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

The weather started warm but dipped this past week then gradually warmed again. Day temperatures have returned to the 60s. The nights are now in the high 20s or 30s.

This is our current growing degree day (GDD-base 50) accumulation for communities around the state. We are in triple digits everywhere in the state.

Aberdeen	150
Beresford	256
Chamberlain	273
Rapid City	216
Sioux Falls	222

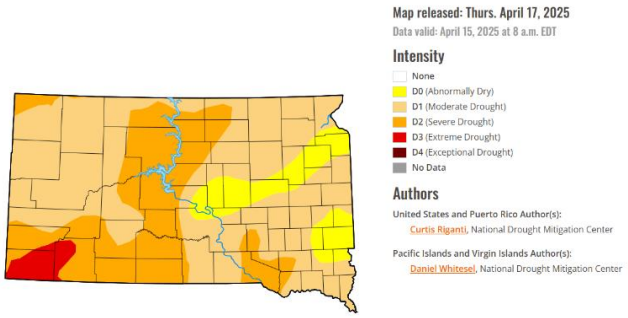
The boxelders (*Acer negundo)* are in flower. They are one of the last maples to bloom. A more attractive display is the plums that are beginning to flower.

Drought monitor

While the little precipitation we received last week is a plus we are still behind in moisture. We need at least two inches of rain in the next two weeks just to catch up!

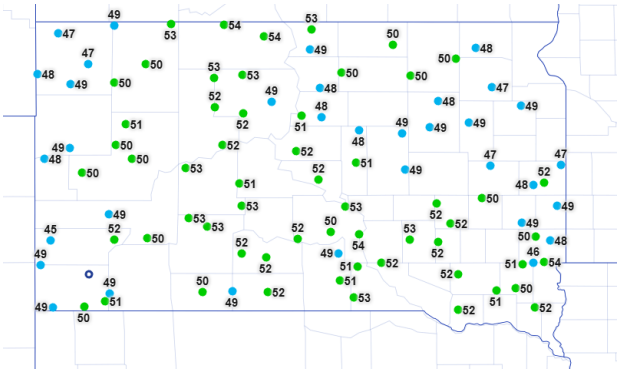
We have streaks through the state classified as "Abnormally Dry." About half the state is still classified as "Moderate Drought" with the southwestern counties as "Extreme Drought."

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



Soil temperatures are now in the 50s across the state

The soil temperatures have been increasing across the state. Much of the state is now in the 50s at 4-inch depth in bare-soil. There are a few spots – mostly in the northeastern and northwestern part of the state - that are still in the 40s, but the high 40s so they will be at 50 this coming week.



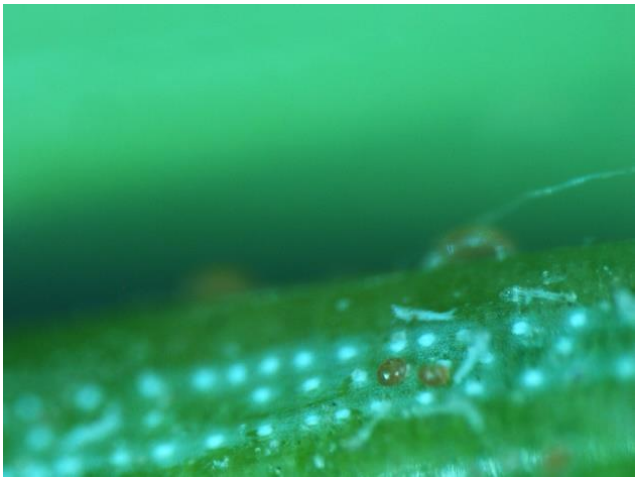
We are now at the start of the bare-root tree planting season, but it is just the beginning as root growth has not yet started on the 2-year-old established plant I have been checking. The white fine roots are not yet forming.

The key to successful establishment of newly planted bare-root seedlings is warm soils so the roots will grow and begin absorbing water. Cool air temperatures are also necessary to delay bud break until after the roots are functional.

Treatments to Begin Now

Spruce spider mites

Spruce spider mite (*Oligonychus ununguis*) eggs (see below) will soon begin hatching and the young mites will start sucking sap from the needles. The damage caused by this mite – bronzing needles - is not noticed until mid-summer though the damage will occur during May.



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 80ºF, is not effective as the mite is in a dormant egg stage and not easily killed by treatments.

Egg hatch starts when silver maples are blooming, and the peak spruce spider mite activity is between 200 and 370 GDD (late April-early May). Spruce spider mites feed by inserting their piercing-sucking month parts into the needles and removing the cell contents. Now is the time to treat.

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 as the active ingredient are some of the most common miticides used by commercial applicators. 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 contain Abamectin have translaminar properties meaning they penetrate the needle creating a reservoir of active ingredient.

Acephate is another active ingredient used against mites (it also is an insecticide). It is systemic so it can be applied through soil injections. Other insecticides such as Malathion may have mites listed on the label but have very limited effectiveness against them. Other insecticides, Carbaryl and Imidacloprid, can increase mite populations so should not be used.

Timely Topics

Emerald ash borer update

Most emerald ash borers are beginning to form pre-pupae. They are still in the overwintering chamber but have shrunken and straightened from their J-shaped form.

We begin to see pre-pupae at 100 GDD with pupae forming at 200 to 250 GDD. Adult emergence begins at 550 GDD. We are still looking at the end of May for adult emergence in the Sioux Falls area.

Planting bare-root trees

Bare-root is the most common means of planting windbreak trees and shrubs seedlings. Bare-root is also an inexpensive means for planting 4- to 6-foot-tall landscape trees.

Bare-root also provides better establishment than other planting methods such as containers. Since there is no soil attached to the roots of bare-root trees, there will not be any changes in soil texture around the new tree. Changes in soil texture can interfere with water movement, either drying out or drowning the new seedling.

The challenge is the narrow window for planting bare-root seedlings. The top – stem, branches, and buds – must be dormant. If the buds start to open, the expanding leaves will require water but that will be limited until the roots begin to grow. Do not plant bare-root stock that has already leafed out.

The fine roots need to start growing as soon as the trees are in the ground since root growth must precede leaf growth. Seedlings need water even before they leaf out. When the tops are exposed to temperatures in the 40oFs, water will be lost through buds and shoots. Water loss is even greater in evergreens as they will also be losing moisture through the foliage.

This means we need soil warm enough to start root growth at planting, not a week or two later. Root growth may begin as low as 42ºF for some tree species, but most require soil temperatures (at a 4-inch depth) higher than 50ºF. The soil temperatures in most of the state are now in the low 50ºFs.

Ideally, we will have a prolonged period of day temperatures below 60ºF along with cloudy, wet weather. The worse the weather for the planter, the better for the plant!

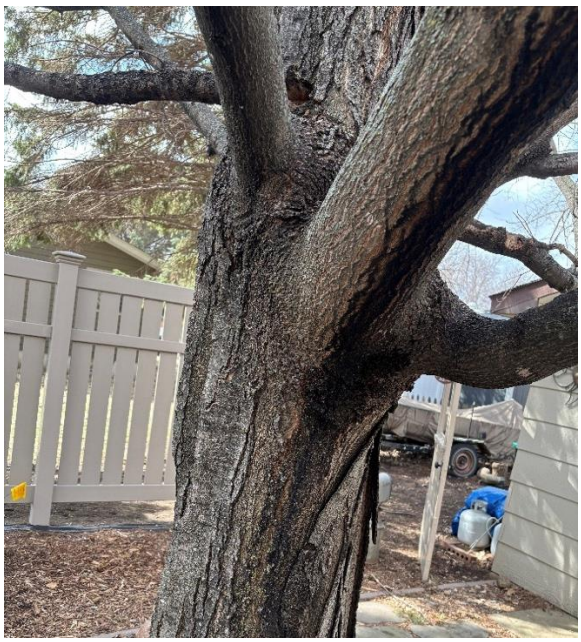
E-samples

Bleeding maple

The maple syrup season is ending as sap flow slows to a trickle. But sap will still leak from any old wound or crack in a tree.

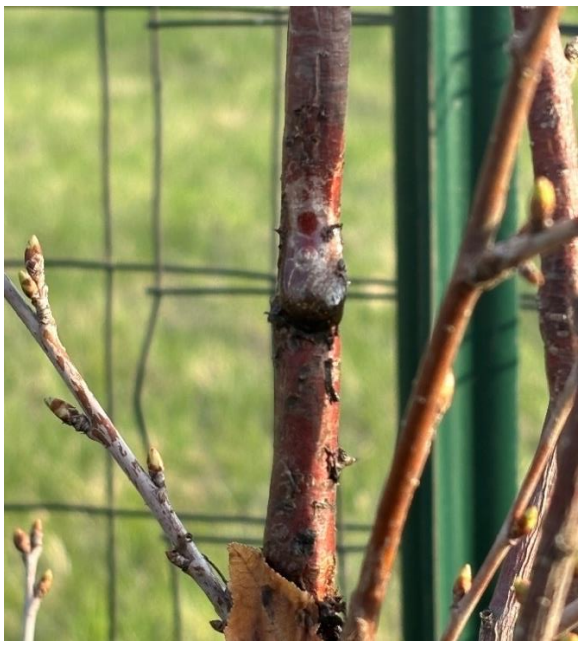
This is a maple tree that had a slow flow of sap coming from a branch and flowing down the trunk. The flow itself is not a concern – the tree is not going to “bleed” to death. The only concern is if the sap is leaking from a crack.

Depending on the length of the crack it may be an indicator of failure. Long cracks, especially those that originate at a branch union, should be evaluated by an arborist. They can determine whether the crack has increased the risk of failure.



Gummosis on Prunus

This is amber colored gum extruding from the bark of young Prunus trees (apricots, cherries, peaches, and plums). The question was what to spray?



Gummosis – the sticky goop – is a reaction, not the problem. Gummosis can be caused by mechanical damage such as string trimmers or even hail. Gummosis is also an indicator of borer problems such as the peachtree borer. Fungal canker diseases such as cytopsora canker can also cause gummosis.

The first step to determine whether pesticide treatment is needed is to find out the reason for the gum. This will require a site visit.

Samples received/Site visits

Beadle County, Not EAB but close!

I received some images of ash trees in Huron with exit holes on the bark. All the pictures but one showed the oval holes produced by one of two *Neoclytus* species – the banded ash borer (*N. caprea*) or redheaded ash borer (*N. acuminatus*). These are common borers of declining ash trees in the regions.

But one of the images showed what appeared to be a D-shaped exit hole. These are made by the emerald ash borer. The hole was not a crisp D but certainly close enough to require an investigation. Any emerald ash borer found in a new county requires the insect to be identified before we can confirm the find. We cannot confirm EAB just from an exit hole or blonded wood.

Once I found the tree, the hole was slightly rounded at the base. I have seen this when an *Neoclytus* emerges at an angle. Once I scrapped down into the wood, it was apparent that the exit hole was created by the emergence of one of these two insects. A pupal case was also found. These are two of the earliest emerging adult borers.

Lincoln County MN, Girdled bur oak

This was a bur oak presenting with dieback at the tips of the branches. There can be many reasons for this, but the tree owners wondered if it was the disease oak wilt (*Bretziella fagacearum*). This disease is mostly found from central Minnesota to Pennsylvania and south to Texas. It has not been in Lincoln County, Minnesota, but is occasionally found in Minnehaha County, South Dakota. Bur oak blight caused by the fungal pathogen *Tubakia iowensis* would be a more common disease.

The problem for this tree was not a fungal disease but a “people problem. The base of the tree was partially girdled by a cable. While there were short wood blocks holding the cable away from the trunk, the wood became imbedded in the tree. The cable and blocks of wood were disrupting the movement of water and food in the tree.

Lincoln County MN, Cytospora canker on spruce

This is one of three declining Colorado spruce trees. The lower branches are shedding their needles. Some branches have bluish white blisters of sap near where they are attached to the trunk. If these blisters are carved away, a sunken area of wood will appear. These may show small black dots, the fruiting bodies to the fungal disease cytospora (*Leucostoma kunzei*).

The disease can be present in healthy branches, so it is hard to find a Colorado spruce without any infection. The infected trees appear fine until the lower branches begin to decline, either from shading or age (or both). It seems that once the spruce branches from one spruce to the next start touching in windbreak, the disease begins to develop. Hence the disease appears a lot sooner in rows with 12-foot spacing than 16-foot spacing.

The simplest treatment is to prune out the dying, infected branches during dry weather. This will slow, but not eliminate, the spread of the disease. The best solution is to avoid planting Colorado spruce on droughty soils and with tight spacing.

Lawrence County, Old man’s beard on spruce

The pale green to yellow-green tassels hanging from spruce along the streams in the Black Hills are often a curiosity to folks. This is not a disease but old man’s beard (*Dolichousnea longissima* syn *Usnea longissima*), a lichen.

Lichens are not parasites – obtaining substance from its host – but an epiphyte – living on the host, even a rock! They are commonly found on declining spruce but are not the cause of the decline. The lichens are just taking advantage of the anchorage that has more light.

Lichens form from a relation between fungi and alga or cyanobacteria (commonly referred to as blue-green alga). Cyanobacteria produce sugar through photosynthesis while the fungi provide a structure and receives sugars from the cyanobacteria.

Lichens absorb nutrients, water and even toxins from the air. This means lichens are extremely sensitive to air pollution. Polluted air, especially containing sulfur dioxide, can either eliminate the lichens or limit their growth to a few inches. The same lichen growing in clean air can sometimes have tassels almost three feet long. Considering the long tassels on spruce in Spearfish canyon, the air must be exceptionally clean!

Despite the sensitivity to polluted air, lichens are tough. A recent study grew lichens under a simulated Martian atmosphere. They did not grow much but survived.

Lawrence County, Construction injury to pines

Everyone wants to live in a neighborhood nestled in the pine forests of the Black Hills. Unfortunately, we often slowly kill the trees we leave on the home lot when building the house.

The most common way we kill trees during construction is through burying the lower trunk and roots. The lower trunk cannot survive if covered with soil. The soil can keep the bark too moist, reduce gas exchange and create resistance for trunk expansion. Burying roots can reduce gas exchange.

This soil environment can slowly kill a mature pine. They can sometimes survive several decades of this stress before dying. This construction stress also makes the pine more susceptible to bark beetles.

The solution is to decide what trees can be kept on the new home lot without having to make a grade change. If the soil needs to be filled more than a few inches within ten feet of a tree's trunk, either remove the tree before building or change the building placement.

Minnehaha County, Rough bulletgalls on bur oak

The question on this stop was why there are different looking acorns on the oak trees. While there were some acorns persisting on the trees – along with their burry caps – most of the acorns were rough bulletgalls.

These galls are found on the white oaks in our state, bur oak and occasionally swamp white oak. A small gall

wasp (*Disholcaspis quercusmamma*) creates these galls. If you look closely, you might see a small hole in these galls and that marks the emergence of the female wasp. The galls with holes are empty.

The female flies to the leaf bud in the fall and lays a single egg. Once the egg hatches in the spring, the larvae stimulate the expanding leaf to form tiny galls along the main vein. During the summer adults emerge from these galls and insert eggs on the current year's shoots and twigs.

Once these eggs hatch, the larval feeding stimulates the tree to form a woody gall around them. This gall forms from the inner bark and cambial tissue but water flow through the sapwood is not interrupted so the twig does not dieback.

The galls leak nectar – also produced by the plant – and this attracts the attention of bigger wasps (the stinging ones we call hornets). The nectar also becomes infected with sooty mold, so the galls and shoots develop a dusty black covering. The previous year's galls that were found on last year's branches are almost black with age and mold.