# Pest Update (January 17-24, 2018)

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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 particular 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.



## Plant Development

The eagerly anticipated January thaw has arrived throughout much of the state this past week. While the warmer weather has been a welcomed relief from the cold, it is alarming some tree owners as they are noticing their evergreens turning brown.

## Timely Topics

My evergreens are turning reddish-brown, should I spray them with an anti-transpirant? I had a couple of folks ask this question recently and one person also sent me a web link regarding these products. People see their evergreens turning brown, assume it's because they are drying out and look at anything that holds water in the plant as a good thing.

Evergreens turn brown during the winter for many reasons. Scotch pines (*Pinus sylvestris*) naturally turn a yellow-green to brown and so do Russian-cypress (*Microbiota decussata*). However, most browning is due to winter desiccation, often called winter burn, from the plant giving up moisture on warm windy winter days that it cannot replace through a frozen stem and roots. While spraying a film on the plants to prevent the water loss sounds like a good idea, it may not work. They can also turn a blue spruce into a green spruce.

What is an anti-transpirant? Plants lose water to the atmosphere through transpiration. This is an essential process and is the driving force for water movement through the plant. As the water evaporates from tiny pores on the leaves (called stomata), it is pulled up as a continual chain through the stem and roots. The plant is able to move this water without doing any work – the transpiration process drives the movement.

Anti-transpirants are designed to retard or stop this water loss from the leaf. The most common anti-transpirants work by creating a physical barrier to the release of water vapor by the plant. The barrier is created with acrylic, latex, or wax that form a film over the leaf surface plugging many of the tiny pores.

The thought behind the use of anti-transpirants is by plugging the pores the water will not transpire out of the foliage so the plant will not dry out and turn brown. Unfortunately, this is often not true and in some instances can even make the problem worse. The real problem is these products can work too well and last too long, often into the growing season and that's where the real problems begin.

First, water loss though the leaves by transpiration is a normal process that we usually do not want to interrupt. As mentioned earlier, this is the driving force for the circulation of water through the plant. Retarding the transpiration process can reduce water movement into and though the plant and along with this all the nutrients and growth regulators that are carried by this stream.

Water escaping from the leaves also provides a cooling benefit to the foliage, much as sweat cools our skin. The evaporative cooling as the water vaporizes is reduced by plugging the stomata so the leaf heats up, sometimes 15$^{o}$F or more.

Second, not only do anti-transpirants retard the movement out of the leaves, they also retard the movement of carbon dioxide into the leaves. Carbon dioxide is the essential building block for the sugar-making process of photosynthesis. Anti-transpirants not only reduce water loss, they can reduce photosynthesis. So there are a lot of negatives to the use of anti-transpirants. One of my favorite quote from a study on the use of anti-transpirants on evergreen seedlings in windbreaks was; “Tree survival was inversely proportional to their effectiveness.” In other words, the better the anititranspirants worked at plugging up the pores, the lower the survival rate of the trees.

Another study on the effectiveness of anti-transpirants in protecting evergreens from winter burn found that most products actually slightly increased the browning rather than reduced it. The problem was the material was still working six months later, now summer, when you do not want to reduce loss at all.

Can anti-transpirants be helpful? Possibility, but to reduce the winter desiccation the film cannot be placed on the foliage until the plant is completely dormant, sometime in early November. They need to be applied when the air temperatures are in the 40$^{o}$Fs and they have to completely wear off by late winter. This is a tough recipe to follow.

The short answer is that the best means of avoiding or reducing winter burn on your evergreens is to water in late summer and fall so the plant enters winter healthy, not stressed. While anti-transpirants are sold to combat this dehydration, they are not the quick and simple solution they appear.

**Emerald ash borer concerns this winter**

There seems to be a lot of homeowners still having firewood delivered to their home this winter. I took this picture of a pile of ash firewood that was just delivered to the home and the owner was in the process of stacking it. I asked where the wood came from – in a friendly way – and he thought the dealer was cutting trees out of old windbreaks near Parker. At least the wood probably was not coming from Minnesota, Nebraska, or Iowa, all states with known infestations of emerald ash borer. If an infested tree is cut down in

the fall, bucked and split into fuelwood then sold that winter, any wood still remaining in May can have adult beetles emerge from it. Emerald ash borer can only develop in a living tree, they will not attack a dead one so the concern is wood that was cut this fall and sold. Wood that has been split, the bark removed, and dried more than a year is not a concern as any emerald ash borers would have emerge from the wood the previous summer.

So a quick reminder if you are having firewood delivered to your home and it contains ash. Ask where the trees were cut and were they cut this past fall or before last spring. Ideally the trees are from a local in-state source and were harvested and split last spring before beetle emergence.

## E-samples

**I have this picture of an eastern white pine that turned from an attractive bluish-green to an ugly yellow-green.** The question; was this winter burn? The tree apparently does this every year and it seems to be the worse in a grouping of eastern white pines (*Pinus strobus*), with some maintaining their attractive bluish-green needles while others turn yellow though not as bad as this one. The problem may not be winter burn at all, some eastern white pines also go through a color change in the fall, such like Scotch pine, only to have the normal color resume as the weather warms in the spring.

**I found D-shaped holes in my ash tree, is this emerald ash borer?** Fortunately, not. True these are D-shaped holes that were created as the borer emerged from the tree but the tree is not an ash, but an ash-leaf maple generally known as boxelder (*Acer negundo*). While it is hard to tell the scale of the D-shaped hole, it most likely was created by the maple borer (*Agrilus masculinus*). This is a close relative to the emerald ash borer, but it is native to South Dakota and attacks declining trees rather than healthy one.

This brings up two requests to anyone that submits pictures of D-shaped holes in a tree – first, place something next to the hole, even a finger, so I have a sense of scale and two, take a close up picture of the tree (which these folks did) as well so I can see whether or not it's an ash.

I **received this picture of a deer rub** from Josh, one of the South Dakota Department of Agriculture foresters in the Black Hills. As discussed in the November 28, 2017 *Update*, deer rub trees to 1) remove the velvet from the antlers and 2) to mark the tree as a signal this is their territory. Most of the damage we see is not from deer removing velvet – that occurs over a relatively short time period in the fall - but from a few dominant bucks marking out their space. They begin rubbing sooner and continuing rubbing longer into the season. When they chose a tree, they rub more of it and will continue to come back to continue rubbing it during the season. These are the problem deer and it appears that they have killed this tree.

Usually if the bark has been removed more than one-third the way around the stem, the tree *may* not survive. If it's more than two-thirds around the stem, the tree *will* not survive. It may send up a few sprouts along the base, but it will probably never recover to be an attractive tree. Note it's the circumference that the deer rub, not the length that determines survival. Rubbing the bark off around the trunk severs the connection between the leaves and the roots. This can reduce the amount of food reaching the tree's roots and result in their starvation.

## Samples received

Fall River County **What is wrong with this ponderosa pine?**

Anthony, another one of our Department of Agriculture foresters in the Black Hills, send this picture and some samples. These pine shoots are presenting the classic symptoms of injury from a growth-regulator herbicide – abnormal thickening of the tips. The most common herbicide I have run across that causes these symptoms is picloram. Tordon is a common herbicide that contains picloram as its active ingredient and it is used to manage broadleaf weeds. The label also mentions it can be used to kill woody plants, such as pines, but sometimes people do not read that far. The label also mentions not to use it within the rooting zone of desirable trees. This distance is much farther out than most applicators realize. The rooting distance can be at least as far from the tree as it is tall. So a 40-foot pine may have roots extending out from the trunk at least 40 feet.

However, while this swelling is a classic symptom for herbicide injury, this is not the only possible causal agent. The samples were covered with striped pine scale (*Toumeyella pini*), a close (and western) relative of the pine tortoise scale (*T. parvicornis*). These are soft scales that feed by sucking the sap from the shoots. High populations on a shoot can stunt the development of the new growth and also cause some distortion. The other symptom of high scale populations is the presence of honey dew that is excreted by the scales as they feed and black sooty mold that colonizes this sweet substrate. The shoots submitted for testing were also covered with the mold.

There is no rule say a plant can only have one problem at a time so it may be a combination of both. I know it has a high scale population. The only way to know for certain if picloram is responsible any injury is tissue testing and the analysis will be covered in an upcoming *Update*.



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