

# Pest Update (March 6, 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

We are continuing to experience snow and extremely cold temperatures. The night temperatures during the first week of March are predicted to be below -10°F. While our woody plants are tolerant of cold mid-winter temperatures, this tolerance decreases as the winter progresses. Some trees such as the 'Crimson King' Norway maple can tolerate -25°F in mid to late January but only 5°F by mid to late March. Hopefully the temperatures will become more seasonably soon for the sake of our trees (and us!).

## Timely Topics

### Emerald ash borer over-wintering mortality

Emerald ash borer is spending the South Dakota winter snug beneath the bark. Well, not exactly snug, there is no central heating in the trees, so the temperatures drop close to that of the ambient air temperature. As mentioned in a previous *Update* (January 23, 2019), emerald ash borer can survive very cold temperatures through a mechanism called super cooling where water is removed from cells and replaced with a natural “anti-freeze.” This process allows the larvae to survive temperature to -20°F or lower by midwinter.

We have been surveying winter mortality and even teamed up with a class at Roosevelt High School for the last check. The mortality survey is tedious work. Trees that are known to be infested from sampling conducted last fall are harvested, the trees cut into small sections, the wood thawed for a day or two and then bark peeled away to reveal the larvae. Since the larva typically live in the phloem-cambial layer just beneath the bark, it relatively easy to find them – if they are there.



Dead patches of wood from previous emerald ash borer attacks.

One interesting find from our sampling is it appears the larval density is lower now than two years ago. It was very common to peel back branches and find more old galleries (tunnels) within necrotic tissue than new galleries. The sampling completed at Roosevelt yield only two larvae for an hour of peeling by about 10 people – science is not always exciting (or like on TV).

We did not try to determine the density of the larvae populations in the trees (at least to a high degree of accuracy), but it appears to be low, about one per square foot. Some studies have found closer to 10 larvae per square foot of phloem in heavily infested trees. The difference is most likely that this is still a relatively young infestation with most trees infested for only the past two or three year.

We found mostly larvae with the average length about an inch, these are mature larvae. This is typically the last feeding instar and is found in late summer and autumn. We also



Mature emerald ash borer larva.

found a few smaller larvae, those that may be taking two years to complete their development.



Curled emerald ash borer pre-pupa.

There were also some larvae found slightly deeper in the outer sapwood. These were curled pre-pupae, the stage that forms in the autumn preceding forming a pupa. We did not find any pupae but did not expect to as these develop in the May regardless of whether it's a one- or two-year life cycle for the insect.

The larval mortality was very high within the upper canopy where the bark is the thinnest and provides the least amount of insulation. The survival was much better in the trunks where the thicker bark provided better insulation. We also found more pre-pupae in the larger wood of limbs or trunks. Since there is more surface area in the trunk and limbs, the insect population is higher in this tissue. While we lost a lot of larvae in the upper canopies, we lost much fewer in the larger limbs and trunk, so we probably had an overall larvae mortality of about 30%, about what we predicted in the January 23<sup>rd</sup> *Update* - good, but not enough to change our management strategy.

If you are in Sioux Falls and have a healthy ash that you want to keep – treat it this spring if you did not do so last year. If you have an ash that you do not to keep, either it's too small (less than 10 inches in diameter) or older but has defects, e.g. cavities and dead branches, and not worth treating plan on removing the tree.

### **What is a good lilac substitute for a windbreak?**



Common lilacs (*Syringa vulgaris*) typically reach a height of about 12 feet and a spread of 8- to 10-feet. Common lilacs sucker profusely so they tend to fill in and make a thick, almost impenetrable, hedge. Lilacs are also tough, there is many an abandon farmstead that is only identifiable by the concrete foundation and the lilac hedge.

There is also a late lilac (*Syringa villosa*). It achieves a similar height but not quite the spread as it does not sucker. The shrub, while drought-tolerant, will not perform as well as common lilac on droughty soils. The flowers are not as fragrant. Some



have more of an odor than a fragrant, certainly not one that you want to bring the blooms in the house and set in a glass. Still it's a tough plant.

The toughness of a lilac is the hard part for matching a substitute. There are many shrubs such as dogwoods and viburnums that have similar height and spread (since they also sucker) but are not nearly as tough. Dogwoods on dry sites are prone to stem canker diseases and the viburnums become infested by borer when also planted on dry site. These shrubs need moist, well-drained soils for best performance.

There are other tough shrubs that meet the criteria – tall shrub that spreads and can tolerate dry sites – but are not commonly available. Hoptree (*Ptelea trifoliata*) become about 15 feet tall with an equal height. It does not sucker but seeds prolifically so fill in. It's a tough tall shrub but almost impossible to find as liners.

A possible substitute is Siberian peashrub (*Caragana arborescens*). This shrub achieves the same height as the lilacs, though not quite the spread. It is also drought tolerant, though droughty soils will affect performance. It is also a legume, so it is a nitrogen fixer. But as a legume, it is susceptible to defoliation from the blister beetle. This insect is often found in alfalfa fields and if peashrub is planted nearby it will suffer the same defoliation. The other issue is deer seem to like to rub on them, but the plants usually sprout after this injury.



## E-samples



Some folks apparently do not get around to cleaning out their digital camera files until winter. Here is a picture of a green ash tree from southeastern South Dakota with the question; “Does this tree have emerald ash borer?” Now it is impossible to prove a tree is not infested, perhaps it was just attacked last summer for the first time. However, the picture leaves a lot of doubt for an infestation.

What they had noticed was the tree had a lot of dead twigs throughout the canopy. Someone told them that this is an indicator of emerald ash borer. It's not. Green ash is a 'twiggy' tree with the lower, shaded branches continually losing leaves and twigs. This is completely natural for healthy green ash.

Where there would be a concern is if the tree was presenting with a discrete portion of the canopy having smaller and lighter leaves. This, along with woodpecker pecks, is one of the first signs of an infestation. The tunneling by the larvae cuts off the flow of sugars from the leaves to the roots and as the roots begin to decline a portion of the canopy reacts to the moisture stress by generating small, lighter green leaves.

## Samples received/Site visits



**Not a sample but a question from a reader last week regarding shrub pruning.** She wanted to know which shrubs can be pruned in the spring before they bloom. Our spring flowering shrubs form their flower buds during the previous growing season so the flowers we will see on the forsythias this April were formed during the summer of 2018. Heavily pruning these shrubs now will result in the removal of the flower buds so few flowers this spring.

Delay pruning of spring flowering shrubs until just after they bloom. This will provide them with the time to develop flower buds for the next season. Summer flowering shrubs can be pruned now as their flower buds have not yet formed. These shrubs produce their flower buds in the spring for their summer blooms.

### Some of our common spring flowering shrubs are:

Bridal wreath spirea  
Common lilac  
Dwarf Korea lilac  
Forsythia  
Garland spirea  
Vanhoutte spirea  
Weigela

### Some of our common summer flowering shrubs are:

Bush-honeysuckle  
Bumalda spirea  
Japanese spirea  
Late lilac  
Panicle hydrangea  
Potentilla  
Smokebush  
Smooth hydrangea

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