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

Last week's weather was pleasant and mild. The warm sun was balanced with moderate temperatures – perfect for outside activities, if you did not mind the 20 mph winds! We expect windy days in May.

The moderate temperatures added to the growing degree days (GDD-base 50). We gained around 30 to 50 GDDs during the past week. Here are the total GDDs for communities across the state.

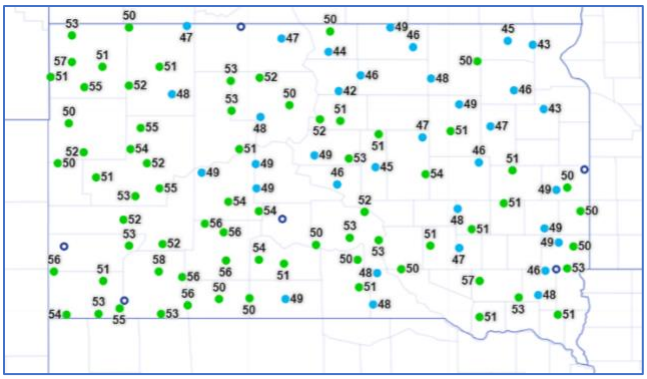
Aberdeen	224
Beresford	476
Chamberlain	488
Rapid City	457
Sioux Falls	421

Tatarian honeysuckle (*Lonicera tatarica*) is in bloom now. This was once a valuable windbreak shrub due to its tolerance to a wide range of growing conditions and few pests. This popularity waned in the 1980s when the honeysuckle aphid (*Hyadaphis tataricae*) arrived in the US (see site visits in this *Pest Alert*) and the plant itself became a pest in some regions. Now its planting is limited to a few cultivars.

Soil temperatures

The soil temperatures at a 4-inch depth are in the high 40s to low 50s. We have soil temperatures that encourage root growth. This is especially important for bare-root woody plants. The transpiration demands of young tree seedlings during leaf expansion is very high.

Bud expansion cannot occur until the roots begin to grow.



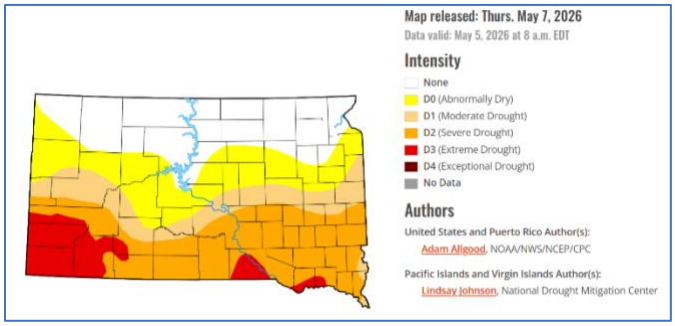
Drought monitor

The drought-free region of the state has not changed in the past several weeks. A little more than a quarter of the state, the northern quarter, is drought-free. If you are up in the counties bordering North Dakota, the drought has had little to no impact.

Farther south is a different story. Another quarter of the state – a ribbon running through the middle - is classified as “Abnormally Dry.” There is a thinner ribbon - about 15 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 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 the same as 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. platyphyllla*) 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. The adults emerge at 545 GDD so bark/foliage sprays will be applied in another week or two in the southern part 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 roots and move up through the canopy. If applied now it will be in the leaves in time to kill the adults as they feed.

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 with the wet weather.

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 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.

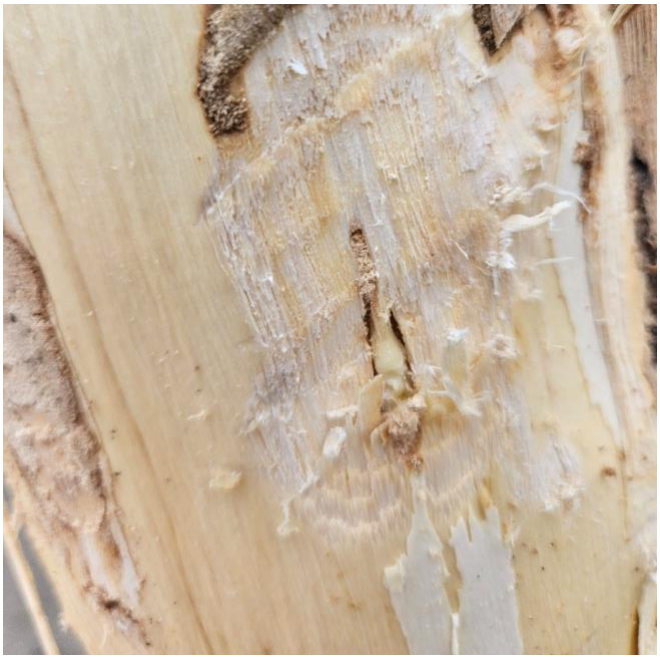
The use of fruit bags is no guarantee of control as the fruit may become infested before it reaches this size. But the bags do provide reasonable control of this pest. The bags also can improve the shine to the apple – worth a try.

Timely Topics

Emerald ash borer update

We continue to monitor development of emerald ash borers in ash trees. We see the transition from the larval to the pupal stage 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 Brandon area of a white pupa within its overwinter chamber. This pupa is just starting its transition. It will become an adult and emerge around Memorial Day. Adult emergence is expected to begin in mid to late May in Dakota Dunes and 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

Pine engraver beetle adults are infesting down branches and broken pine trees in the Black Hills

It starts as a trickle, but we are beginning to see adult pine engraver beetles (*Ips pini*). The adults overwintered in the litter layer of the soil. Now that temperatures are staying warm, the adults are flying to find suitable material – moist, green fallen or cut branches - to make a home for their young.

A male beetle begins the tunneling in the branches – the tiny orange-brown sawdust on the wood is evidence of their boring. The male will attract about two to four females to his nuptial chamber. After mating there is a quick divorce as each female burrowing her own gallery away from this central chamber creating a X pattern in the wood. She lays 30 or more eggs along the edge of her gallery.

These hatch in about 10 days. The small, white larvae tunnel is perpendicular to the parent gallery as they feed in the inner bark. The larvae feed for about three to four weeks then forms a pupa in an oval chamber at the end of the gallery. After another 10 days, the pupa becomes an adult which emerges to find a new home.

It takes about 40 to 50 days from the flight of these first-generation adults to the second generation. The first generation will be flying for the next few weeks so the second generation will be out in late June.

What is the concern about pine engraver beetles?

The pine engraver beetle is smaller cousin to the mountain pine beetle and is not typically a tree killer. It is content to spend its life feeding in recently down trees and branches. The pine engraver beetle has difficulty attacking healthy pine trees as it cannot contend with the sap. It is easily pitched out.

But under severe or extreme drought – which is the status of the Black Hills – the trees are easier prey as their capability to pitch out beetles is much reduced. Unless we have plentiful spring rain during the remainder of May and June, we might see these beetles having some success in their attacks.

Another factor is all the down trees and branches after the two windstorms that raced through the Black Hills this past winter. This woody debris is still green - so perfect homes for the beetles. There are lots of “homes” for them to raise big families this spring.

But this green material will dry out by end of June so the second generation of beetles may seek out weak trees as their new homes. The combination of a large second-generation of beetles seeking homes and drought-stressed pines is the perfect recipe for a pine engraver beetle outbreak.

Let us hope we have some good rain this month and June. If so, the concerns about the beetle will fade away. We just must wait and see.

Unfortunately, there are some services going to forested neighborhoods of Rapid City telling homeowners their discolored pine trees are infested with pine engraver beetles. They are telling owners that they need to quickly remove their pines before the beetles emerge. One told a homeowner all his pines would be dead by summer.

Some of the pine trees on these properties do have discolored needles, but the stressor is often diploida tip blight, a fungal disease, not the pine engraver beetle. This disease is rarely a tree killer, more a disfigurer. It is also a disease that can be managed with timely applications of a fungicide (see last week’s *Pest Alert*).

Slightly discolored pines, while not common, can be found in neighborhoods above Rapid City. This yellow to reddish-brown discoloration is due to a multitude of stressors from winter fleck, nitrogen deficiency, diplodia tip blight, and dothestroma needle blight, among others. Most ponderosa pines with discolored needles in Rapid City are not infested with pine engraver beetles.

The sex life of conifers

Pines, spruce, and other conifers do not produce flowers or fruit. They produce two different cones. Pollen cones appear briefly in the spring. They release their pollen and then the cones quickly shed.

The seed cones accept the pollen and produce seeds enclosed by woody scales. These are the “pinecones” we see on pines, spruce, and Douglas-fir. These cones may be almost eight inches long with layers of scales as seen with Norway spruce (*Picea abies*) or the 1/6-inch diameter compressed cones – the berries – that appear on cedars (*Juniperus*).

The spruce seed cones are forming now. The formation began last year; it takes two years to form seeds. They began last year as small buds. This spring they opened to form fine filaments to capture pollen released by the pollen cones. Once they complete this function, the cone scale closes tightly, and the cone swells and matures into the woody cones by late summer.

E-samples

Black knot on chokecherry

This disease frequently appears in the *Pest Alert.* Black knot is a very common disease on common chokecherry (*Prunus virginiana*) and the European bird cherry (*Prunus padus*), which is also called the Mayday tree.

The disease rarely appears on Amur chokecherry (*Prunus maackia*) or black cherry (*Prunus serotina*).

While common chokecherry is a frequent host, not every common chokecherry will have the disease. If a tree is infected, it will always be infected. Removing the knots from a tree will not eliminate the disease from the host. The knots are the second year of infection. The first year the infection presents only a slight swelling on the twig.

The simplest approach might be just to eliminate the trees that form the knots or live with them.

Samples received/Site visits

Brule County, Red wings on boxelder seeds

The call was about long trains of reddish wings on a boxelder (*Acer negundo*). The question was more curiosity than a concern about the tree.

The winged fruit of maples, including boxelder, are schizocarps. People also call them samaras or simply helicopters after the twitting pattern to the falling fruit. Red maples (*Acer rubrum*) often have red wings to their schizocarps but so can boxelders.

The red comes from anthocyanins, plant pigments that produce a red or purple color to tissue. The accumulation of these pigments occurs during cool weather. We have had enough dips in the spring temperatures to trigger this production.

Anthocyanins also accumulate under intense light. They are thought to serve as sunscreen. They appear in the leaves all seasons but are masked by the green.

Minnehaha County, Distorted and shriveled lilac leaves – cold weather injury

More calls are coming in about lilacs with distorted and shriveled leaves. The concern is someone in the neighborhood sprayed herbicide that drifted on to their lilacs. The symptoms are commonly associated with drift from growth-regulator herbicides, but they are not exclusive to this stressor.

Freezing temperatures as the buds are expanding with the new leaves can also cause these symptoms. Ice forming in the tender unfolded leaf causes some tissue to die. This results in black margins, wilting, and cupping of the leaves. Holes can also appear.

Lilacs must have been at just the wrong stage of leafing out during one of those episodes of freezing temperatures. The injury is widespread with calls from Watertown to Beresford.

There is nothing that can be done about the distorted leaves. Many of these will fall and soon replaced by new leaves.

Meade County, Honeysuckle aphid

These aphids were of major concern when they first appeared in the United States during the early 1980s. Its primary host, the Tatarian honeysuckle, was considered a pest-free shrub up to then. Unfortunately, the honeysuckle aphid arrived from eastern Europe into the Chicago area in the early 1980s and quickly spread out to wherever its native host, the Tatarian honeysuckle was planted.

The aphids feed in large colonies, sucking the sap from the plant while injecting the tissue with a growth

regulator. This results in the formation of witches'-brooms. These are clusters of stunted shoots and leaves that form at the tips. Many people confuse the damage with herbicide drift.

The aphids overwinter as eggs in the witches'-brooms and there are multiple generations per year. The feeding rarely kills the host but does reduce growth and makes the plant unsightly. There are many insecticides labelled for use against this insect but the most effective are applied as systemics. These work by being absorbed into the foliage to kill the aphids as they feed. Insecticides that work by contact will not reach the aphids inside the folded leaves within the brooms.

There are cultivars of Tatarian honeysuckle that are resistant to the aphid. The resistance is not perfect so some damage should still be expected. The three cultivars most used are Arnold Red, Freedom, and Honey Rose. Freedom has the best leaf quality while Arnold Red is the hardiest, adapted to even USDA Plant Hardiness zone 2. All are adapted to South Dakota, though their use has decreased due to concerns about invasiveness.

Pennington County, Diplodia tip blight on ponderosa pine

This stop was about a concern about pine engraver beetles. The discoloration of the pine needles was thought to be due to beetles. But the symptoms did not match. Instead, it was diploidia tip blight (*Diplodia pinea*).

While we do not lose ponderosa pines (*Pinus ponderosa*) to diplodia tip blight, it can leave the host disfigured and stressed. This fungal pathogen kills the expanding needles and shoots on 2- and 3-needled pines. It does not affect the 5-needled pines such as eastern white pine (*Pinus strobus*).

Diplodia tip blight is not usually a tree killer as the disease cannot invade older shoots. Mature branches and even the trunk can sometimes be killed by the disease if wounded by hail or other injury. They can also invade older tissue if the tree is stressed. The infection can also remain dormant for years in host tissue until stress weakens the tree's defenses.

The most common symptoms are new shoots which are stunted with their needles turning straw-colored. These needles may be covered with sap (resin) causing them to be stuck together. The affected needles turn gray by the end of the year and may hang for another season before falling.

The disease usually affects the lower two-thirds of the canopy. One common indicator of the disease is the lower branches are covered in straw- and gray-colored needles while the top of the canopy has normal color needles.

The first publication confirming diplodia in native pine stands of the Black Hills was in 1985 (*Plant Disease Reporter* 69(2): 136-137). However, the article mentions that it appears to have been there for some time.