



# Tree Pest Alert



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## Samples

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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.

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.

Reviewed by Master Gardeners: Carrie Moore and Dawnee Lebeau

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## Plant development for the growing season

The growing degree days (GDD-base 50) significantly increased from last week due to the warm weather – but I expect we will see an increase every week going forward but expect the increase to be less this next week due to the cold, snowy weather.

The current GDD for communities around the state are as follows:

Aberdeen	9
Beresford	146
Chamberlain	123
Rapid City	109
Sioux Falls	130

One of the first trees to bloom in Brookings are the Corneliancherries (*Cornus mas*) at McCrory Gardens. Some years they have bloomed as early as March 21. Other years as late as May 5. The flower buds are just beginning to open on the trees this year.



## Treatments to Begin Now or Soon

### Apple scab

The last issue of the Pest Alert (April 12, issue 8) I discussed the treatment of apple scab. I am seeing more apples and crabapples with expanding and open buds in the southern third of the state. In that area, the first fungicide spray should be on now and soon in the more northern part of the state.

### Emerald ash borer

An important note, treatments are only needed in Lincoln, Minnehaha, and Union counties, where we have confirmations of the insect. Communities outside these

counties but within fifteen miles of an infestation can also begin treatments. Vermillion is about thirty miles from the confirmed emerald ash borer infestation in Dakota Dunes. Residents of this community do not need to treat ash yet – but will in another year or two.

There are many injection systems that are effective for managing emerald ash borer. Treated trees have an extremely high survival rate, more than 98 percent. If a tree is treated by professionals in a timely fashion, the tree will still be here once the beetle epidemic has passed.

The optimum time for treating ash trees is from leaf out, which may be several weeks away, till about mid-June. Trees treated during May and early June will have sufficient chemical in them to kill the adults as they feed on the leaves this spring (and before they lay eggs).

The insecticide will also quickly kill any young larvae that hatch this summer before they are large enough to harm the tree. The treatments are effective for two years so treatments applied this spring will kill adults and young larvae next year.

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## Timely Topics

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

I am sure emerald ash borers are beginning to feel as house bound as us. Imagine spending the winter in a dark, cold cell all winter. As the weather warms, these begin to wake up from their winter slumber. A few larvae are beginning to shrink and straighten in these cells to as prepupae. The prepupae look like emerald ash borer larvae but are a little stouter and less than an inch long.



This stage quickly transitions to the pupal stage, usually by early May. The cylindrical white pupae gradually develop the shape and form of the adult. Adults are present beneath the bark by the last week of May. They begin emerging in late May or early June in the Sioux Falls area. I expect some early emergence in Dakota Dunes.

### ***Emerald ash borer injection workshop***

We are holding our annual emerald ash borer workshop in Sioux Falls on Wednesday, May 3. The City of Sioux Falls, Dakota ISA chapter, South Dakota Department of Agriculture and Natural Resources, and South Dakota Extension Service are sponsoring this annual workshop for applicators to learn about spread of EAB in eastern South Dakota, the developmental stages of the insect, and treatment options available to protect trees from becoming infested.



This is an opportunity for applicators to learn about and discuss the systems available for injecting ashes with demonstrations by Arborjet, ArborSystem, Rainbow, and Warne Chemical (Chem-jet). I will discuss EAB life cycle and identification of the insect and infested trees. Bryan Peterson, Urban Forestry Specialist for the City of Sioux Falls will be on hand to discuss tagging and reporting specifications for applicators.

The workshop will be at a *new location this year*, the Mary Jo Wagner Arboretum, 1900 South Perry Pl, Sioux Falls, SD 57110. It will begin at 10 a.m. by the picnic shelter in the Perry Nature Area which is just to the northwest of the Interpretive Center and parking lot.

The program will run for about two hours. No registration is necessary and it will be held “rain or shine.” This is a fantastic opportunity for those who already offer emerald ash borer treatments in the area to refine their skills as well as companies that are thinking about offering this service to learn more about it.

### ***Will there ever be an end to EAB treatments?***

A common thought is once the emerald ash borer kills all the untreated trees in a community, the beetle will disappear. Not true. Ash and the beetles will persist in a community long after the epidemic has passed.

Usually, a community loses all their mature untreated ash within a decade of the initial discovery of the insect. But before these trees die, their seed will be scattered in any open ground, alleyways, ditches, and vacant lots.

Ash seedlings and saplings will grow from these seeds and these new trees will become large enough to produce seed before the emerald ash borers attack them. This is a picture from Rochester New York of ash saplings beneath ash killed by the emerald ash borer.



This means that once a community has emerald ash borer it will always have the borer. But far fewer of them as their hosts are mostly small trees. This means the borer population is not high enough to rapidly kill any mature tree that remain. The treatment interval for these mature trees stretches from every two years to every four to six years.

### **When can we start planting bare-root tree seedlings?**

Everyone is anxious to start the spring planting season. A question I am getting from impatient planters is can I start planting bare-root tree seedlings now?

The answer is no, not yet. The key is soil temperatures that are adequate for root growth. The survival of bare-root stock is dependent on the trees quickly taking up water once in the soil. If they lack fine roots – the ones important in water and element uptake - they absorb very little water. Bare-root trees lack these roots.

There is no development of these fine roots at soil temperatures below 45°F. The worst combination of events, and a common one in South Dakota, are cold soils and hot, windy weather. A seedling in 40°F soils (measured at 4-inch depth) is not absorbing water yet, while warm, windy air is sucking what moisture there is from the needles, buds, and twigs. This results in severe desiccation and either poor growth or death of the seedlings.

Tree seedlings start producing fine roots between 45 and 50°F. Delaying planting until this threshold is reached allows the seedling to develop the root capacity to allow for water loss by the tree in warm weather. We usually see these soil temperatures by late April or early May.

The optimum soil temperature for root growth is 60°F. These soil temperatures usually occur by mid-May just in time for the hot weather where water uptake needs to be at its maximum to support the new shoot growth.

The colder conditions this year means we might not be planting until next week or later. The soils temperatures around the state are in the high 30°F with only the southern third of the state in the low 40°F. However, with the snow gone and warmer weather, the soils should warm up quickly.

If someone already has received their tree seedlings store them in a cool, shaded environment, the floor of a pole barn is a good spot. The trees should not be in direct sun and ideally the storage temperatures are in the low 40s°F. Cover the roots with a moist media – sawdust, peat moss, even old leaves – to keep them wet but not soaked. Do not place them in a bucket of water!

The trees can be held this way for a week or so and hopefully by then we should have soils warm enough to plant.

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## **E-samples**

### ***Banded ash borers flying***

A few weeks ago, I discussed banded ash borers (*Neoclytus caprea*) flying in a house. A homeowner found several of them clinging to the window on a sunny day. These are frequent late winter house guests if you store ash or elm firewood in the house.

The banded ash borer adults are also one of the first beetles to emerge in the spring – about the time robins return north. John Hartland, the SDDANR urban and community forester, forwarded this image he received from a landowner. The beetles are easily identified by their cylindrical gray body with several yellow bands on the wing covers. The ones on the upper cover almost form two loops.



The beetles attack recently dead and dying trees. If the larvae are found in a dying ash tree, they are not the primary reason for the decline. If adults are swarming around an ash tree in search of a site to lay eggs, it is a good indication that the tree is stressed and already weakened.

Drought is the common stress that increases attractiveness for the banded ash borer. Emerald ash borer is becoming a stress agent. Ash trees attacked by the emerald ash borer are becoming a host for the banded ash borer. I often see the larvae of both in the same tree along with the close relative of the banded ash borer – the redheaded ash borer (*N. acuminatus*). The larvae of the two are almost identical.

### **More bunny damage**

I received a text with several pictures attached of a hedge cotoneaster row with extensive browse damage. The shrub canes were girdled by browsing for the entire length of the row.



Fortunately, hedge cotoneaster responds well to rejuvenation pruning. The best treatment is to prune back the entire hedge to three inches tall. New canes will quickly form from adventitious buds that form in response to the pruning.

### **Lightning strike on a tree**

The warm weather last week generated a few thunderstorms. I watched lightning lace the early morning skies, a pleasant change from snow. The flashes are nature's fireworks, fun to watch, but they are as dangerous as fireworks. A few trees, such as the one sent in from Lewis & Clark Recreation Area, are already casualties. Wood debris from the strike was scattered through the empty camp site.



We were all taught not to run beneath a tree during a thunderstorm for good reason. Trees are the tallest natural conductors on the prairies and so are the sites for many strikes. The evidence of a strike is often bark blown off the trunk exposing a long, vertical crack.

We used to think the tree exploded from the sap water superheated by lightning (temperatures are 50,000°F!) turning into steam. While this is a small factor, the one we did not consider is the superheated air which expands (sometimes with a force of 60 psi) pushing the bark into the trees and exploding out on the rebound.

Most trees survive a lightning strike, in fact some trees are repeatedly struck over the years. The difficulty of predicting the outcome of a strike is we cannot see how much internal damage there is from the strike. The best advice is if the strike has not resulted in much bark loss – less than one-fifth the circumference – and the crack is shallow, then just wait to see what happens.

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## **Samples received/Site visits**

### **Clark County, The case of the purple-needled spruce**

This was a sample submitted with pictures of two Colorado blue spruce (*Picea pungens*) and a Black Hills spruce (*P. glauca*). The trees are about twenty feet tall and are clearly declining. The trees are open with many of the exterior needles missing – only the interiors still have foliage.

The samples presented with bare shoot tips and the interior needles were purplish. Some of these needles had a bottlebrush appearance where all the needles for one season are shorter and denser than the year before or after.



Purple needles are usually an indicator of a problem with the root system. The roots are not able to absorb enough water to support the canopy. A common reason for this is either the roots are too dry or too wet.

Too dry is common in much of the state during the past two years but the northeastern part of the state has seen less drought. They also received abundant moisture a

few years back and there were many tree groves sitting in water or wet soils for weeks or even months.

The "root" of the problem here was the trees were too wet a few years ago. Roots in wet soils are restricted due to the low soil oxygen and absorb less, not more, water. A tree can die from the lack of water while standing in water, a condition described as physiological drought.

The bottlebush appearance of the growth from a couple of years ago shows the tree reacted to this deficit with shorter needles and less shoot growth so the needles are denser along that length. The growth improved slightly the following year, but the roots are not recovering fast enough, and these trees will continue to decline.