

Pest Update (July 1, 2020)

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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, 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 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.

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Plant development for the growing season

We are right on schedule for plant development this year, maybe even a little ahead now. The summer-flowering bumalda spireas (*Spiraea x bumalda*) are in full bloom along with another summer favorites, Ural false-spirea (*Sorbaria sorbifolia*).



I received a picture last week of a summer fruit with the question; *What is this and is it edible?* This forgotten fruit, once a staple on the prairie, is the Nanking cherry (*Prunus tomentosa*). This bush cherry, native to Northeastern China and Korea, is adapted to our cold South Dakota winds and our droughty soils. It does not tolerate poorly drained soils, a trait held in common with all cherries.

This is a true cherry. The small bright red cherries form on a shrub that is usually about 10 feet tall (with an equal width). The plants can be very productive (15 to 25 pounds of cherries per plant) and may produce fruit for 20 to 40 years.

The downside – the reason we do not eat them anymore now that imported fruit is easy to obtain – is that the cherry is sour. It is not very tart, it just does not have a sweet taste, but still great for pies. The fruit is prone to damage at picking as it is easy to separate the seed from the fruit if handled too rough.

Treatments to begin soon

Apple maggot (*Rhagoletis pomonella*) is the most serious apple pest and treatments start soon



Symptoms of a maggot infestation are dimpled, lumpy appearance to the surface of the apple and the flesh often turning mushy and containing the brown trails of the larvae, hence the other common name “railroad worm.” 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”), creamy white and legless larva in the fruit. The adults, resembling houseflies with banded wings, will be flying soon and depositing eggs on the developing apples. The National



Phenology Network weekly maps now show the degree-day accumulation for adult emergence (about 900 GDD) indicates apple maggots should be flying in the southeastern part of the state now and most of the rest of the state by next week.

Once emergence begins egg-laying on apples will continue 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 a week or two from now.

Treatment is either Carbaryl (Sevin) or Malathion applied starting in another week or two with subsequent applications every 7 to 10 days for three or four applications. Apple maggots tend to emerge from the soil after a 1/2-inch rains so some producers time applications with rainfall, but this is not necessary for the home production.



Another means of management is to place 3-inch diameter bright red balls in the tree, about 2 in semi dwarf trees (about 10-15 feet tall) and 5 in standard size trees (about 20-30 feet tall) that are covered with a sticky material called Tanglefoot[®]. The female apple maggot always flies to the biggest, brightest apple to lay her eggs and these 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 – even

can find Tanglefoot[®] at most hardware stores or you can buy the completed “apples” from the Internet, try www.GardensAlive.com.

Still another possible 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 tend to then fly to other fruit. The clay must be reapplied if we have some heavy rains so expect to make several applications during a season. It often takes at least three applications to work. The clay is sold as ‘Surround At Home[®] and can also be obtained from www.GardensAlive.com.

Timely Topics

Emerald ash borer update

Emerald ash borer is slowing expanding in Sioux Falls. The slow pace, which was expected, is due to there being a lot of ash in the northern half of the city to absorb the beetle population. The adult emerald ash borer is not an adventurer, more of a couch-potato (perhaps tree-potato might be a better choice of words), content to stay near the tree it emerged from in the summer.

This means if the ash they emerged from is still alive and suitable for colonization, they will stay right there or maybe just move to a nearby ash. Most emerald ash borer adults do not fly farther than about 300 feet. But if they cannot find another tree, they will fly up to 15 miles to find a home.



This is one of the reasons that emerald ash borer is moving through Canton faster than Sioux Falls. Ash are a little more scattered in Canton and the beetles need to move to find new homes. Infested ash trees are now easy to spot throughout the city and there are pockets of infested trees on acreages south of town. This is a picture of infested ash about a mile south of the town. The intensive bark blinding, where the woodpeckers have pecked at bark to search for the borer, indicates this tree has been infested for at least a few years.

Drought injury beginning to appear in western South Dakota

The hot, dry summer has turned the moderate moisture stress to severe for trees and shrubs across western South Dakota.



The most common symptoms of moisture stress are leaves turning a lighter green than is typical for the species. Affected leaves also are showing brown and crisp margins and often the browning dips down between the veins. Some trees in the Custer area are already having leaves curl and fall, a symptom of severe stress. Eventually trees showing severe moisture stress will begin to dieback.

Evergreen foliage on drought-stressed trees, particularly seedlings, turns yellow to almost purple at the tips of the needles. Some of the older needles on drought-stressed trees, needles that formed three to five years ago, are beginning to drop prematurely.

There is not much that can be done at this time other than water. This is particularly important for new planting, whether they are seedlings in a new windbreak, or a tree just planted in a yard. A recently planted bare-root seedling need between a pint and quart of water per day for that first summer while a newly planted ornamental tree (about 5-foot tall) will need about 2 to 3 gallons per day. Most young tree belts are probably not receiving anywhere close to this amount and I suspect there will be a lot of replanting next spring.

Established trees will not need daily watering but still require weekly watering to survive this dry, hot summer. A 2-inch diameter tree (measured at 6-inches above the ground) should be receiving about 20 gallons of water a week and this is best applied slowly with a soaker hose placed near the tree. Tree roots typically extend out as far as the tree is tall, but the critical watering zone is a distance out about 2/3's the height. As an example, if the tree is about 24 feet tall, the watering should occur within 16 feet of the trunk.

Bark beetles in the Black Hills

The mountain pine beetle epidemic has been over for at least the past four years. This does not mean the beetle have left, just that the population collapsed, and the beetle is now limited to attacking small trees. The population will expand again someday, but hopefully not for a decade or two. Most people have already forgotten about it.

But not everyone. I still receive call about spraying for the mountain pine beetle. Last week I got an email from a resident in one of the housing associations near Rapid City that said a company was coming through the neighborhood and spraying trees for mountain pine beetle at \$60 per tree. He wanted to know if it was worth it.

Short answer - no. The epidemic is over, and we do not need to spray for the beetle anymore. The focus now should be forest management to reduce the impact of the next, inevitable, epidemic, not spray.



But we do have some bark beetles that are becoming a concern. These are the engraver beetles (*Ips*) which are common bark beetles in the Black Hills. The role of these nonaggressive beetles is as opportunists colonizing broken limbs, wind-thrown trees, and pines weakened by drought, fire, or lightening. However, when insect populations increase due to an abundance of suitable host material, they can invade and colonize healthy pines.

There are two engraver beetles native to the Black Hills, the pine engraver beetle (*I. pini*) and the six-spined engraver beetle (*I. calligraphus*). The six-spined engraver beetle is larger than the pine engraver beetle, 1/4-inch for the former, 1/6-inch for latter. The six-spined engraver beetle is sometimes confused with the similar-size mountain pine beetle (*Dendroctonus ponderosae*) due to the presences of pitch tubes on infested trees.

The attacks are also concentrated on the thicker bark of the lower 30 feet of bole, the same portion of the tree where mountain pine beetle attacks are concentrated.

The increase in engraver beetles can be tied to the large number of broken branches from the late snowstorm last year that provided habitat as well as the current dry conditions stressing the trees. While we do not generally worry about managing these insects in standing, live trees, if the populations continue to build, it may be necessary to spray high-value trees next spring. Fortunately, engraver beetle outbreaks are of short duration and usually last less than three or four years.

Japanese beetle adults feeding on leaves now



Japanese beetle (*Popillia japonica*) adults are out feeding in communities across South Dakota. I was able to find adults feeding on grape leaves this weekend in Brookings and Rick, one of the state's community foresters, reported them appearing in Sioux Falls. The Asian insect was first found in New Jersey in 1916 and spread all the way to South Dakota by 2007. It is now found in scattered communities across the state. It is

also in North Dakota, Minnesota, and Nebraska.

The adult beetles are about 3/8-inch long with a dark metallic green head and metallic tan wing covers. There are also several other closely related insects, the rose chafer (*Macrodactylus subspinosus*) to name one, that look similar, but lack the white tufts of hairs along the lower abdomen. The females lay eggs on grasses during mid-summer. The eggs hatch in about two weeks and the larvae burrow into the soil.

The Japanese beetle larva is a C-shaped grub that feeds on grass roots though they have been found feeding on the roots of container nursery stock. During hot, dry summers, the severing of turf roots can add to the water stress and large dead patches of turf can develop in grub infested soil. Skunks, moles, and shrews find the grubs tasty so heavily infested lawns will also be torn up at this time of year as these animals search for the insect.

While the larvae are a concern to anyone that likes turf, the adults can defoliate trees and shrubs. The defoliation is not complete, instead the adults feed on the soft tissue between the veins leaving a lace-like appearance to the foliage. Japanese beetle adults do not feed indiscriminately but prefer certain hosts. The trees that are their favorites include American elm (*Ulmus americana*), buckeye (*Aesculus*), linden (*Tilia*),



apple and crabapples (*Malus*), birch (*Betula*), cherry and plum (*Prunus*), Norway maple (*Acer platanoides*) and walnut (*Juglans nigra*). The two favorite shrubs are hydrangea (*Hydrangea*) and rose (*Rosa*).

The most common treatments for the adults are foliar sprays of insecticides labelled for control of Japanese beetles and containing acephate, carbaryl or imidacloprid as the active ingredient. A soil drench of an insecticide containing imidacloprid may also be used but should be applied in the spring before adults are found feeding on the leaves. Caution – do not apply imidacloprid to plants with flowers attractive to bees. These include crabapples and lindens.

E-samples

Ash rust is still showing up around the state



I received this picture of the gall on the petiole that is produced by the pathogen. We have seen a lot of this disease across the state, most likely due to the wet summer last year. There is nothing that can be done to treat the disease at this time of year. The disease is managed by fungicide applications made as the leaves are beginning to open – an event that occurred several months ago. Fortunately, the disease usually just results in disfigured leaves that drop prematurely and is not a serious threat to the tree's health.

Cedar-quince rust is appearing in eastern South Dakota



Despite the name “quince” cedar-quince rust has a wide host range and the host can be quince, serviceberry, hawthorn or even mountainash. The alternate host is “cedar” but not the true cedars (*Cypress*) but junipers (*Juniperus*). The spores are released from infected junipers in April and May and these can infect hawthorns, usually either the twigs or the fruit and by now the diseased fruit on the hawthorn will look like a pin cushion and be covered with pinkish aecia. These will be releasing spores that return the favor and infect the junipers this fall.

Cottony maple scales

The cottony maple scale (*Pulvinaria innumerabilis*) is becoming very noticeable on maples, though the insect can also be found on buckeyes (as seen in the picture on the next page) and lindens. This soft scale overwinters as an immature female

on the twigs and now some are just beginning to bulge with masses of eggs – almost looks like “Jiffy-Pop” on a twig. The eggs will soon hatch, and the young crawlers move about the twig until they find a suitable place to feed. Once settled, the female crawlers lose their mobility and remain stationary for the remainder of its short life (the males as adults are winged but do not feed).



The cottony maple scale is a soft scale, meaning it produces honeydew, a sticky substance that rains down on leaves as well as decks, cars, and any other object below the infested tree. The best solution for small trees (6 to 10 feet) is to treat with a horticultural oil now while the crawlers are out (they tend to hatch about the time PeeGree hydrangeas are blooming). Commercial applicators can also spray with an insect growth regulator containing pyriproxyfen at this time. A soil application of an insecticide containing imidacloprid or dinotefuran can also provide effective management of the scale on taller trees, but these should be applied in late fall or early spring, rather than now, to ensure good distribution of the pesticide through the tree’s canopy.

Important note: lindens are susceptible to cottony maple scale. However, Imidacloprid should not be used on lindens as the flowers are very attractive to bees and this systemic insecticide can be found in the nectar and pollen. The pesticide may not be in high enough concentrations to kill visiting bees but enough to affect their ability to fly and navigate.

Silver maple and wasps – an interesting tale of tree decline

Silver maples are nice trees, fast growing and create a lot of shade, but they also susceptible to many wood decay fungi. Finding a mature silver maple with rot is very common and I receive lots of pictures with dying silver maples peppered with holes. The questions accompanying the pictures is always, *What do I spray?*

I received a picture of a declining silver maple, made a stop by another maple where they had insects in a jar, and then Patrick, an extension entomologist, had a couple bring in some insects that were on their silver maples. Interestingly all three of these events have something in common.



The round holes on the silver maple are the exit holes made by the pigeon tremex (*Tremex columba*). This insect also goes by the common name horntail due to the



“stinger”, but it is a type of non-stinging wasp. The stinger is used to insert eggs beneath the bark of declining trees. The larvae feed in the wood for a year, sometimes two and Mom also leaves her larvae with a snack. As she is laying eggs, she is also introducing a white rot fungus which accelerate the decay and provides a better food for the larvae. The question of what to spray is easy – you don’t. The insect is more an indicator of a problem – decay – rather than being the problem. Trees that have show

cavities or dead wood with these round holes should be inspected by an arborist to determine whether the tree is safe or should be removed.

Another insect is often associated with dying silver maples and pigeon tremex and this is the giant ichneumon wasp (*Megarhyssa*). These are what the couple brought in the Patrick (and of course they wanted to spray). This insect is parasitic wasp that uses its ovipositor (the stinger) to inject eggs into the horntail larvae feeding beneath the bark. The ovipositor can be as long as 5 inches and works as a drill so this wasp can reach very far into the rotted tree! These insects should not be sprayed either – they are killing the horntails that are feeding in the rotted tree!



Samples received/site visits

Jackson County

What is wrong with these cottonwoods?



The holes and stippling in the leaves are due to feeding by the cottonwood leaf beetle. This is a common insect West River and I have seen trees completely defoliated by them. The adults are about 5/16-inch long with yellow wing covers that have several long black stripes. The larvae are black and have a couple of white spots on the side. They begin feeding by only on the underside of the leaves but eventually holes are created, and leaves can become skeletonized (the leaf blade missing except for the major veins).

Haakon County

What is wrong with this lilac?

The discoloration of the leaves and blackening ends are typical symptoms of bacterial blight of lilac (*Pseudomonas syringae*). Infection begins as brown spots that enlarge and blacken. The terminal tips of shoots also blacken as seen in the picture. The best control is to prune out the diseased tips to a foot below the symptoms during dry weather.

Minnehaha County

Leaves falling from a sycamore tree



We do not have many sycamores in South Dakota, but the ones we do have appear to be heavily infected by the anthracnose fungus this summer. I stopped by this home in Sioux Falls that had a large sycamore that was shedding leaves like it was fall. New leaves are appearing, but the lawn was covered with the older leaves.

The fallen leaves, which are littering the yard beneath the tree, are covered with large blotches that are associated with the veins, particularly near the base of the leaves. The disease can also infect the twigs resulting in a proliferation of stunted shoots appearing along the branch. There is not much a tree owner can do to protect their tree at this time other than rake up and dispose of the fallen leaves to reduce the amount of overwintering fungi.

This provides only limited control and usually fungicide treatments are necessary to control the disease to any degree. The trees can be sprayed with a fungicide containing propiconazole as the active ingredient at bud break and repeated two more times at 14-day interval. The foliage sprays do control the leaf symptoms but not the twig cankers. The tree can also be injected with a fungicide, similar as how Dutch elm disease treatments are done, to manage the cankers. While this suppresses leaf symptoms, it may be two or three treatments to reduce the infection so that the symptoms – leaf and twig – disappear. These treatments must be done by a certified pesticide applicator.

Minnehaha County

you test for herbicide?

What is wrong with these trees? Can



I get many requests each month from people wanting trees tested for herbicide. Usually they do not know who might have done it or what it might be, but they just want it tested and they send a box of leaves.

Herbicide drift is an issue in communities surrounding by ag land (though we have enough problem with

homeowners spraying weed-killer in town). Some herbicides are easily carried by even the slightest breeze and can move considerable distances.

But no one has a CSI lab where a sample can be dropped in and, within 45-minutes (minus commercial), determine the herbicide, whether it will kill the tree, and who did it. It can sometimes take a bit to figure out what to test, there are few standards to correlate residue to extent of injury, and it can be near impossible to determine who did it if the tree owner does not know. Knowing who might be responsible for the drift is critical to finding what was used, at what rate and when.

If South Dakotans want to file a pesticide complaint, they can do so at:

<https://www.state.sd.us/eforms/secure/eforms/E2093V1-PesticideComplaint.pdf>

This form is electronically sent to the South Dakota Department of Agriculture Division of Agricultural Services, Office of Agronomy Services and they will follow up.



The testing done for samples and calls to the *Update* sometimes do require herbicide analysis as part of the diagnosis process. A good example is this line of spruce adjacent to a bean field. Every spruce in the row was presenting the same symptoms - wilting and curling shoot tips. The hackberry in the second row had cupped and curled foliage. These are common symptoms of herbicide drift though not only agent that can cause them, so testing can be important to determine the cause.

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