



# 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 growing degree days (GDD- base 50) crept up another 45 degree days over the last two weeks to 3,625 (though we are beyond the growing season). While we have experienced some cold weather, winter still alludes us. This past week I hiked Custer State Park in the Black Hills, and it was 75°F!

Several years ago, the state had a campaign to entice people to come to South Dakota called "South Dakota – Better than Mars." Now in addition to a breathable atmosphere, we can say we have warmer winters than Mars. There was a high of only 19°F at the Gale Crater on Mars (where it is also winter) last week. Last year at about this time, we only tied Mars for the high!

## Treatments to Begin Now

While we are having a little warmer weather, now is the time to wrap your arborvitae. These upright evergreens are composed of several main trunks that are jointed at the base. This makes these shrubs susceptible to splitting under the weight of heavy snow.



Manila twine or rope should be used to encircle and support the trunks, not metal or nylon wire that can cut into the foliage or trunk. The best approach is to wrap the twine around the outside of the evergreen, starting at

the base, and wind upward around the plant like stripping on a candy cane.

Some people find the twine unattractive. So instead, the twine or rope can be wrapped around trunks in the interior. This takes more time, but it is equally effective; just remember to cut it out before spring. Even manila twine can injure the expanding trunks as they grow during the season.

Some people also wrap their arborvitae in burlap like a Christmas present. The idea is that the burlap wrapping will protect the evergreens from the drying winter winds and sun. Wrapping burlap around the plant does reduce winter burn, but unlike Christmas wrapping paper, burlap is not attractive. An ornamental benefit of an evergreen is that it is “ever green,” a way of brightening up the winter drab. Covering the bright green foliage with burlap does not add to the winter interest.

The best way to prevent winter burn is watering during the summer and fall. Wrapping arborvitae in burlap should only be done if the arborvitae had suffered winter burn in past winters.

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## Timely Topics

### *Emerald Ash Borer Update*

Since the weather is still warm, there was one last opportunity to check on emerald ash borer (EAB) development. All the branch sampling last week revealed J-shaped larvae tucked within their winter chambers deep inside the sapwood. There are only a few earlier instars still beneath the bark.



Spending the winter deep inside the wood provides a few more degrees of insulation. The J-shaped larvae can survive temperatures of 0°F without any mortality. If the temperatures drop to -30°F, about 98% will die.

Almost 80% die at -20°F, and while that may seem a lot, it's not. Considering how many “babies” a mom EAB has, about 70 to 80, losing 80% does not dampen the

population (though it will lead to fewer Christmas presents mom EAB must buy for the kids).

At 80% mortality, the population is still increasing along with tree mortality.

The bark and sapwood can provide around 5°F insulation. Think of -35°F air temperature translating to -30°F in the EAB sapwood winter chamber. And it can take two days before the cold seeps deep into the wood. Two days of -35°F can kill almost every larva (and car batteries). It would also be a very rare event. We sometimes dip to -30°F, but only for a few hours or so, not days.

If it does dip into the -20s during an early morning, that will help kill larvae in the small branches within the canopy of infested trees. However, if we only dip to the negative teens this winter, we will see minimal mortality.

### ***What to do with a live Christmas tree?***

Every year some folks decide to bring inside and decorate a living tree for Christmas. These are usually smaller trees than the six-foot tree in the living room, but regardless of size, the question now is, “What to do with them for the rest of the winter?”



The two trees I see sold as living Christmas trees in South Dakota are small (two feet or so) Colorado blue spruce or American arborvitae. These potted trees are small enough that someone might think they can just treat them like a fig or rubber tree – put them in a sunny room and water for the rest of the winter. This is a mistake. These are not tropical trees that are adapted to warm weather year-around, but temperate trees that expect, and even require, winter cold before growing the next season.

So, keeping the tree in a warm, sunny room is not what they need. Instead, they need to be exposed to cold

temperatures for a few months. Ideally the live tree has only been in the house for 10 to 14 days; if it's been in longer, the tree may be more susceptible to freezing weather. If it has been in the home for three weeks or more, you'll need to move it into a place with cold (33 to 40°F) temperatures, but not freezing temperatures for the winter.

Even if the tree was only inside for a week or two, keeping it in cool, rather than freezing temperatures, is probably best. While the above-ground portion of the tree – the trunk and foliage – can take the cold, the below-ground tree, the roots, can only tolerate temperature to about 20°F. Since the pots for these trees are only one to two feet in diameter and of equal depth, they lack the insulation qualities of the ground and will reach the ambient air temperature within a few days. If the air temperatures dip to 10°F or lower for a few days, the roots in the pot will die.

The best approach for winter survival of these potted trees is to place them in an unheated garage (light is not necessary or even desirable) and put straw or other insulating material around and over the pot to keep it from warmer than 20°F.

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## E-samples

### **Apple Maggots**

This picture of lumpy apples also came with a few that were close-ups. A common reason for lumpy apples is a small fly-like insect called the apple maggot. The lumps or dimples occur when the adult insect “stings” the apple skin to lay eggs.



Once the eggs hatch, the legless larvae, called maggots, burrow into the flesh, creating brown tracks as they tunnel through the fruit. Eventually the maggots drop out of the fruit, but the damage causes discoloration and

softening of the flesh. An apple infested by the apple maggot is not very appetizing.

One of the simplest controls is to pick and discard all damaged apples. If the apples are removed before the maggots drop out of them, a small orchard of a few trees or so might be able to rid themselves of the pest. Insecticide treatments may also be necessary to kill the adult fly when they are laying eggs. These insecticide treatments usually start about July 1 and end mid-to-late August, depending on when the fruit is to be harvested.

### **Elongate Hemlock Scale**

The elongate hemlock scale (*Fiorinia externa*) began appearing on Christmas wreaths in South Dakota and Minnesota about two years ago. The scale is native to Japan and was first found in North America in 1908. It has slowly spread along the East Coast (Maine to North Carolina) since that time and inland to the Midwestern states of Michigan and Ohio.

The scales have “jumped” to South Dakota on Christmas wreaths and roping harvested from fir trees in North Carolina and other eastern states. It has not been found on any trees in our state, but its hosts include spruce, as well as firs, Douglas-fir and hemlock, so the potential exists for an infestation to become established. We have a lot of spruce in the state.

The adult female scales are the most-noticeable life stage. The mature females are covered with an elongate, waxy and slightly translucent covering. They range from a yellowish-brown to a brownish orange. The scales can be found on the underside of the needles along the stomatal bands. They are about 5/64 inches long.



Elongate hemlock scale is an armored scale that feeds by piecing the interior needle cells to suck out nutrients. They do not feed directly from the phloem, as do soft scales, so there is no sticky honeydew and black sooty mold on the foliage. The damage is usually limited to some needle yellowing and loss on heavily infested trees.

Still, we do not want this pest to become established in South Dakota, so any Christmas greenery made of fir branches that have needles with these scales should be

disposed of during a community Christmas tree pick-up or burned. They should not be placed in a compost pile, where the young crawlers could move to nearby spruce in the spring.

There is also another exotic scale that looks similar. The cryptomeria scale (*Aspidiotus cryptomeriae*) has also been found on Christmas wreaths and roping made of fir. This insect has not yet been found in South Dakota, but the two insects can be confused. The cryptomeria scale is about the same size and color, but the shape and appearance is more of a fried egg, yellow in the center of a white oval.

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## Samples Received/Site visits

### Custer County, Bark Beetle Update

The outbreak of pine engraver beetles in the Black Hills appears to have fizzled despite the continuing drought. The bark beetle populations started to increase a year or two ago as the weather in the Black Hills shifted from wet to dry.

These boring beetles can quickly respond to water deficits in pine trees. These stressed trees are more vulnerable to attack by the adult beetles. They cannot produce defenses, such as pitch, to push the beetles back.

Engraver beetle populations ebb and flow with the weather. During dry years they expand with the increase in vulnerable hosts, and during wet years the population declines, as fewer trees are susceptible.

The populations were increasing this spring and summer. Any recently fallen trees – such as those that fell during the tornados east of Custer last May – were quickly infested by the bark beetles. The question now is, “Where did they go?” Despite the continued dry weather that has left pine susceptible to attack, the number of newly infested trees declined later in the year.

Also, there was a marked reduction in the number of beetles caught in traps. Last year, the trap catches increased in September and so did tree mortality the following spring.

Despite the dramatic reduction in beetle populations and tree mortality, landowners should still practice good slash management. This means avoid placing slash in small piles next spring or chipping during this same period. These activities will draw the insects to the site and later to possibly infested standing live trees.

### Minnehaha County, Fletcher Scale

I stopped by to look at two tall (25-foot) columnar arborvitae on the north side of a home. The concern was that the foliage was turning yellow throughout the lower branches.

Some yellow foliage in the fall is normal for arborvitae. They, like all evergreens, shed some of their older

foliage. But there was more than just some older yellowing foliage on these evergreens. The affected foliage was also sticky with a little black mold.

The cause for all this is the Fletcher scale (*Parthenolecanium flecheri*). This soft scale is a pest of arborvitae, but it will occasionally attack yews and junipers. The adult female scales are sessile, about 1/8 inch in diameter, almost hemispherical and are brown to tan. The young, called crawlers, are mobile and move around the foliage, but are so small they are not easily seen without a hand lens.



The insect overwinters as a nymph and will resume feeding in the spring. A common means of control is a foliage application of a dormant horticultural oil sprayed on the plant in the window between freezing temperatures and the evergreen beginning to put on new growth. This is usually sometime between late April to May.

### Pennington County, Black Knot

Black knot disease (*Apiosporina morbosa*) was appearing on small common chokecherry stems along a wooded area behind the house. The yard abutted a ponderosa pine forest and the understory had chokeberries suckers among other small trees and shrubs.



The disease is very noticeable on the cherries once the leaves have fallen. The thick, elongated black galls or knots were hard to miss on the new shoots of these small chokecherry suckers. These galls appear during the second year of an infection. During the first year of

infection, the shoot may show just a faint, light-brown swelling, and this is easily overlooked.

The disease can cause infected shoots to dieback, or sometimes nothing unusual happens. Black knot is difficult to control, and pruning has limited value, as the first-year infections are so easy to miss. Fortunately, not all chokecherries are susceptible, and sometime the best approach is to remove any infected trees, as once susceptible – always susceptible.

### ***Union County, Spruce Needle Miner***

These are Colorado spruces that were losing more foliage than normal for seasonal needle drop and needlecast diseases. The trees were being treated for needlecast disease, and the treatments appear to have been effective. There were very few needles presenting signs of the disease on the treated spruce, while nearby untreated trees were showing moderate infection.

But the trees were still losing needles, so the request came to inspect the trees. The first thing I noticed was that the needles were not missing, but instead were detached and clumped together. These clumps often occurred along a whorl of interior branches, so they were easily missed until I pulled the outer branches away and looked inside.



The clumps were home to the spruce needle miner (*Endothenia albolineana*). This insect is so small that the larvae begin their life by burrowing into a needle (hence the name needle miner). As the larva grows, it finally cannot fit in the needle, and instead uses silk to web needles around its body as a tent. This activity results in lower branches appearing a little more open than normal, as many needles are detached and webbed together.

Treatments can be as simple as an early spring high-pressure stream of water through the tree to dislodge the larvae and their home.

Otherwise, a foliage spray of an insecticide containing Carbaryl as the active ingredient and labelled for this purpose. The spray can be done in April just before the larvae begin to become active.