



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 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 past week's weather was cool and mild. The day temperatures barely reached into the 80s for much of the state. There were exceptions. Rapid City daytime temperature reached 92°F on May 13, but only 62°F on May 9.

The temperatures were still warm enough that we added to the growing degree days (GDD-base 50) accumulation. We gained around 70 to 80 GDDs during the past week. Here are the total GDDs for communities across the state.

Aberdeen	293
Beresford	564
Chamberlain	572
Rapid City	538
Sioux Falls	502

There are two tree species that are in bloom now in the southern half of the state, Autumn Splendor buckeye (*Aesculus x arnoldiana* 'Autumn Splendor') and the Korean mountainash (*Sorbus alnifolia*).



Autumn Splendor buckeye has creamy yellow-green flowers that appear in terminal panicles at about 500 GDD. A nice feature of this buckeye cultivar is the flowers do not result in much fruit production. The annoying buckeyes are smaller and fewer in number than the more commonly planted Ohio buckeye (*Aesculus glabra*).

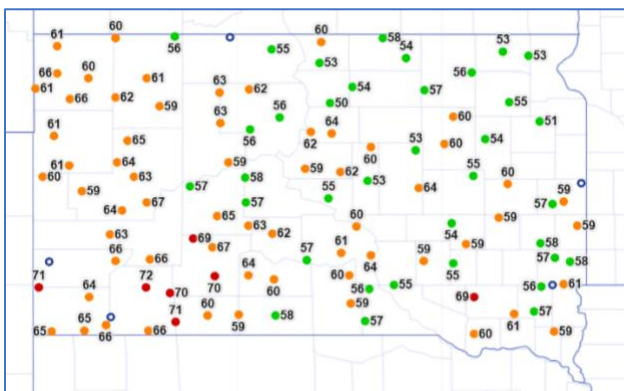


The Korean mountainash produces loose corymb of six to ten white flowers. The floral display is more attractive than other mountainash. The flowers have a faintly sweet fragrance rather than the pungent odor of the more popular European mountainash (*Sorbus aucuparia*). Korean mountainash has alder-like, simple leaves while other mountainash have pinnately compound leaves.

Soil temperatures

The soil temperatures at a 4-inch depth are in the 50s and 60s. We are reaching soil temperatures, high 60s to low 70s, that are optimal for tree root growth. This is especially important for bare-root woody plants. The transpiration demands of young tree seedlings during leaf out is extremely high. Bud expansion cannot occur until the roots begin to grow.

Unfortunately, we do not have other resource required for root growth – water.



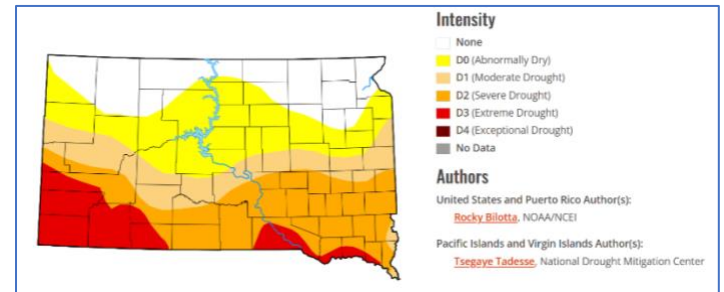
Drought monitor

The drought-free region of the state has changed since last week but not for the better. We have slipped to only about 20 percent of the state being drought-free – the counties in the northern edge of the state.

Another quarter of the state – a ribbon running through the middle - is classified as “Abnormally Dry.” There is another ribbon, about 25 percent of the state, which is classified as “Moderate drought.”

About a quarter of the state from Brookings to Pennington Counties are under “Severe Drought.” The southwest corner of the state, including much of the Black Hills, is under “Extreme Drought” along with parts of Bon Homme and Gregory Counties.

Here is the current map from the National Drought Mitigation Center at the University of Nebraska-Lincoln. It looks worse than last week’s map. We need the rain!



Treatments to Start Now or Soon

Brone birch borer

The bronze birch borer (*Agrilus anxius*) is a close relative to the emerald ash borer with a couple of big differences. Bronze birch borer attacks birch, not ash. Bronze birch borer is also native to North America. It did not arrive from another continent.

This means that our native birches, such as paper birch (*Betula papyrifera*), are only susceptible to attacks when they are stressed. But the insect is lethal to healthy Asian birch (*B. platyphylla*) and European birch (*B. pendula*) and their cultivars.

Susceptible trees can be treated with a bark/leaf spray of an insecticide containing Permethrin as the active ingredient and labeled for this use. The insecticide will kill the adults as they walk on the bark or as they feed on the leaves. Adults emerge at 545 GDD so the treatments should be applied now for much of the state.

A soil drench of an insecticide containing imidacloprid or imidacloprid + clothianidin as active ingredients and labeled for this use may also be used. This treatment will take a few weeks to be absorbed by the trunk and move through the canopy. If applied now it will be in the canopy in time to kill the adults as they feed on leaves.

Cedar-apple rust

Cedar-apple rust galls on the junipers are swelling and turning reddish orange. This is an indicator to begin treatments to protect susceptible apples and crabapples from cedar-apple rust. The galls are developing their

gelatinous, orange telial horns that will release teliospores to infect the apples and crabapples. The horns expand during wet weather and then shrink down during dry spells. They can expand and contract several times. They are popping open now (see e-sample, this issue).

The teliospores can be carried as far as six miles, though most apple and crabapple infections occur within three hundred feet of the cedar. The infection on apples and crabapples results in discolored foliage and fruit and premature drop of the leaves. Fungicides containing myclobutanil as the active ingredients can be applied beginning now and repeated three more times at 7 to 10-day intervals.

Codling moth

Treatment time is upon us as the adult codling moths (*Cydia pomonella*) are flying and beginning to lay eggs on apple leaves and the dime-size fruit. Once the eggs hatch, the larvae will burrow into the newly forming apple, usually near the base of the fruit, resulting in a trail through the apple filled with brown, powdery frass.

Codling moths feed on the apple seeds, not the flesh. The larvae often burrow through the apple's base, close to the developing seeds. If they just ate the seeds, we might see that as a benefit – we do not eat the seeds. The problem is the larvae make a mess of the apple flesh as they tunnel through the fruit – their paths are filled with crumbly apple flesh and insect poop – not very appetizing.

Common treatment options for homeowner apple trees are insecticides with either carbaryl or malathion as the active ingredient. A more recent option is the use of spinosad, a pesticide made from naturally occurring soil bacterium. While these are common active ingredients for fruit tree sprays, not all products containing these ingredients are labelled for use on apple trees. Always read the label.

Regardless of the active ingredients in the fruit tree spray, the first treatment for control of codling moth is applied ten days after petal fall with three more applications spaced about ten days apart. The other option is bagging the individual apples using the Japanese fruit bags when the apples reach about ½-inch diameter.

The use of fruit bags is no guarantee of control as the fruit may become infested before it reaches this size. But the bags do provide reasonable control of this pest. The bags also can improve the shine to the apple – worth a try.

Oystershell scale

Those teardrop pale gray bumps on the bark of trees are the dead female adults of the oystershell scale

(*Lepidosaphes ulmi*). The eggs began hatching beneath the shell of their dead moms at 350 DD and continue until now, 500 GDD (ironically, they finish dispersing from their dead mom around Mother's Day). The crawlers move out to feed on the new shoots.

Right now, they are very vulnerable to insecticide treatment right now. One of the best insecticides for the public to use on small trees is horticultural oils as these will kill the crawlers but have limited impact on the many insects that feed on the scale.

Summer horticultural oils (2% oil) can injure trees if applied at too high of rate or during hot weather (above 85°F). They cannot be mixed with sulfur fungicides. Oil should not be used as the leaves are opening. Applications of summer horticultural oils must be made before the buds open or wait until the leaves have fully expanded. Read and follow label directions.

If there is a large infestation, one that is resulting in tree dieback, hire a commercial applicator to provide treatments. They have other insecticides that are highly effective against this scale and other armored scales.

Timely Topics

Emerald ash borer update

We continue to monitor development of emerald ash borers in ash trees. We see pupae, no longer larvae, from Brookings to Dakota Dunes.

The pupae begin the stage as milky white rhombic masses with few features. They begin to form dark eye spots in about 10 days. After this, the body becomes a golden green and starts to resemble an adult. This process takes about three weeks.



This is a picture taken in the Dakota Dunes area of a pupa with eye spots clearly visible. It will be an adult soon. I expect to see EAB adults flying there later next week. The Sioux Falls area can expect to see EAB adults just after Memorial Day. The adults will be flying early to mid-June in Milbank.

More information on EAB lifecycles is available at:

<https://extension.sdstate.edu/sites/default/files/2023-05/P-00266.pdf>.

E-samples

Cedar-apple rust

I am receiving pictures of the cedar-apple rust fruiting bodies on junipers. The concern with cedar-apple rust is not with the cedar (junipers) but with the apples or crabapples. The orange gelatinized galls now appearing on the eastern redcedars and Rocky Mountain junipers are perennial so remain from year to year.



It usually takes about two years for the galls to develop before they produce these horns. The horns release spores that infect the apple and crabapple leaves. Later this summer, spores will be released from these infected leaves and carried by the wind to infect junipers.

The injury to the juniper from the disease is usually minimal, just a few scattered woody galls through the canopy. However, the galls can become so numerous on a juniper that the infection results in tip dieback. There are no fungicide treatments that will remove the woody galls that have already formed on the juniper. The only treatment is to prune them off.

Black rot of apple

The symptoms are associated with the fungal disease called black rot (*Diplodia seriata*, syn *Botryosphaeria obtusa*). This disease affects the fruit, leaves and branches of apple trees. It is sometimes mistaken for the bacterial disease fireblight (*Erwinia amylovora*) which can present similar symptoms.

Infected fruit will develop large brown rotted areas around the blossom end. The rotted tissue will often have concentric circles. The fruit will sometimes not fall but remain mummified and hang all winter.

Infected leaves develop frog-eye leaf spots. The name comes from the circular spots that have a tan center

surrounded by a reddish or purple edge. These symptoms usually appear by mid-summer.



Infected branches dieback to a canker – a reddish-brown sunken area of the bark. These are sometimes hard to see. Examine the area at the base of the dead or dying branch.

The disease most often appears in older trees. The infection may begin in branches that are declining due to cold temperature or drought injury. Once established in a tree it is hard to eliminate. The best management is to dispose of all fallen and mummified fruit before spring and prune out any dead or declining branches. Fungicide treatments are rarely used.

A site visit and bringing a sample back to the diagnostic laboratory will be necessary to determine the causal agent. Symptoms can provide us with clues, but further investigation is needed to determine many pathogens, including black rot.

Samples received/Site visits

Bon Homme County, Windbreak seedling mortality

This was a stop to look at a 2025 windbreak planting that had significant mortality among all the rows except for elderberries (*Sambucus*). The windbreak trees were planted in fabric and irrigated, so the care appears adequate. Usually when we see a situation such as this, herbicides are a suspect as the causal agent.

The owner thought herbicides had not been used either in 2025 or the previous year but was not sure what may have been applied by the renter. Since it may be herbicide-related foliage samples were taken from the elderberries and soil samples throughout the entire planting. The only herbicide detected was 2,4-D in the

elderberry foliage. Not likely to be related to the mortality in the planting during 2025.

The mortality started with the roots with the tops dying in response to the lack of water. This is an unlikely pattern with 2,4-D sprays.



So, what caused the planting failure? That is difficult to determine at this time – looking last summer would have been better. But the pattern - losses in most rows and these rows containing different tree species - usually indicates an abiotic stressor rather than an insect or pathogen. Unfortunately, the clues as to which stressor are difficult to determine a year out from planting.

Custer County, Pine engraver beetles infesting green slash

The telltale signs of adult pine engraver beetles (*Ips pini*) on the move are small piles of orange-brown sawdust on recently fallen pine branches or piles of slash. Slash refers to the cut branches and other woody debris piled or scattered after a logging operation.



If the bark beneath the sawdust piles is carefully scraped away, a tunnel will be found, often with a small beetle or two. These are the engraver beetles. Over the next few

weeks, the tunnels will lengthen by the female beetles, and side tunnels will be carved by their larvae.



This first generation will be content to feed in the fresh slash. But once the slash dries out it is no longer a suitable host for the beetle. The second generation of adults, which will appear in mid to late June, may attack live trees, especially if they are drought stressed.



Custer County, Oystershell scale on green ash

This was a good stop. Not because there was a pest problem, but they had managed the pest problem. The green ash had been infested for several years with oystershell scale. This is a serious problem with ash from Pierre to Rapid City.

The visible stage of the scale is the adult female that forms the oystershell shaped shell. Once shell begins to form, she is immobile for the remainder of her short life –

a couch potato. The young, mobile crawlers scurry out to the expanding shoots to find a spot to insert their piecing-sucking mouth parts and begin sucking out the content of cells just beneath the bark. Eventually the crawlers lose their legs, remain stationary, and form a hard, waxy shell which covers and protects the adults.

Most systemic insecticides have limited effectiveness against armored scales, such as oystershell scale, as the chemical does not concentrate in the tissue where these insects feed. However, one does work, dinotefuran. It is available under the trade names Safari and Zylam. These can be applied as a soil drench or as a lower (the first eight feet) trunk spray as it is readily absorbed through the bark. These are available to commercial applicators.



This tree was treated by a commercial applicator last spring (2025). The treatment worked as there were no new scale on the shoots that grew last year. The only scales are the old shells of scales that died a year or two ago. The empty shells can remain attached for several years.



Pennington County, *Cytospora canker* on Colorado spruce

This stop was about a concern of surfacing roots around a mature Colorado spruce (*Picea pungens*). There were trails of roots meandering out from the canopy into the small lawn. Concrete edging about 12 feet from the trunk was being pushed up by the enlarging roots.



The tree is at its peak of perfection – a beautiful symmetrical, conical canopy with dense branching from the base to the top. Colorado spruce has a short shelf-life, about twenty to thirty years. After that, a long decline settles in with canopy thinning and the lower branches declining.



The tree has a severely restricted root zone as the spruce is sandwiched between two driveways, townhouse foundations, and the street. The soil within

this small area is very compacted. These environmental conditions can cause roots to surface.

There is not much that can be done to relieve these conditions. Replacing the parched grass with a shredded bark mulch will help but there is no means of expanding the root zone. It is too late to do much anyway.

Colorado spruce, especially stressed trees such as this one, are susceptible to cytospora canker (*Leucostoma kunzei*). This is one of the primary stressors responsible for the decline of mature spruce. The lower branches were covered with small cankers covered with bluish-white resin. These cankers will enlarge with time and eventually girdle the branch. The branch beyond the girdle will die and the needles shed.



The best solution here is to remove the tree. The restricted space means it will be difficult to maintain the health of a mature (and large) spruce.

Union County, Spiny oak sawfly feeding on bur oak

This small caterpillar-like larva is feeding on bur oaks. The feeding has just started so I expect to see larger holes appearing in leaves as the season progresses.



This is the spiny oak sawfly (*Periclista albicollis*). The young larvae are light-green, semi-transparent with a shiny black head. The small dots seen in the picture are rows of developing short, forked spines.

Equally hard to see in this young larva are the six pairs of stub-like prolegs lining the abdomen. The number of prolegs is a means of separating butterfly and moth caterpillars from sawfly larvae. Sawflies have six or more pairs of prolegs on their abdomen while caterpillars have less than six pairs.

The spiny oak sawfly larvae feed during May, leaving the foliage dotted with small holes. The larvae drop to the ground to form cocoons in early June to emerge as adults next spring.

As the oak leaves continue to expand in the spring, the holes gradually enlarge. These holes are often overlooked until they become larger. Since the sawfly is long gone by then, tree owners are at a loss to explain the appearance of holes in the leaves.