

Pest Update (November 29, 2018)

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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

There should be no plant development now until spring – it's too cold! The cold snap we went through earlier in November was not too cold, about 9°F for the low in Sioux Falls, our woody plants can tolerate temperatures this cold by now. If we do not see minus zero temperatures for a few more weeks, we should not see any cold injury due to the autumn or early winter temperatures. Unfortunately, it has not been cold enough yet to kill emerald ash borer either.

We will be monitoring the Sioux Falls population this winter to see if we have much cold temperature borer morality but that will take a string of -30°F days.

Timely Topics



Ice melt products and plants. The light rain we experienced this week left some icy sidewalks and driveways. Homeowners are combating these hazards with melt products. While these are effective at melting ice, their use may also injure turf and ornamental trees and shrub come spring.

Ice melt salts are designed to break the bond between the pavement and the ice allowing the slush to be shoveled off the surface. The three different salts in ice melt products, used alone or in combination, are calcium chloride, magnesium chloride and sodium chloride. Homeowners sometimes wonder if any one of these salts is less harmful than the others in term of plant damage, but the injury is due to the chloride in the salt and all three of these contain chloride.

Chloride enters plants through two routes: 1) being absorbed by the roots though runoff or 2) absorbed through the buds and foliage from aerial deposition. Runoff can result in injury if the plants are growing in a slight depression where melt water can accumulate in the spring or if salt-laden snow has been piled on the plants during the winter. However, chloride quickly leaches through the soil so for most situations runoff and root absorption is not the primary means of chloride entering the plant. Instead, salt as small droplets or as dried dust particles are common means for plants to accumulate chloride.



Homeowners can reduce damage to their lawn and ornamental trees and shrubs by 1) using salt substitutes, 2) minimizing their use of salts to clear ice and 3) flushing the salts from the soil and vegetation in the spring.

Sand, cat litter and even sawdust can be used to improve traction on ice. While the overuse of these materials can also create spring clean-up problems, they provide traction when the temperatures are lower than 10°F as salts are not effective at or below this temperature. A little sand, less sand and more shoveling are the best ways to have a safe drive or walk and healthy plants.

The use of salts can be minimized by clearing the snow from the walk or drive and then spreading a light layer of salt over the icy surface. Only apply enough salt to break the bond of the ice to the surface. Once the bond is broken, the icy slush can be removed with a shovel or scoop. It is not necessary to completely melt the ice from the surface, just enough to break the bond.

Finally, once the weather begins to warm next spring, wash all the dried salt from the pavement and soak the surrounding grass and plants with water about three or four times during warm weather so the chloride leaches away from the surface. Next spray water on the buds of deciduous trees and shrubs and the needles of evergreens to wash the dried salt from the plants before it is absorbed.

How fast can an emerald ash borer population expand?



I was asked this question recently. Here is an illustration of just how fast they can multiple.

An adult female borer may lay as few as 1 to as many as 300 eggs but most lay between 75 and 90 eggs in their short (3 week) life. About half the eggs that hatch will be female. IF survival was near 100 percent throughout their lives then here is what you can expect.

Life Table of Emerald Ash Borer – No mortality

Year 1	1 female	80 eggs
Year 2	40 females	3,200 eggs
Year 3	1,600 females	128,000 eggs
Year 4	64,000 females	5,120,000 eggs
Year 5	2,560,000 females	

This looks impressive! Almost like out of a scene from the movie *The Birds*, so many emerald ash borers flying that they block out the sun. However, not everyone survives to maturity. In fact, very few do so let's look at this again with the mortality calculated in.

If you start out with 80 eggs, about 55 will hatch into larvae. The rest died from predators (ants like to eat the eggs) and parasites (the egg wasp *Oobius*). Only about half the larvae survive to maturity. Most are killed by parasites (*Tetrastichus*), tree resistance (the sap flow can kill them), winter cold (but it must get very cold), and woodpeckers. The 24 that survive to become mature larvae will be eaten by woodpeckers before they pupate and emerge as adults. Only six

adults may emerge from the original 80 eggs and half those will be males. So, let's look at the population curve again.

Life Table of Emerald Ash Borer with Mortality

Year 1	1 female	80 eggs
Year 2	3 female	240 eggs
Year 3	9 females	720 eggs
Year 4	27 females	2,160 eggs
Year 5	81 females	

Eighty-one females after five year is not as impressive as 2.5 million but still the population is growing at a fast rate! This is one reason that emerald ash borer tree mortality is low at the beginning of an outbreak in a community. There are not a lot of beetles and it takes about four to five years of repeated attacks to kill a tree. Once the trees begin to die and the beetle population is expanding at an increasing rate (year 6 you have 243 females!) a community "suddenly" sees widespread and rapid tree morality.

The best management – management to slow the mortality – should be implemented early rather than later.

E-samples



Herbicide injury is a common problem with trees. The difficulty with diagnosing these problems is it helps to know what active ingredient was applied and sometimes that information is not available.

Sometimes tree owners wait until the tree is just a stick. While you can rule out several possible problems, e.g. planting too deep, poor drainage, it is very difficult to determine if a herbicide was responsible for the injury.

The best situations are when you can look at the entire tree (before it is dead) and you have the herbicide. Earlier this summer I look at some spruce that were dying rapidly. They were dying from the top down and the discoloration and needle loss was almost in a spiral pattern around the crown. The tips of the shoots were also wilting. These are classic symptoms of an application of a growth-regulator herbicide.

We also had the chemical. It was a herbicide that contained 30% 2,4-D, 8% Mecoprop (MCPP) and 3% Dicamba. So now we have trees presenting symptoms



commonly associated with growth-regulator herbicides and we had the herbicide that contained three different growth-regulator herbicides.

However, we need to do one addition step. Are these active ingredients found in the trees? The needle samples from the tree on the previous page were analyzed for these chemical and here are the results.

2,4-D	1140 ppb
Dicamba	1100 ppb
MCPP	180 ppb

Looks like we have a match

- ✓ Tree presenting symptoms of exposure to growth-regulator herbicides
- ✓ A herbicide containing growth-regulator herbicides
- ✓ The growth-regulator herbicides showing up at high levels in the trees

The herbicide is labelled for residential and commercial turf but also has as precautions *Avoid mist to vegetables, flowers, ornamentals, shrubs, trees and other desirable plants. Do not spray roots of ornamentals and trees.*

Labels are not read as carefully as they should be. There is also the common myth that tree roots only extent to their drip line – the edge of the canopy. Tree roots extend about as far out as the tree is tall.



I was asked a question about **bishop's goutweed**, also known as snow-on-the-mountain (*Aegopodium podagraria*). It's a common groundcover around many homes. Goutweed tolerates shade and poor soils so it's a 'go-to' plant for these tough sites. Unfortunately, it spreads by rhizomes so can also be hard to keep under control and a bed can quickly spread to neighboring yards. It tends to be a problem, rather than have a problem.

But the leaves are prone to scorch where the edge of the foliage appears burnt and the planting looks thin and weak, especially in the center of a planting – almost a halo effect. This injury is common when we have hot weather just after the plant has put out a lot of lush growth. This picture was taken in mid-summer just after that string of 90° days. The plant will recover and should look fine next spring.

Samples received/Site visits

Lawrence County

What is this insect?



This insect was found beneath the bark of an aspen tree. I received pictures of this insect and asked for the larvae. It often requires placing the insect under a scope to identify it to family or genus.

There were several insects sent in the vial. The larger ones were Cerambycidae, possibly *Xylotrechus*, the poplar-but borer (yes, that's its name). This insect attacks dead and dying trees. There were several maggots in the vial as well and these were most likely fungal gnats. The insect that were collected are generally found in dead trees or zombie trees (trees that are dead but don't know it yet). They are no threat to a healthy tree.

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