



Tree Pest Alert



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Samples

John Ball, Professor, SDSU Extension Forestry Specialist & South Dakota Department of Agriculture and Natural Resources (SDDANR) Forest Health Specialist

Email: john.ball@sdstate.edu

Phone: 605-688-4737 (office), 605-695-2503 (cell)

Samples sent to: John Ball
Agronomy, Horticulture and Plant Science Department Rm 314, Berg Agricultural Hall, Box 2207A
South Dakota State University
Brookings, SD 57007-0996

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: Bess Pallares, Carrie Moore, and Dawnee Lebeau

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Plant development for the growing season

We are at about 995 growing degree days (GDD-base 50) in Sioux Falls. The lindens are in bloom across much of the state and their honey scented flower are adding a nice fragrance to the air. The flowering is just slightly ahead of schedule, but not by much.



Treatments to Begin Now

Apple maggot (*Rhagoletis pomonella*) is our most serious apple pest and treatments start now!

Symptoms of an apple maggot infestation are a dimpled, lumpy appearance to the surface of the apple and the flesh often turning mushy. Inside, 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"), 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 will start and 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 now.

Treatment is either Carbaryl (Sevin) or Malathion applied starting now with subsequent applications every 7 to 10 days for three or four more 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 (and we would be lucky to get a 1/2-inch rain!).

Another means of management 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. You can 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 rains. Many summers you can expect to make several applications during season. It may not require as many this dry summer. The clay is sold as ‘Surround At Home®’.

Timely Topics

Emerald ash borer update

The adult emergence is almost at peak emergence. It seems to coincide with the full bloom on lindens which we are beginning to see across the state. If anyone is looking to see an emerald ash borer adult, now is the time to be out hunting.

They are also likely to be disappointed. The adults are typically out in the middle of the day when the air temperatures are in the 70s and 80s. Once it gets hotter, they are less active (just like us).

They are most likely to be seen in the upper canopies of ash, not a spot that most people have access. The chances of finding one along a lower branch or trunk are very slim. And do not expect them to land on your hand.



But just in case, here is what to look for. The adults are a coppery-green and about 1/2-inch long. They are very slender; only about 1/16-inch wide. They are usually found walking or resting on the bark so their wings will

be folded beneath two long covers called elytra. These wing covers are a duller and darker green.

They can move very quickly so do not expect them to hang around long enough for a selfie.

Emerald ash borer progress in Canton

The one year change in the ash tree canopy in Canton due to emerald ash borer is very noticeable. While last June you had to look closely to see the tell-tale signs of an infested trees (thinning upper canopy, clusters of shoots and leaves in the lower canopy), now these trees are appearing throughout the town. This is consistent with experience in other small towns throughout the Midwest. Once the beetle is confirmed in a small community, the infestation becomes widespread within three years or so.



This is not the case for larger cities such as Sioux Falls where there are lots of ash to absorb the expanding populations so the spread throughout the town is slower. It has been three years since the confirmation of emerald ash borer in Sioux Falls and while I can find infested trees throughout the town now, they are in groupings rather than widespread.

Still the number of lightly infested ash throughout Sioux Falls is growing and I expect the infestation to be more noticeable by 2022-2023, just as we predicted back in 2018.

Fortunately, there are two big factors that are dampening the impact of emerald ash borer in Sioux Falls. First, the city began an ambitious program to remove street and park ash trees over a 10-year period. The removals have been targeted and throughout the community, so the loss is not as noticeable. This process will gradually thin ash out of neighborhoods.

Second, the residents of Sioux Falls have also been removing ash trees and, equally important, treating desirable ash trees. Sioux Falls has one of the highest treatments rates in the country. And just as herd immunity is an important strategy for COVID, it may also be helpful in slowing the spread of emerald ash borer in the community.

The more trees that are treated, the more likely an adult emerald ash borer will encounter a tree with toxic leaves when they are feeding. That means fewer adults to lay eggs on nearby trees.

Japanese beetles are out in Sioux Falls

Rick, our South Dakota Department of Agriculture and Natural Resources (SDDANR) forester located in Sioux Falls emailed me that he is beginning to see adult Japanese beetles. The adults begin appearing at about 970 GDD. The beetles are right on schedule.

Japanese beetles have been spreading across the state for almost a decade now. They entered the United States in 1916 through New Jersey, so we had about a century to prepare for it!

There is nothing nice about having this insect come visit South Dakota – though maybe it liked our South Dakota “Better than Mars” campaign to get folks to come to visit. After all, having a breathable atmosphere is a basic requirement for this insect.

The insect also likes a lot of the plants we have here. The larvae, which feed in the soil, feed on grass roots and can destroy a lawn. The adults, which are beginning to emerge now, have a wide host range and while roses, lindens, and hydrangeas are among their favorites, they feed on about 300 other plants including soybean leaves and even corn silks!

The adult Japanese beetles are 7/16-inch long, metallic green beetles with copper-brown wing covers. They have a row of white tufts of hairs just beneath the edge of the wing covers on each side.



You can find them feeding in colonies on bright, sunny days on linden leaves (as well as other plants) and rose petals. They feed on the upper surface of the leaves, munching on the foliage between the veins so the devoured leaf has a lace-like appearance. The females stop snacking to occasionally fly to the ground and burrow into the soil to lay eggs.

The adults live for about a month. July is the month where we see most of these beetles and by the end of August they are gone.

The most common treatments to kill the adults are foliar sprays of insecticides labeled for control of Japanese beetles and containing Acephate or Carbaryl as the active ingredient. A soil drench of an insecticide containing Imidacloprid may also be used but must be applied in the spring before adults begin feeding as it takes a while to concentrate in the leaves. Caution – do not apply imidacloprid to plants with flowers attractive to bees. These include crabapples, lindens, and roses.

Neem, a plant-based insecticide, is another choice, particularly when there is a concern for harming pollinators. Neem products that contain Azadirachtin are effective at deterring feeding for about three to four days. This means frequent applications and you will still see some buzzing around (but hungry). However, neem products that do not contain azadirachtin, are not effective. These products are usually sold as neem oil but always check the label.

E-samples

Ash leaf curl aphid on tips of ash shoots

The ash leaf curl aphid also known as the woolly ash aphid (*Prociphilus fraxinifolii*), is showing up across the state as it frequently does about this time each summer. The symptoms are curled leaves forming rosettes at the ends of ash shoots, especially the rapid growing terminal shoots. If you unfolded these curled leaves, you find these little “fuzzballs” that are aphids (and they move very quickly once you open the leaflet they are in).



Treatment is usually either letting them be – since any treatment will not uncurl the leaves and lady beetles do a pretty good job of control – or a soil injection of an insecticide containing Acephate or a trunk spray of Dinotefuran. These work as a systemic and will kill the aphids as they feed on the leaves (but this should be done in early spring, just after the leaves open). Most foliage applied insecticides are contact poisons and will not reach the aphids living inside the curls.

Pine tortoise scale

Pine tortoise scale (*Toumeyella parvicornis*) is a common scale on many of our mugo pines, but I also

see them on Scotch pine. Rick, the SDDANR forester in Sioux Falls, sent this picture of one on a Scotch pine.



The insect gets its name from the tortoise-like shell that covers the adult female. The shells are reddish-brown and slightly wrinkled. The females are the overwintering stage, and the females resume growth in the spring, maturing in June.

The eggs – as many as 500 per mom – are laid under the shell. Egg hatch begins at about 500 GDD and the young, called crawlers, come out beneath the now dead mom to move out to the new shoots and suck sap. Egg hatch ends at 1,200 GDD so we have a lot of young crawlers still scampering around the twigs looks for a place to insert their mouthparts and begin sucking sap.

The insects produce honeydew from their feeding and this sticky material will often coat the needles and shoots. The honeydew is also a food source for a sooty mold fungus, and this coats the needles and twigs with a powdery substance.

The best time to treat to suppress the population (you cannot eliminate them) is now. The treatment can be as simple as forceful sprays of water (two times 5 days apart) to dislodge the crawlers from the plant to insecticides to kill them as they feed or crawl along the twig.

The most common insecticides used for control contain Acephate, Dinotefuran or Imidacloprid as the active ingredient (and they must be labeled for scale control on pine). These are best applied as a soil injection rather than a spray as many insecticides sprayed on the shoots kill far more than the scale (including insects that feed on the scales) Horticultural oils are often listed as an option, and these are much less harmful to other insects. However, these should not be applied in hot weather and that seems to be all we have this year!

Samples received/Site visits

Minnehaha County, Possible herbicide drift on ash

I have been receiving numerous calls concerning herbicide drift. There has been a noticeable increase from last year. One of the most common trees that seems to be affected is the green ash. The most

common symptoms are curling of petioles and cupping of the leaflet blades. There are also many ashes presenting strapping – a stretching of the leaflet blades.



These are common symptoms associated with exposure to growth regulator herbicides such as 2,4-D and dicamba. We are conducting tissue analysis to look for residue in the leaves.

Minnehaha County, Pine wilt disease in Austrian pine

This was a call about dying ponderosa. When I looked at the trees, the grove of trees were not ponderosa pines but Austrian pines. An easy way to separate the two species is that ponderosa pine will usually have longer needles, 5 to 11 inches long, versus 4 to 6 inches long for Austrian pine. Ponderosa pines will also usually have the needles in clusters (fascicles) of 2's and 3's while Austrian pine is always in 2's.

The trees were almost completely dead with gray needles hanging from twigs so dry they snapped easily in your hand. The nearby Scotch pines were presenting the same symptoms. The problem was pine wilt disease, a disease that has frequently appeared in the *Pest Alert* this year.



While the disease - caused by a nematode but carried from tree to tree by a longhorned beetle – is now found throughout the state, the southeastern counties are being especially impacted with rows of dead Austrian

and Scotch pines windbreaks dotting acreages and yards.

The most common control is to remove and destroy the infected trees. This is usually accomplished by burning in the winter as the longhorned beetle move the nematode from now dead hosts to new live ones in the spring. This only slows the spread and eventually the entire row or grouping of pines is killed. Our native ponderosa pine is not affected by pine wilt.

Union County, cottonwood petiole gall

Just about every year I receive calls about fallen cottonwood leaves with “bumps” at their base. The first one for this year was from Union County.



This is the cottonwood petiole gall formed by the feed activity of a very small green aphid known as (you guessed it!) the cottonwood petiolegall aphid (*Pemphigus* spp). The insects begin feeding on the leaves in the spring and the galls forms around them. The aphids usually mature by July and the winged adults emerge from the galls and fly to another host. The alternate host is a plant that is a member of the mustard family. The aphid feeds on the roots.

The cottonwood damage from this insect is annoying to us – who wants to rake in July – but it does not harm the tree. The fallen leaves do not need to be burned; the insect has already left, so leaving these leaves will not increase the problem next year.

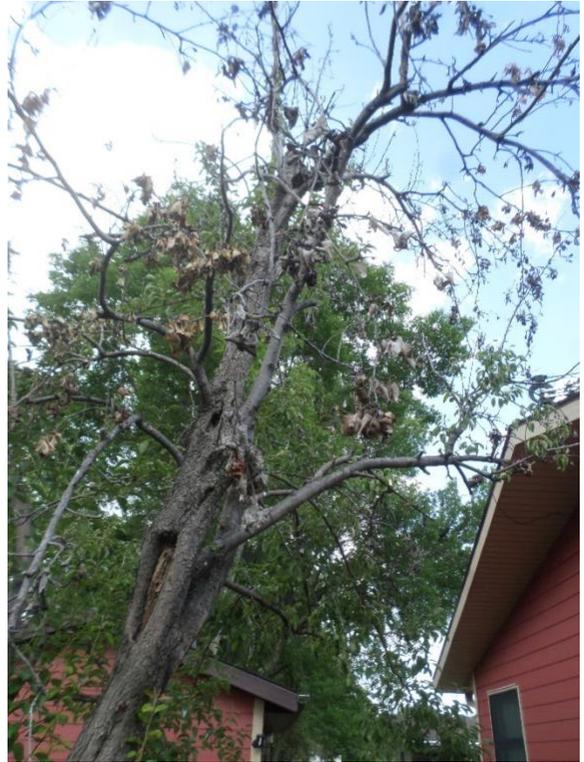
An application of dormant oil can be applied on the tree to kill the aphids before they move out from the bark fissures next April. Most people do not bother with spraying, just raking.

Yankton County, Fireblight on pear

A dying pear tree was the concern here. The pear (they could not remember the cultivar, but they said the fruit was tasty), was presenting with long shoot and branches that appeared scorched with blacked leaves hanging from them.

This is the bacterial disease known as fireblight. It is a common problem with many pear cultivars but can also be found on apple. It does not affect our stone fruits

such as cherries, plums, and peaches. Fireblight is also a common disease on a popular hedge shrub known as hedge cotoneaster.



Management of affected trees is usually done by pruning out the infected tissue before the disease spread farther into the plant. The pruning is performed during the winter while the bacteria is dormant. There is less chance of spreading the disease via the pruning tools during that time of year.

Summer pruning can also be done during dry weather, and we have plenty of dry weather this year. If pruning is performed now to remove the infected tissue, the pruning cuts need to be made about a foot beyond visible symptoms (blackening wrinkling bark) on the branches and shoots. The disease often extends farther into the tissue than is visible.

The pruning tools, hand pruners and hand saws, need to be disinfected between cuts as the disease can be transmitted on the small debris caught on or in them. A 20% solution (1:5 dilution) of Lysol or Pinesol and water can be used. Leave the tools in contact with this solution for 1 to 3 minutes before using them for the next cut. Household bleach can be used as a disinfectant, but will may corrode pruners.