South Dakota State University Extension

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 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 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 seeing some very warm days across much of the state. But if you are in the northern Black Hills, you might not know this as cool (and wet) weather prevailed during much of the past week.

These are the current growing degree days (GDD-base 50) for communities across the state.

Aberdeen	808
Beresford	1,007
Chamberlain	915
Rapid City	734
Sioux Falls	971

Catalpas and Japanese tree lilacs (pictured) are in bloom across much of the state.

Much of the western part of the state is classified as None for drought intensity according to the US Drought Monitor. I have spent many days walking in the rain in the northern Black Hills this year.

My West River rain gauge, the pond with the Wall Drug sign on the southwest side of exit 132 of I-90, is filling up from the many recent rains. The pond was dry last summer. This spring the water is already up to the base of the signposts. As a comparison, back in 2019, the posts were covered with water and the pond level was up to the base of the billboard.

The southeastern counties bordering the Missouri River are still classified as Severe Drought. These counties were listed as Severe Drought last year. I expect to see a lot of drought related tree failures there again this year.

Treatments to Begin Now

Apple maggot treatments start soon

Symptoms of an apple maggot (*Rhagoletis pomonella*) infestation are a dimpled, lumpy appearance to the surface of the apple. Inside the mushy flesh, the apple will contain the brown trails of the larvae, hence the other common name “railroad worms.” A sure sign of the pest – an unpleasant one if you happen to find one, or half of one, while eating the apple – is a small (1/4 inch), creamy white and legless larva in the fruit. The adults, resembling houseflies with banded wings, are beginning to fly and depositing eggs on the developing apples.

Once adult emergence from the soil begins (900 GDD), egg-laying on apples begins and continues for about a month. The larvae burrow immediately into the apple and feed for several weeks or more before dropping to the ground (usually in the infested apple). The apple maggot pupates in the soil and remains there until now when it becomes an adult fly.

Treatment for homeowner apple trees is either Carbaryl (Sevin) or Malathion applied starting now with repeated applications every 7 to 10 days for three or four more times. Apple maggots tend to emerge from the soil after a one-half-inch rain so some producers time applications with rainfall, but this is not necessary for home production.

Another means of managing the maggot is to place 3-inch diameter bright red balls in the tree - about two in semi dwarf trees (about 10-15 feet tall) and five in standard size trees (about 20-30 feet tall). Each ball is covered with a sticky material called Tanglefoot®.

The female apple maggot always flies to the biggest, brightest apple to lay her eggs and these balls will be the biggest, brightest “apples” in the tree. You cannot eliminate the pest by using this control, but the population can be significantly reduced. The “apples” can be made from material found in almost any garden store. Tanglefoot® can be found at most hardware stores; just spread it on the spheres you bought and sprayed (candy apple red is a good color choice). You can also buy the completed “apples” from several companies on the Internet.

Another control measure is to spray Kaolin clay on the fruit. The clay is not a true pesticide, but it irritates the adult apple maggot, and they fly to other fruit. The clay must be reapplied if we have some heavy rain. Many summers you can expect to make several applications during the season. The clay is sold as ‘Surround At Home®.

Spruce bud scales have started hatching

The spruce bud scales have begun to hatch and crawl out from beneath the shell of their dead mom. Treatment is an insecticide containing Carbaryl as the active ingredient and applied on the foliage and shoots near the tips.

Timely Topics

Emerald ash borer update

The adult beetles are flying now. I am seeing a lot of new D-shaped emergence holes associated with an empty overwintering chamber. We will see the peak of emergence in about another week. Since adults live for three weeks or more, late June and early July have more beetles on the wing than any other time of year.

If you want to see an adult beetle, stand near a small (20 foot tall) ash that has been previously infested and about one-third of the canopy is already dead. Pick a time between 10 am and 3 pm on a sunny warm day (70 to 80ºF) with no wind. Stand on the south side of the tree but be prepared to stand there for an hour or more.

While the beetles are out there, they are hard to spot. First, they blend in with the mottled bark and green leaves of the ash trees. They also do not stay in one spot for very long. Emerald ash borer adults rest for about a minute or two, then zip around for about three or four minutes before landing again – usually on the same tree.

Some take longer flights and can travel a mile or so over their life. But most are content to stay within 300 feet of their home assuming there are adequate ash trees in the vicinity. A few, especially if there is a lack of suitable hosts, will fly two to ten miles to find an ash. They can even fly 15 miles over a week to search for an ash tree - hence the conservative recommendation to begin treating ash if an infested tree is found within 15 miles.

Basswood bracts littering the ground

Considering all the trees that are missing leaves this year due to winter desiccation injury, it is not too surprising people start noticing leaf drop on other trees. The most recent is the “leaf” fall from American linden, also known as basswood (*Tilia americana*).

The long, narrow leaves falling to the ground are not leaves, but leafy bracts that are attached to the flower and fruit (a small round nutlet). This year they are dropping earlier, and the drop is heavier than normal. I have seen trees where the entire ground beneath the tree is covered by these bracts. While a nuisance, they are not a cause for alarm.

Chlorosis is beginning to appear in trees

I have seen numerous trees that have turned a bright yellow such as this swamp white oak (*Quercus bicolor*) in Brandon. If you look close at these yellow trees you notice that while the leaves are yellowish-green or even yellow, the veins in the leaves are still a faint green. Typically, the youngest foliage, the leaves on the tips, show the most severe symptoms.

The most common reason for chlorosis is the lack of iron in the leaves (though manganese deficiencies may be a problem with maples). It is not that iron is lacking in the soil, it is just that the alkaline soils have rendered the iron insoluble and not available to the tree.

The trees that are most sensitive to an iron deficiency are red oak (*Q. rubra*) and swamp white oaks along with river birch (*Betula nigra*). Silver (*Acer saccharium*) and red maple (*Acer rubrum*) may also suffer from iron deficiencies but chlorosis in maples is usually due to a manganese deficiency or both iron and manganese.

During stressful years, either too dry or too wet, where root growth is limited, we can also see chlorosis occurring on apples, crabapples, catalpas, and plums among other tree species. This is appearing in trees that are in the areas of the state impacted by severe drought.

The soil pH is the real problem. The ideal pH for trees is about 6.8 but even up to 7.3 we do not see much chlorosis appearing. Unfortunately, many of our urban soils have a soil pH of 7.8 to 8.0! Trying to lower soil pH is difficult in South Dakota as our soils are buffered and the amount of sulfur to be added would almost make the ground crunch! While changing the pH may not work, increasing the organic matter of the soil with a layer of leaf compost/wood mulch placed on the surface will help over time by increasing the array of soil micro-organisms that may aid in element uptake.

Adding iron or manganese to the soil will not usually help as this added iron also becomes unavailable due to the alkalinity (though adding a chelated form of these microelements may work). Iron and manganese can be directly injected into the trunk, a means of bypassing the roots. This technique is highly effective but needs to be repeated about every two to three years.

Pine loopers adults are beginning to fly

The pine looper (*Phaeoura mexicanaria* syn *Nacophora mexicanaria*) was in the May 24 issue of the Pest Alert. This insect was responsible for the defoliation of a long ridge of ponderosa pines near Pringle last August. These outbreaks are rare, only occurring every twenty to thirty years, but when they do there is severe defoliation in the affected stands.

There has been much discussion as to whether we will see a second year of defoliation. Sometimes the pine looper populations collapse as quickly as they appear and we only see one year of defoliation – at least that is what the few old reports of this insect say.

This may not be the case this time. The pupae survived the winter in large numbers and some are beginning to emerge as adults. The adult moths are mottled gray brown with zig-zag markings on the wings. They have a wingspan of about two inches long. They are night-flyers so may go unnoticed except for the landowners in the Pringle area that wonder about this strange moth flying around their porch lights.

We will be setting some night lights of our own to determine the flight period and distribution of the adults. This will help us determine whether the same area or an adjacent ridge will experience defoliation later this summer.

E-samples

Ash leaf curl aphid

The ash leaf curl aphid, also known as the woolly ash aphid (*Prociphilus fraxinifolii*), has been feeding for a week so the symptoms of this activity are beginning to appear. The symptoms of infested trees are curled leaves forming rosettes at the ends of ash shoots, especially the rapid growing terminal shoots.

If you unfold these curled leaves, you find these little white aphids (and they move very quickly once you open the leaflet they are in). You may also find ants as they “milk” the aphids for their honeydew and will protect the aphids from other threats.

There are few control options at this time as the leaves have already curled. Earlier in the spring an injection of an insecticide containing Acephate or a trunk spray of Dinotefuran can be done. These work as a systemic and will kill the aphids as they feed on the leaves but need to be applied before the aphid began feeding. Most insecticides applied to the foliage are contact poisons and will not reach the aphids living inside the curls.

Fortunately, the damage is limited to the leaves on the terminals and will not seriously harm the ash – emerald ash borer will do that.

Hackberry nipple galls

The hackberry nipple gall is appearing on hackberry leaves throughout the state. The elongated bumps on the lower surface of hackberry leaves are due to feeding by the hackberry nipplegall maker (*Pachypsylla*), a very small psyllid.

The adult psyllids, which resemble very small cicadas, overwinter in the warty bark of the hackberry and once the new leaves appear migrate out to them and lay eggs. Once the eggs hatch, the young nymphs begin feeding and while doing so inject a substance into the leaf which stimulates the formation of a gall to enclose and protect the insect.

The nymphs hatch out from these galls as adults in late summer and either fly about often collecting on window screens and even plugging up the intakes on air conditioners before settling in for the winter on the hackberries. Caulking cracks around windows and doors and repairing holes in screens can reduce the number that enter the house though the adults, at 1/10-inch, can often squeeze through screen mech.

While the galls do detract from the appearance of the tree, think of them as zits on a teenager, they cause no significant injury to their host. Occasionally some heavily infested leaves will fall prematurely but generally the tree capability to manufacture food is not reduced by the formation of these galls. Hackberries also continue to produce new foliage as the season progresses. New leaves form after the nymphs have settled in. These new gall-free leaves hide the interior damaged leaves.

Pesticides containing Acephate or Carbaryl as active ingredients can be applied just as the spring leaves are expanding; one application often reduces the extent of damage but will not eliminate the problem.

Venturia leaf and shoot blight on aspen

Venturia leaf and shoot blight (*Venturia macularis*) is appearing on quaking aspens in the Black Hills. I have received several pictures and calls regarding the disease. The disease results in shoot tips turning black and drooping forming a Shepard’s crook. The foliage will also develop blackened and browning lesions. The disease is most common in young quaking aspens, though less than 15 feet tall and rarely is a problem on mature trees.

Blame the wet weather for the appearance of the disease in the Black Hills, but we need the rain! Fortunately, the disease is not a serious problem for the trees.

Samples received/Site visits

Hand County, Winter desiccation injury on maples

The most common call this past week was about maple trees that only had leaves on the lower two-thirds of the canopy. Either the top of the canopy is dead or late in leafing out. This was a stop to look at one of these trees.

This is winter desiccation injury due to the combination of a dry fall and a long winter. The trees started the winter dry. While the deciduous trees are dormant during the winter, this does not mean that they cannot lose moisture through their shoots and buds.

The most common tree species affected by desiccation injury this spring are maples, birch, and walnut (*Juglans*). These same trees are the most sensitive to desiccation injury during bare-root winter storage.

The only treatment for these trees is watering (if not receiving an inch of rain a week) and patience. Do not prune out the “dead” for a few more weeks. Some trees are just beginning to leaf out now. If the bare branches are still bare after the 4th of July, they are dead and should be pruned out.

Jones County, Winter desiccation injury on walnut

This walnut (*Juglans nigra*) only had leaves on the lower half of the canopy. This is the same problem discussed under Hand County. Walnuts are also sensitive to desiccation during winter if the fall is dry.

The buds along the bare branches in the upper canopy are beginning to open. If the tree receives water during the week – set the sprinkler under it and turn it on for at least an hour every few days – the new leaves will continue to expand. The tree may completely recover by mid-July.

Pennington County, Codling moth infesting apples

I received a few apples that had large holes on the side or base of the fruit. The holes were covered with reddish-brown granular debris. When I cut the apples in two, I found small caterpillars – better to find them than eat them! These are the “worms” of the codling moth (*Cydia pomonella*).

The white to pink larvae (with a brown or black head) are found in or near the center of the apple or pear. They feed on the seeds, not the flesh of the fruit but do a lot of damage to the flesh as they tunnel through the fruit.

There is not much that can be done at this time. Once the larvae are in the fruit there is no insecticide that can be used. The best approach is remove and destroy any infested fruit.