



# 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: Bess Pallares, Carrie Moore, and Dawnee Lebeau

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## Plant development for the growing season

The weather is staying a little on the cool side with daytime temperature ranging from the balmy 70°F to cool 50s. We are at about 160 growing degree-days (GDD base 50) in Sioux Falls and 100 in Rapid City.



The Norway maples (*Acer platanoides*) in Sioux Falls are in full bloom and they are starting to flower in Rapid City. A canopy covered with these greenish yellow flower clusters is eye-catching and one of the overlooked ornamental features of this tree.



The apple serviceberries (*Amelanchier x grandiflora*) are just starting to bloom. When this tree is in bloom, spruce spider mite eggs are beginning to hatch.

While the temperatures have been pleasant, we could use some precipitation. Only a small area of the state; Brookings to Grant County and west to Clark and Kingsbury, are drought-free. The rest of the state is under some level of drought with the northwestern part of the state from Campbell County west and south to the Cheyenne River under exceptional drought.

We are going to see more pine and spruce decline in that region and the dominant factor will be the continuing

drought. Diplodia tip blight is contributing to the decline of the pines but we need rain more than fungicides (though disease management is still a good idea).

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## Treatments to Begin Now

### *Spruce spider mites*



The damage caused by spruce spider mite (*Oligonychus ununguis*) feeding, bronzing and needle loss, is not noticed until summer. Too many people have the attitude 'see and spray'. They see the damage and they spray. But now is the time to begin treatments as this cool-season mite is hatching. Treating in the summer, when day temperatures are staying above 80°F, is not effective as the mite is in a dormant egg stage and not easily killed by treatments.



Egg hatch has started now and the peak spruce spider mite activity will be between 200 and 370 GDD (May-early June). Spruce spider mites feed by inserting their piercing-sucking mouth parts into the needles and removing the cell contents. Now is the time to treat to avoid this damage during the next few weeks.

This is one pest that is best managed by a commercial applicator. They have the miticides that are targeted for this mite and cause little harm to predatory mites and insects that provide most of the control. There are two active ingredients commonly used by commercial turf and ornamental applicators. However, there are many others that are also effective.

Miticides containing Bifenazate are probably the most used. This is a contact miticide effective against eggs to adults and provides about a month of residual action.

Miticides containing Abamectin (which is also an insecticide) are also used by many commercial applicators. It is derived from a naturally occurring soil microorganism and works as a contact miticide. It is not effective against eggs but will kill the immatures and adults. Miticides that contains Abamectin often have translaminar properties meaning they penetrates the needle creating a reservoir of active ingredient.

Acephate is found in insecticide that is used against mites, most often as a soil injection. Other insecticides such as Malathion may have mites on the label but have very limited effectiveness against mites. Other insecticides, Carbaryl and Imidacloprid, can increase mite populations so should not be used.

### *Zimmerman pine moth*

Now is the best time to treat to kill the overwintering larvae before they burrow into the wood. A second application is made in August (when goldenrod begins to bloom) to kill the newly hatched larvae of the next generation.

Insecticides labelled for treating Zimmerman pine moth and containing either Bifenthrin or Permethrin as the active ingredient should be applied with a pressure spray so that the droplets reach and saturate the trunk of the tree.

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## Timely Topics

### *Emerald ash borer update*

We are continuing to monitor insect development this spring. Most of the emerald ash borers are now in the pupa state. This stage begins as the insect takes a white, cylindrical shape, nondescript form that gradually takes the appearance and form of an adult.



This process will take several weeks. Once the insect transforms into an adult, it may remain just beneath the bark for a few days to a week or more before chewing a D-shaped hole and emerging.

Based on the current development of the insect and the long-range weather forecast, emergence is expected to begin around June 1 in Sioux Falls.

### **Update on bare-root tree planting**

The planting season has started throughout much of the state. Our soil temperatures are generally warm enough to support rapid root growth, above 50°F, but some parts of the Black Hills still have persistent patches of snow!

It could be worse. We could be planting on Mars this spring. Mars daytime soil surface temperatures near the equator are a chilly -5°F – too cold for planting bare-root tree seedlings. However, while the Martian soils temperatures are colder than South Dakota, the soil moisture is not that much difference – it is dry in both places!

This means South Dakotan and Martian tree planters need to take extra precaution when planting this spring. First, the roots must be kept covered and moist right up to the second they are covered with soil. Even a two-minute exposure to warm (75°F), sunny, windy (20 mph) conditions can kill roots before the trees are even planted!

Second, pre-hydrating the roots may be beneficial this year. Pre-hydrating is soaking the roots (just the roots, not the whole seedling) in water before planting. Some European studies have shown soaking the roots for up to 24-hour before planting increases water storage (it doubles the weight of the seedling), so the new plants have an increased 30-day survival.

However, much of their work was with larger broadleaf saplings. Soaking seedlings too long can kill roots due to the low oxygen levels. **The best approach in South Dakota may be to limit pre-hydrating to no more than one hour for either broadleaf or evergreens.**

Third, whenever possible try to avoid planting on days where the wind speeds are above 30 mph and the air temperatures are in the 80s. This combination of windy and hot weather causes seedlings to lose moisture at a faster rate than they can replace it. The ideal planting weather is during days with wind speeds less than 10 mph, the air temperature less than 70°F and the relative humidity higher than 40% - cloudy is also a plus.

Finally, water-water-water at and after planting. Seedlings should receive about a quart of water at planting and then an equal quantity every few days for at least two weeks.

### **Spraying trees from the air**

It seems every spring I have at least a half dozen questions about spraying a windbreak from a plane or helicopter. This is a common means of treating agricultural crops but is not as widely used on trees.

The greatest challenge with trees is having adequate distribution of the chemical throughout the canopy and

trunk. The most common use has been on foliage-feeding insects that move out on the shoot tips. These insects feed at the outer edge of the canopies where pesticide placement is possible.

Dothistormia is a fungal disease that affects the needles of Austrian and ponderosa pines and there has been some interest in aerial applications to treat this disease. A recent article in *Forestry* (94: 347-362) showed copper fungicide applied aerially was effective at reducing infection. Whether aerial applications of fungicides for other diseases, such as Diplodia tip blight, is not known.

While aerial applications of insecticides are effective against many defoliating insects, they have not been as successful for borer control. Engraver beetles and the Zimmerman pine moth all infested the trunk and limbs in a tree, not the outer canopy of needles.

The challenge for managing these borers is to push enough insecticide into the crack and fissure of the bark to kill the insects as they lay eggs (or with Zimmerman pine moth to also kill the larvae before they burrow beneath the bark). High-pressure ground spraying is necessary to provide adequate coverage. A mist descending through the canopy will not do it.

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## **E-samples**

### **Why are these trees losing their lower branches?**

This Colorado blue spruce and about 15 others were transplanted last fall. Now the lower branches have shed their needles. Once lost, the needles will not return to these lower branches.



Stress is usually the reason young trees lose the needle on the lower branches. A significant stress is planting. The tree is left with fewer roots, so some moisture stress will occur. The planting depth is sometimes set too deep, and this just adds to the stress. However, this cannot be determined from a picture.

The trees should be watered on a regular basis this spring and summer. A shredded wood chip mulch extending out a radius about half the height of the trees and about 6 inches deep will also improve the rooting environment.

### **Drought-stressed spruce**



I receive a great picture from Spink County. This appears to be a drought-stressed Black Hills spruce. The typical symptoms of drought stress on spruce are reduced shoot growth, stunted needles, drooping branches, and excessive cone production. While these symptoms can appear with other diseases and disorders, drought is a common cause for them.

Spruces are not well adapted to hot, dry weather. I expect to see a lot of spruce pictures this summer with the question; "What do I spray?" The answer is simple, water (on the soil).

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## **Samples received/Site visits**

### **Custer County, Pine engraver beetles**



We are starting to catch pine engraver beetles in our funnel traps. The adult beetles overwinter in trees, slash, and even the litter on the forest floor. Now that we are experiencing warmer day temperatures in the southern Black Hills, 60s and 70s, these adults are flying to seek out new homes.

The preferred home is fresh slash, material that was piled this late winter and spring. The adults will burrow into this material and lay eggs. The eggs hatch within a

week and the larvae will feed for about three weeks before pupating and emerging as adults. This next generation begins emerging in mid-June.

If there is more fresh slash in June, the new adults will attack this material. If there is no fresh slash, they will be attracted to nearby live trees. Usually, healthy trees are not susceptible to attack but pines stressed by drought are not healthy. I expect we are going to see significant tree losses this summer.

### **Lawrence County, SNEED on spruce**

This sample was free of the two most common needlecast diseases, *Rhizophaera* and *Stigmina*, but it did have *Setomelanomma holmii*. This fungus is associated with the disease called Sudden Needle Drop of Spruce (SNEED). The common symptoms for this disease are yellowing and browning of the older needles with the foliage eventually confined to only the shoot tips.

This fungus is usually limited to stressed and declining trees. Healthy spruces are not affected. Most likely there is an abiotic cause for the decline and this fungus is merely accelerating the decline.

### **Meade County, Turpentine beetle**

While engraver beetles gaining attention in the Black Hills, there are still red turpentine beetles (*Dendroctonus valens*) out there. This is the largest of the bark beetles, often about 3/8-inch long, and with a distinct red-brown color.



The turpentine beetle is also one that is not usually a concern as they are not tree killers. The attacks, which are identified by the large reddish-brown to pink pitch tubes, are confined to the lower three to six feet of the trunk. The beetles will also attack fresh stumps.

We often see trees in newer developments attacked by this insect. These attacks are more a warning that the tree has a problem than the problem being the turpentine beetles.