

Phone: office 605-688-4737, cell 605-695-2503

Samples sent to: John Ball
Agronomy, Horticulture and Plant Science Department
rm 314, Berg Agricultural Hall, Box 2207A
South Dakota State University
Brookings, SD 57007-0996

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.

Plant Development.....	1
Timely topic	
The cold and emerald ash borers.....	2
The cold and our trees and shrubs.....	3
It may be a dry spring: forecast for bare-root planting.....	4
E-samples	
Splits appearing in trees.....	5
Tree identification.....	5
Samples received/site visits	
Davison County (possible dothistroma needle blight).....	6

Plant development for the growing season

We finally experienced some cold Winter weather this past week. Everyone was in the minus column and many communities saw temperatures dip to -20°F or more. The temperatures are expected to get back up above freezing within a week. We know what this cold weather did to our cars – dead batteries, flooded engines, and flat tires – but what about pests and plants?

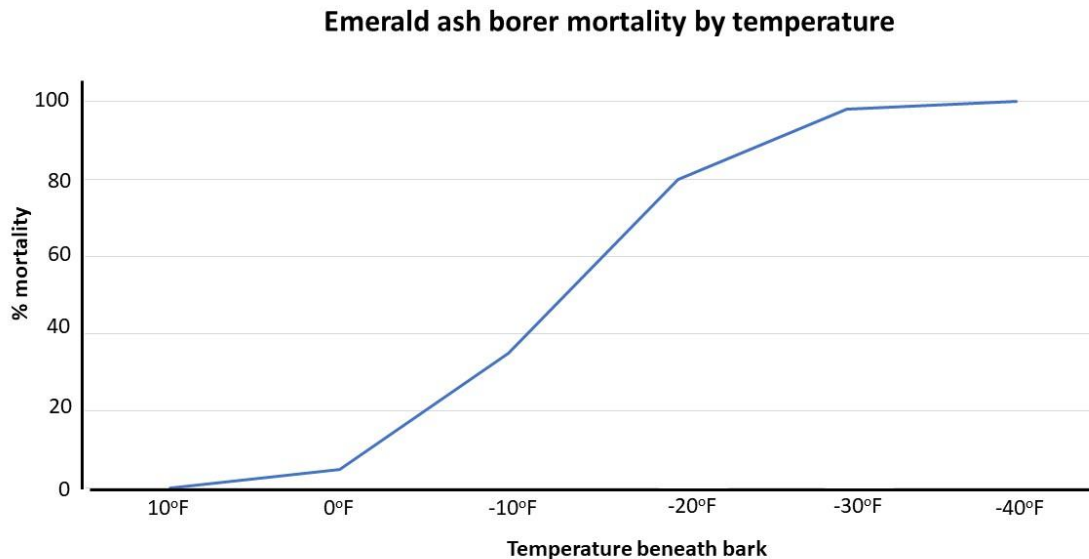
Timely Topics

Emerald Ash Borer (EAB) Update: The Cold.

Did the cold weather kill all the emerald ash borers in South Dakota? Short answer is no. However, the recent episode of -20°F weather certainly reduced the beetle population. How much is not yet known but we should have a good idea after our annual winter mortality surveys in March. The important thing to remember is the cold weather will slow the beetle population growth, not stop or reverse it. It will buy communities, such as Sioux Falls, more time to get ahead of the “death curve”, the period where trees are dying so quickly, removal crews cannot keep up with the losses.

Emerald ash borers supercool – maintaining fluids as liquids far below freezing temperatures – to avoid freeze injury. Some can supercool to about -30°F. Once the temperature dips below this threshold, the insect instantly freezes and dies. The -30°F threshold is the coldest temperature that some emerald ash borers can resist hard freezing. Others freeze at temperatures closer to zero. Just like some of us, they seem not to mind the cold as much as others.

According to research conducted by Robert Venette (US Forest Service) and Mark Abrahamson (Minnesota Department of Agriculture) at about 0°F we can expect about 5% mortality and at -30°F almost 100%. The following figure shows the curve for the mortality percentage over a temperature range.



During this past week, many communities in eastern South Dakota experienced early morning temperatures between -23°F to -26°F. The emerald ash borer prepupae are in their overwinter cell cut about 1/4-inch into the wood. This provides a layer of insulation

and depending on the diameter of the tree, small branch versus large trunk, it can provide about 5°F of cushion.

So, the -23° to -26°F air temperature is about -20°F in the prepupae cell beneath the bark. This means the insect mortality may be about 80%. The greatest mortality is in the smaller branches within the canopy of larger trees and the trunks of smaller trees where there is less bark and wood insulation. The thicker bark of larger trunks, and the mass of these trunks, provides more protection and there will be lower mortality in this wood.

Larvae are more vulnerable to cold mortality than prepupae, primarily since they are closer to the bark surface so there is less insulation. While most of the overwinter stage for emerald ash borer are prepupae in Sioux Falls, I can still find a few larvae.



While the survey will be done in March, past the time we typically experience these cold temperatures, I can already find a few dead larvae in small trees this Winter. They look like bananas that have been placed in the freezer for a day or two. Rather than their creamy white appearance, they are almost black.

But before everyone rejoices remember most emerald ash borers are now prepupae deeper inside the wood and many are in the trunks, rather than branches. When these factors are taken into consideration, we probably lost about a third of the emerald ash borers in a tree – it will slow the tree mortality, but not stop it.

What About the Cold on Trees and Shrubs?

Cold weather is a problem with plants as well as pests. It is enough of a problem that we even have a plant hardiness map. The map, developed by the US Department of Agriculture, assigns 11 zones across North America from zone 1 in northern Canada to Zone 11 in the southern tip of Florida and much of Mexico. Each Zone has a temperature range. The range is the average minimum January temperature.

South Dakota is mostly in USDA Hardiness Zone 4a & 4b (minimum temperature -20° to -30°F) with one Zone 3b spot (minimum January temperature -30° to -35°F) which is Britton SD – our icebox! We also have several Zone 5a locations (minimum January temperature -15° to -20°F). These are the communities of Dakota Dunes, Pierre, Pickstown, Rapid City, and Yankton.



If the trees and shrubs in a South Dakota landscape are hardy to Zone 4, which is almost all the plants sold in the state, there should be little to no injury from this cold snap. Cold temperatures at this time of year, January through mid-February, must be very cold before we see winter injury. Almost all our woody plants can tolerate -30°F at this time of year. I say almost all, as some of the seasonal big box stores will carry a few plants that are hardy only to Zone 6 or 7. Always check the label!

The challenge in South Dakota is not that it gets cold in mid-Winter. It can also drop to subzero temperatures in April (Britton was -44°F in April 1932) and October (Britton was -4°F in October 1925), times where plants have not yet acclimated to the cold or were already coming out of dormancy. Most of our plant “Winter” injury occurs in Fall and Spring, not Winter.

Finally, our Winters are becoming warmer. Britton, as an example, reached -30°F or lower in only three of the last ten years. Three of the years, the coldest January weather was in the minus teens. Warmer Winters are not necessarily good. We are still subject to the Fall and Spring temperature fluctuations that are the real killers and more pests, such as emerald ash borer, will benefit from the warmer temperatures. Still if I were an ash tree I would want to be in Britton!

It may be a Dry Spring: Forecast for Bare-Root Planting.



I was talking with Jon Larson at the Big Sioux Nursery and one bit of information we were sharing was the concern for a dry spring. Unless there is a big change in the weather (and that is common with South Dakota) we are going into a dry Spring. The Fall was dry, and we have not had much snow cover. It is not looking good.

The concern is for all the bare-root trees that will be planted in windbreaks this coming April through June. If the weather stays dry, supplemental watering will be critical for the recovery and establishment of these young trees. The most important watering is right after the trees are placed in the ground. The sooner these seedlings receive about a quart of water, the better the chances of success. Ideally these trees should receive another quart the following day and every day for at least two weeks.

The next issue will discuss the possible irrigation needs this coming year and some possible solutions.

E-samples

Cracks Forming in Tree.



When we experience very cold temperatures, it is common to see splits occur in trees. Usually, it is not that the split or crack just happened from the cold. These splits were there for many years.

These are commonly called frost cracks. They result from some earlier injury in the tree, usually when the tree was young. The injury sets up an internal shake line, a defect, in the wood. The intense cold is the trigger that causes the crack to expand outward to the bark.

While these can become enclosed and covered with bark, the original weakness is still beneath and can rupture to the surface when the trunk is exposed to extreme temperatures.

While many trees survive decades with frost cracks, these are indicators of internal defects and if the crack is along a large limb over a house, for example, it may need to be examined by an arborist. They can evaluate the tree and determine if the crack poses a significant risk.

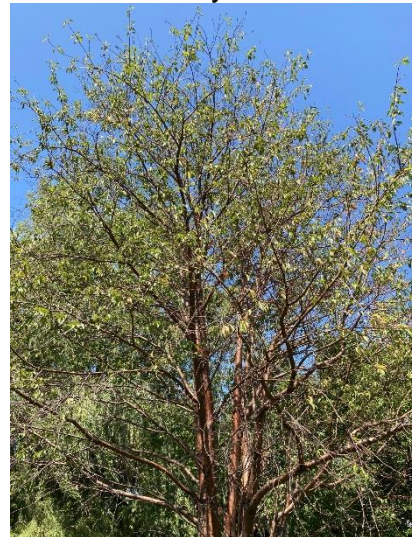
What is This Tree?



The first rule for identification of pests is to know the plant. Most pests do not attack a wide range of plants but concentrate on a specific genus (maples or ash, for example). Once you know the plant, figuring out the pest becomes a little easier.

This was identified as a yellow birch (*Betula alleghaniensis*), but it is a cherry, the Amur chokecherry (*Prunus maackii*). The confusion is understandable as they both have

exfoliated red brown to bronze bark. However, the leaves are very different with yellow birch having doubly serrated leaves with nine to eleven pairs of veins and the Amur chokecherry having finely serrulate margins and seven or fewer pairs of veins along with tiny glands on the petiole.



The problem was identified as mites on the “birch”, but it is not a birch and the symptoms do not appear to be mites. I will stop to look at the tree this Summer, but it probably is not mites. The biggest issue with this tree is its age. Cherries are not long-lived trees and ones in the 30s are very old and usually declining.

Samples received/Site visits

Davison County

Discolored pine needles



The ponderosa pine trees were presenting with yellow bands and the affected needles distal to the bands dying. These are common symptoms for dothistroma needle blight (*Dothistroma pini*). But these are common symptoms to many other diseases and disorders and dothistroma is one of the most misdiagnosed agents.

I brought samples back, but at this time of year, it is not an easy task to find the pathogen in dormant tissue. We will probably have to wait until Spring before the causal agent or agents can be determined.

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

The South Dakota Department of Agriculture and South Dakota State University are recipients of Federal funds. In accordance with Federal law and U.S. Department of Agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, or disability (Not all prohibited bases apply to all programs.) To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW Washington, DC 20250-9410, or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

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