South Dakota State University Extension

Tree Pest Alert

July 21, 2021 Volume 19, Number 23

In This Issue

Samples

John Ball, Professor, SDSU Extension Forestry Specialist & South Dakota Department of Agriculture and Natural Resources 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

This publication made possible through a grant from the USDA Forest Service.

Plant development for the growing season

The warm to hot weather has continued to advance the season. We are at about 1,750 growing degree days (GDD base 50). All our summer flowering plants are in full bloom now.

This also means some of our late summer treatments are coming a little sooner this year.

Treatments to Begin Now or Soon

The Zimmerman pine moth summer treatment is usually in August, but this year the application should probably start next week. The adults can be flying at about 1,900 GDD and that may be next week, about a week or so early.

The adult moths have dark gray wings with a zigzagging pattern and a span of about one inch. They will be laying eggs on the trunk of pines soon. These eggs will hatch in a week or two and after then, the young larvae will crawl along the bark to find somewhere to spend the winter, usually beneath bark flakes where the branches connect with the trunk. Any insecticide spray must reach and cover the trunk to kill these young larvae as they crawl over the bark.

The insecticides used to treat the larvae contain either Bifenthrin or Permethrin as the active ingredient and are labelled for this use.

Timely Topics

Emerald ash borer update

The eggs have started hatching and now very tiny larvae can be found burrowing into the inner bark (phloem) of ash trees. I could easily find 1st and 2nd instar larvae in trees during the survey this past week. The period between the beginning of adult emergence to 2nd instar

larva is between 5 to 9 weeks. Adults started emerging about 7 weeks ago, so we are right on target.

These are very small larvae, most only 1/4-inch long or less. They also are just beginning to thread galleries in the inner bark, so the tunnels are short and shallow. These tiny tunnels are not yet disrupting the movement of sugars through the tree.

And these tiny larvae would be dead if the tree had been injected this spring (or last year) with an insecticide. An advantage of early season emerald ash borer insecticide trunk injections is they can kill the adults before they lay eggs as well as the very young larvae before they do any damage to the tree.

Trees can still be injected at this time, but it will take about 10 days for the insecticide to move up the trunk and into the leaves, sapwood, and inner bark. Another two weeks of development will find 3rd instar larvae plowing, not threading, galleries.

These 3rd instar galleries are long enough to begin to sever the sugar pathway between the leaves and the roots. They are also wide and deep, so they are severing some of the sapwood as well as the inner bark, so these galleries are also restricting water movement in the tree. In short, you want to stop emerald ash borers before they reach the 3rd instar to maximize the benefits of treatment.

E-samples

Bacterial blight on lilac

This preliminary diagnosis is made from pictures and a sample/visit will be needed to confirm. However, the symptoms are consistent with what is seen with bacterial blight (*Pseudomonas syringae* pv. *syringae*). This bacterial disease is found on all species of lilac including the Japanese tree lilac. But white flowered lilacs, regardless of species, are more susceptible so in a row of purple and white flowered common lilacs, only the white flowered shrubs may be present symptoms.

The disease is also associated with drought, so not too surprising to see it this year. The disease was also common last year when it was equally as dry.

The symptoms begin in the spring with brown spots appearing on the foliage. The spots enlarge and the tissue along the midrib (the center vein) turns water-soaked and gray. The disease causes the infected leaves to appear deformed and wilt. The bacteria move to the shoot and the infection results in blackened and drooping shoot tips.

Currently the only treatment is pruning out infected shoots to limit the spread. The pruning should only be done during dry weather (which is not hard to find this year) and with pruning tools that are disinfected. The pruners must be cleaned with Pine-Sol, Lysol, or other disinfectant between cuts since the bacteria can be carried on the hand pruners or saw. Pruning cuts should be made 20 inches below any symptoms and the pruned shoots destroyed.

Carpenterworm in ash

Some declining ashes were felled in central South Dakota and these large, deep tunnels were noticed. The question, of course, was whether these were signs of emerald ash borer.

Fortunately, no. Emerald ash borer galleries are made just beneath the bark, in the inner bark and outer sapwood. The cross-section of their galleries is an elongated oval and filled with sawdust.

These galleries appear to be constructed by the carpenterworm (*Prionoxystus robiniae*). I do not have any pictures of the larvae (and that would confirm the diagnosis) but the very large galleries (more than 1/4-inch) round tunnels that are free of dust are signs of carpenterworm.

This insect makes the largest tunnels in an ash, larger and deeper than those made from the clearwing ash borer, another wood borer. The carpenterworm infests more than ash; elm and cottonwoods are also common homes. They also attacked dying trees so are more an indication the tree is dying rather than being the reason the tree is dying. The tunnelling does affect the stability of the tree and infested tree trunks and branches may snap.

The borers can live in the tree for years so using insecticides to achieve control is difficult and may take years. The larva cleans out its tunnel, so it always maintains a opening through the bark. An old control measure (1920s) was to have children threat a wire into the hole and down the tunnel to pierce the larva. Unless it can be turned into a video game, this activity is not likely to interest any kids these days!

Chlorosis

I received this picture of a very chlorotic red oak from Josh, one of the community foresters with the SD Department of Agriculture and Natural Resources. He took this picture in Spearfish, but you can find trees presenting these symptoms throughout the state.

Chlorosis describes a leaf blade where the tissue is yellow except along the veins where it may remain green. The most common cause for chlorosis is the lack of either iron or manganese in the foliage.

The lack of these microelements is not that they are missing in the soil. There is adequate iron and manganese in our South Dakota soils, it just is unavailable to the plant. Our alkaline soils reduce the amount of these microelements that stay in soluble form, so deficiencies develop.

Most trees are not sensitive to deficiencies of these microelements, at least up to about a pH of 8.0. But some oaks (pin oak, red oak, swamp white oak) and birches (river birch and gray birch) are sensitive to reductions in available iron. Maples (red maple, silver maple and their hybrids, the freeman maples such as 'Autumn Blaze') are sensitive to reductions in manganese and iron.

I also receive a sample of two branches from swamp white oaks growing in a yard near Beresford. One is the normal glossy green and the other is presenting chlorosis. Why the difference? It would take a pH test to be certain but the chlorotic tree (and another like it) are next to the house, near the foundation and drive, and the other (along with some equally green swamp white oaks) are out in the lawn. The soil pH is often highest near the house and drive as concrete foundations and drives can increase alkalinity in the adjacent soils.

These deficiencies are made worse by the drought since elements are moved into the roots with the water. The simplest solution is watering (and with water that is not highly alkaline, above 7.7 if possible). Another is using a wood chip/twig/shredded leaf mulch beneath and around the tree. This will slowly provide more organic material and a cooler, moister root environment – better for root growth.

Another solution – and a combination of these options may be use – is to inject the missing iron or manganese into the tree. These are highly effective treatments that can provide more than a year of benefit but should be performed by a commercial tree care company.

Clearwing ash borer

Any hole in the ash is likely to raise concern these days. These are holes that most likely made by the clearwing ash borer (*Podosesia syringae*). This insect, also known as the lilac/ash borer, was the most common pest of ash before the new kid on the block arrived and it still is a very common insect. I can easily find both clearwing ash borer and emerald ash borer larvae in trees – they seem to get along well.

The clearwing ash borer makes a round hole, not D-shaped as does the emerald ash borer, and the hole is 1/4-ihch diameter, about twice the size of those made by emerald ash borer. You can also find sawdust around base of tree (the holes) for the clearwing ash borer as their larvae maintain an opening through the bark to push debris out of their tunnels.

Another difference is the clearwing ash borer infests dying trees so infested trees often have extensive dieback in the crown. It is also common to find the pencil-size exit holes near the base of the trees.

Emerald ash borer infested trees usually have thinning canopy, not dead branches (at least at the beginning) and the D-shaped holes are not found along the trunk until the tree is dead.

Ganoderma fungus

The questions were 1) what is this fungus and 2) will it harm the tree? The fungus appears to be Ganoderma. These are fungi that produce a conk, a shelf-like structure that releases the spore. The conks are reddish-brown with a white edge and often a shiny coating. The underside of the conks has a white, porous surface.

While the conks may be attractive (and perfect for a gnome garden), they are attached to a fungus that rots out its host tree. Unfortunately, by the time the conks begin to appear, the tree may have significant rot at the base and be a safety hazard. The second question – will it harm the tree – cannot be completely answered without probing around its base. But long-term, yes it will harm the tree and result in the tree falling.

Samples received/Site visits

Davison County, Kabatina twig blight

Browning shoot tips are common symptoms on junipers (cedars), and they can be due to several abiotic and biotic agents. The importance to knowing which is the treatment. Abiotic stress agents, drought for example, is best managed with water, not pesticides or fertilizers. I frequently get the question from a landowner with a half-mile belt of cedars asking if hiring a plane to spray an insecticide would help. Not if its drought unless you get a couple of Air Tankers to make a drop with just water – but they are all busy now with the western fires.

Even if you know that a fungus is responsible for the symptoms, it is important to know which fungus as this makes a difference when, what, and if to spray. Kabatina twig blight (*Kabatina juniperi*) was the fungus found on this sample. Kabatina infections occur in the fall through wounds and is not managed by fungicides.

Davison County, Pine wood nematode

While pine wilt disease is rampant in southeastern South Dakota, it is not the reason for decline in every Austrian or Scotch pine. The sample submitted did not contain any of the pine wood nematodes (*Bursaphelechus xylophilus*).

There are two possible reasons; 1) the tree is not infected with pine wilt or 2) the cores missed any pockets of the nematode.

The symptoms of pine wilt disease are needles turning brown to tan beginning at the top of the tree and the edges of the canopy and then quickly – usually within a month – the entire canopy fills with brown, hanging needles. The twigs will be as dry as the needles and snap easily with a slight touch.

Austrian and Scotch pine can also become infected with Diplodia tip blight (*Diplodia sapinea*). This disease will present with shoot tips having browning needles and stunted shoots. The affected shoots will be randomly found throughout the lower canopy, but the top of the tree will remain green.

It is easy to miss the nematodes in a cookie (a cross-section of the trunk) or increment corer. We have had occasions where the first sample yields no nematode yet a second does. The sample must be taken from the trunk near a lower whorl. The wood must be placed in a plastic bag, kept cool and mailed immediately.

Lawrence County, Spruce shedding needles

This is a sample of a white spruce that has cast almost all last year's needles. The needles for this year are very stunted. The paper with the sample mentions that the trees are producing a lot of cones.

We eliminated all the usual suspects, the needlecasts – rhizosphaera and stigmina - and SNEED. The stunted growth and cone production may be indicators of an abiotic stress and this will require a site visit.

Union County, European elm flea weevil

This elm sample showed small oval holes in the leaves. This is a common symptom of a European elm flea weevil infestation. Unlike the other common defoliator of elm in South Dakota, the elm leaf beetle, the holes are crisp and oval shaped. The elm leaf beetle skeletonizes the leaves so that all the leaf tissue between the veins is removed.

It always helps to have the insect to confirm what the symptoms show and fortunately the bag also contained the European elm flea weevil adults. Apparently, they came along for the ride. The adults are reddish-brown weevils about 1/16- to 1/8-inch long. The adults have dark marks on their elytra (the wing covers), the hind legs are enlarged, and the mouthparts are stout-like (which are common mouthparts for weevils).

The adults are feeding now, and they will feed until fall when they nestle down in leaf litter for the winter.

The leaves are also showing some symptoms of herbicide injury and yes, when contacted, the tree owner mentioned some spraying around the trees with an ag herbicide!