South Dakota State University Extension

Tree Pest Alert

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In This Issue

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 listing 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

We are deep into autumn and experiencing our seasonal temperature fluctuations. Sioux Falls recorded a low of 13°F on November 10th, then a high of 70°F on the 14th! Beresford experienced a slightly larger fluctuation of 12°F to 82°F.

The largest temperature fluctuations during the past two weeks were in communities on the prairie. The Black Hills communities did not experience quite a wide swing of temperatures.

But Spearfish holds the record for the largest temperature change in South Dakota. January 22,1943 the temperature rose from -4°F to 49°F in two minutes! Later the same day it dropped from 54°F to -4°F in less than thirty minutes.

The cooler temperatures slowed the accumulated growing degree days (GDD base-50). We only accumulated another 20 to 70 GDD during the past two weeks. Here is the current GDD accumulation for communities across the state.

Aberdeen	3055
Beresford	3665
Chamberlain	3717
Rapid City	3050
Sioux Falls	3620

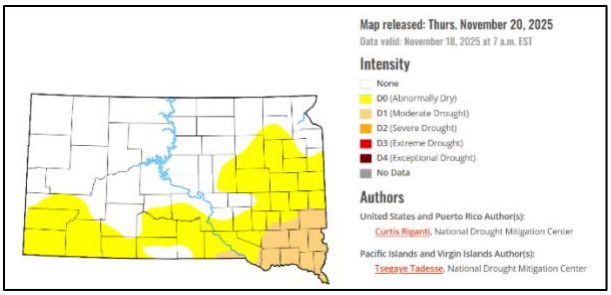
The water requirements of woody plants have decreased along with the temperatures. Soil temperatures have dropped to about 40°F. While the roots are not dormant, they are not absorbing much water at these temperatures. The cooler soils are slowing the absorption of water due to reduced root permeability and increased water viscosity.

This means there is no need to continue watering. Everyone can put the water hoses away (and the Christmas lights up).

Drought monitoring

We are still sliding back into drought. Slightly less than 60 percent of the state is now considered drought free. Another 35 percent of the state is classified as "Abnormally Dry." The southeastern corner of the stat, about 7 percent, is classified as "Moderate Drought."

Here is the current map from the National Drought Mitigation Center at the University of Nebraska-Lincoln.



Treatments to Begin Now

Clean out the Christmas tree stand

It is time to start thinking of Christmas trees! The traditional time to put the tree up is around Thanksgiving. Black Friday is also Green Friday as it is typically the day with the highest sales of natural Christmas trees.

Now is the time to clean out the Christmas tree stand before you bring home the new tree. Rinse the stand with warm water to remove the dust, dirt, and old sap. Then disinfect the stand with a capful of bleach to a cup of water. Rinse and let dry. The stand is ready for this Christmas.

Timely Topics

Emerald ash borer update

We continue to monitor larval development of emerald ash borer (EAB) from Dakota Dunes to Milbank. All the larvae examined are in their overwintering J-shaped form, nestled all snug in their protective chamber, while vision of tasty ash phloem dances in their head.

Selection and care of a real Christmas tree

While about 24 million Christmas trees will be harvested this season, artificial trees are still the more popular choice. About four out of five homes that put up a Christmas tree this season will have one made of plastic rather than plants.

But for those that want a real Christmas tree, here are some tips on selection and care. First, you want to buy a fresh tree. A fresh tree will last longest in the house. The best way to obtain the freshest tree is to harvest it yourself at a nearby choose-and-cut Christmas tree farm or obtain a Christmas tree permit from the Black Hills National Forest.

How to select the freshest tree

If cutting your own tree is not possible, here are some tips for checking freshness of a tree at a Christmas tree sales lot. First, give the tree a light, but vigorous, shake. If it is fresh, only a few interior needles should fall out of the tree. If a pile of brown needles falls to the ground, it is not a fresh tree.

Next, reach into a branch and *gently* pull the needles through your hand as you move out towards the tip. The needles should bend, not break, as your fingers run across them. The branch should only slightly bend to the touch. If the needles break off completely this is another indicator that the tree has already dried out. Likewise, if the branch does not bend slightly but seems more like a

wooden stick, the tree has already dried out and is not worth buying.

What to do when you bring it home

Once you get the tree home, leave it outside in the shade while you set up the stand indoors. The choice of a stand is the most critical factor in maintaining the freshness of the tree once in the home. The stand should be able to hold one-half to one gallon of water. A new tree may absorb this amount on the first day. A good rule-of-thumb is a tree will use one quart of water per day for every inch trunk diameter at the base. If you have a tree with a 3-inch base, it may use three quarts per day.

Just before you bring the tree into the house, cut the base about one inch from the bottom. This will open the sap-filled pores that transport water through the tree. The base cut does not have to be slanted. The angle makes minor difference in the amount of water absorbed, so cutting perpendicular to the trunk is fine.

Do not drill holes into the trunk or whittle it smaller. This does not increase water uptake. Also brush off any debris or dirt on the base before placing the tree in the stand.

Once the tree is in the stand, add water and then *never* let the stand become empty. If the stand becomes empty for more than six to eight hours, the tree's pores plug up again. Water uptake will be significantly reduced. The tree will dry out sooner than expected and the needles will begin to fall.

If the tree stand does dry up for half a day or more there is nothing that can be done other than pull the tree out of the stand and recut the base – not a pleasant task once the lights and ornaments are already up.

Nothing needs to be added to the water in the stand to improve needle retention. The commercial "tree fresher" products do not significantly increase the life of the tree. The home remedies such as aspirin, sugar, soft drinks, and vodka do not work and may be harmful to pets (or partiers) that may drink from the stand.

Place the tree in a spot that receives only indirect light from the windows and not near any heat duct, fireplace, or your attempt to deep fry the turkey. Also keep the house at 40% humidity or higher, as lower will dry out the tree faster. Use lights that emit less heat, such as the LED (light-emitting diode) Christmas lights. This will reduce water loss from the tree and prolong its freshness.

Which is the best Christmas tree?

Each species has its good points, but the Fraser fir is one of the top favorites. The tree has a very pleasant fragrance, excellent needle retention - they will last the entire holiday season - and the branches are stiff enough to hold most ornaments (however, if heavy ornaments are to be placed on the tree go with a spruce). The bright green needles are white on the underside, and this makes an attractive display.

Balsam fir is another excellent choice though the needles do not last quite as long, and the branches are not as stiff. Canaan fir is like Frasier fir, and it is another popular Christmas tree.

Pines are common Christmas trees with Scotch pine the most popular though white pine is a very close second. Scotch pine has a pleasant fragrance and excellent needle retention; the branches are stiff enough to hold heavy ornaments.

Eastern white pine is another pine commonly sold at Christmas tree lots. The needle retention is not as good as Scotch pine and the branches are very flexible, meaning heavy ornaments may fall off. White pines do have very soft needles. If you are going to run into the Christmas tree in the middle of the night, this is the softest one!

Spruces are not as popular as Christmas trees due to their poor needle retention. If you want to have a

Colorado blue spruce as your Christmas tree, you should wait until a couple of weeks before Christmas to cut one and set it up. The needles may only last that long.

Once the needles begin to fall, blue spruces are about the worst tree in the house as the fallen needles are sharp and seem to find their way into socks and slippers. The branches are very stiff, however, and can support the heaviest ornaments. On a positive note – cats do not seem to like to climb blue spruce trees!

White spruce, also known as Black Hills spruce (picture next page), is not a commonly available Christmas tree at lots though it can be cut from the National Forest (with a permit). It does make a nice tree, particularly when cut fresh, though needle retention is poor. The tree also does not have much of a fragrance and occasionally Black Hills spruce trees can produce a slight musky odor when the foliage is bruised.

E-samples

Oak rough bullet gall

These knuckle size, dark green to brown galls laced oak shoots are very noticeable at this time of year. These galls are the work of the oak rough bulletgall wasp (*Disholcaspis quercusmanna*). They build these galls during the spring and summer.

The wasp left these galls this fall. The female wasp laid lay eggs on the buds. The eggs will hatch in the spring and the larvae feeding will create a small gall on the unfolding leaf. Later, the gall wasps emerge from these galls. These wasp adults will lay eggs on the new shoots.

The larvae that hatch from these eggs feed on the tender shoot. They secrete a plant growth regulator into the plant tissue as they feed which causes the shoot to form a wood gall around each larva. They live and feed in this home, forming a pupa in late summer and emerging in the fall.

The galls are most common on bur oaks (*Quercus macrocarpa*) but are occasionally seen on swamp white oak (*Quercus bicolor*). The mass of galls can girdle a shoot. This can result in some dieback, but this is rarely a problem.

Willow cone galls

Pine cones on willow? Is this a Christmas display? No, the cone-like galls at the tips of the branches are willow cone galls. These are the work of a small midge, *Rhabdophaga strobiloides*, which is a fly. The adults, which resemble gnats, place a single egg on the developing terminal bud in the spring.

Once the egg hatches the feeding activity by the developing insect prevents the bud from opening and forming a shoot and leaves, Instead the tissue just continues to enlarge as a bud.

The maggot (the name for fly larvae) feeds in the cone-like gall all summer and remains inside all winter. Come spring the maggots will become pupae then emerge as adults.

The galls are mostly a curiosity rather than a threat to the willow's health. Just enjoy the Christmas display!

Samples received/Site visits

Lawrence County, Mountain pine beetle

A frequently heard comment at the end of the mountain pine beetle (MPB) (*Dentroctonus ponderosae*) epidemic was that the insect disappeared. This was incorrect. The insect is native to the Black Hills. It did not disappear. The population just declined to endemic levels.

This meant there were fewer beetles so they could not kill large pockets of trees. But they were still around, making a living by killing a few stressed trees here and there across the Black Hills. That was until now. But this does not mean another epidemic has started.

We are seeing larger pockets appearing in the northern Black Hills. Last week, Kurt Allen, Forest Service entomologist, and I walked through a pocket of about one hundred infested trees west of Cheyenne Crossing. The trees are filled with small, grub-like, larvae that are ready to hibernate for the winter.

These will resume feeding in the spring, become pupa and emerge as adults beginning in late July. The beetles, and the blue-stain fungus they carry, left their now dead host to find new host trees.

They usually do not fly far, attacking new trees within a hundred yards of the tree they left. This means the pockets of dead trees expand each year result in large swaths of dead trees.

But we have not seen that yet. So far most of the pockets do not expand but instead the beetles disperse. This is common behavior of endemic populations.

Lincoln County, Ash bark beetles

This was a spot to look at a branch that the tree owner thought was “filled with tiny emerald ash borers.” These were not emerald ash borers but the native eastern ash bark beetle (*Hylesinus aculeatus*). These small (less than 1/8 inch long) beetles are fond just beneath the bark in autumn and winter.

The adult beetles are stout-bodied and mottled grays and browns. They are spending the winter in small notches cut just beneath the bark. They are one of the first beetles to fly in the spring (and will happily buzz around your house if brought in with the firewood).

The beetles live in stressed ash trees or even those that recently died. They are often found in ash trees that are infected by emerald ash borer.

Minnehaha County, Dying walnut tree

This stop was to look at a dying black walnut (*Juglans nigra*). The tree had several large dead limbs. There were also watersprouts shooting up from many other limbs. These are common stress signs in trees.

But what was the stress agent? These can be abiotic agents such as drought or biotic agents that can range from borers to cankers. The likely agent for this decline was root damage.

The flare roots were rotting and had already lost their bark. The bark along the lower trunk was also loose. The

decay was started by two soil disturbances – trenching and fill – that killed or severed roots several years ago.

Trees take a long time to grow. They also can take a long time to die. This means there can be a gap between when a tree was injured and when it begins to decline.

The decline has resulted in the loss of supporting roots. There is a high likelihood that the tree will fail. It should be removed.

Pennington/Minnehaha Counties, Spruce needle disorder

We have received samples from both ends of the state (and Minnesota) of spruce needles that are either bleached or banded. There are fruiting structures on the affected needles. They may be related to the symptoms. We are isolated the fungi (which is not the Weir's cushion rust) and will update in a few weeks.