

Pest Update (July 25, 2018)

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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, instead 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



We are ahead of schedule for plant development this year, the hot weather is accelerating plant growth. I am already seeing fruit forming on many trees including mulberry (*Morus alba*). Mulberry fruit is either enjoyed or cursed. The dark raspberry-like fruit can have a slight sweet taste. Not as good as a blackberry or raspberry but still tasty. The fruit is also very nutritious with antioxidants and Dr. Oz calls it's a superfood. The fruit tends to drop almost at once so if you do not get out there quickly to harvest the fruit (or the birds don't) you are left with the curse, the ground covered in purple stain of smashed fruit.

Timely Topics

Emerald ash borer update

We are still catching adults in the purple panel traps though not as many as two weeks ago. The numbers should continue to decrease as the summer progresses. I do not expect to find adults after Labor Day.

Larval densities are still low in infested trees. I am finding more first and now some second instar larvae tunneling through the branches of infested trees. There are also third instars, which as I pointed out in past *Updates*, indicate that at least some of the beetles have a two-year life cycle rather than one-year.

Emerald ash borer is not the only ash pest

While emerald ash borer is certainly the most serious threat to ash, it is not its only pest. Ash has an array of insects and mites that make their living from this tree. While ash has always been regarded as a tough tree, its were never a pest-free tree.

As an example, I visited *one* place in central South Dakota last week that had about every ash pest on their trees.



Ash flower gall mite *Eriophyes fraxiniflora*) infestations result in a proliferation of green to black "balls" hanging in clusters beneath the branch shoots. The galls are due to the feeding activity by the mite and it only feeds on the male flowers of ash. Since ash tends to be dioecious, a tree is either a male or female, so you do not have the galls on ash trees with seeds. Many black, green and white ash

cultivars are “male-only” as most tree owners do not like to deal with cleaning up the small winged samaras that develop from the female flowers. The galls may detract from the appearance, but do not harm the health of the tree.



Ash leaf curl aphid (*Prociphilus fraxinifolii*) was causing the ash leaves to curl and some were so tightly curled they formed rosettes at the tips of the branches. Once you uncurled the leaves there are tiny light green insects covered with white threads. These are the adults and nymphs of the aphid.

Treatment is usually either letting it be, since treatments will not uncurl the leaves or a foliage application of an insecticide containing Acephate at the first sign of the insects. This insecticide is a foliage systemic treatment and will kill the aphids as they feed (but not remove the damage). Most other insecticides are contact poisons and will not reach the aphids living inside the curls. A soil drench systemic insecticide will not be absorbed fast enough to provide any control for the aphids this year, but a spring application next year of these products can prevent the problem from occurring next summer.



Ash plant bug (*Tripodosteptes amoenus*) is a sap sucking insect. The affected leaves develop whitish or yellowish mottling on the upper leaf surface and if you flip the leaf over you'll find the very small insects. The adult plant bugs are about 1/4-inch in length, oval shaped with a triangular pattern on the back. They range from green to black. The nymphs are similar in appearance, just smaller and lack wings. There are two generations per year.

Ash plant bug was a major issue in the mid-90s. The insect populations were very high and for several years in a row they almost completely defoliated ash trees in eastern South Dakota. The repeated defoliation was so severe that there was extensive branch dieback and even tree mortality. After a few years it suddenly disappeared and now it's seen only here and there in very low populations.

That was until I got to this spot in central South Dakota. Just about every ash on this property had the leaves covered with the nymphs and adults. The leaves were presenting the brown stippling damage caused by the piecing and



sucking the sap. Some of the leaves had extensive damage and were already dropping, another common sign of a heavy infestation.

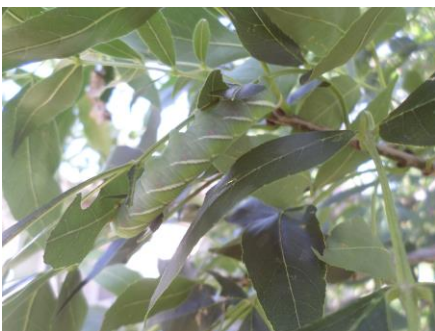
Its usually too late to treat once you see the damage, so treatments are preventative – treating to prevent an infestation. These are applied in the spring about 10 days after the leaves unfold and just after the first-generation nymphs have hatched. This is usually early May. The most common insecticides used have Acephate, Bifenthrin, or Permethrin as an active ingredient.



Carpenterworm (*Prionoxystus robiniae*) is a native boring insect of ash trees as well as cottonwoods, poplars and willows. This insect creates an exit hole about 1/3- to 1/2-inch in diameter, slightly larger than a pencil. There will often be sawdust around the hole and on the ground beneath the tree. The trunk will appear scarred and deformed near the holes. Sap may also be oozing from the exit holes and sometimes the empty pupal case left by the emerging adult insect can be found attached to the surrounding bark.

The galleries are 5/8-inch wide, often empty of frass, and extend deep into the tree. Trees infested by carpenterworms often have their branches and trunks weakened by extensive tunneling and these often break off in high winds. Woodpecker activity is also common on trees infested by carpenterworms.

Treatment is difficult for this insect as it can take several years for the life cycle to be completed. This means bark sprays applied in 2019 while preventing new infestations that year will not kill the insects already in the tree and these may continue to feed for another year or two. This means it may take two or three years of treatments to rid the tree of the pest. The trunks of infested trees can be sprayed with an insecticide containing Carbaryl or Permethrin (and labelled for this use) in mid-May. The formulations are usually the same ones used for bark beetles as the insecticide must remain effective for several month as the adults emerge throughout the summer.

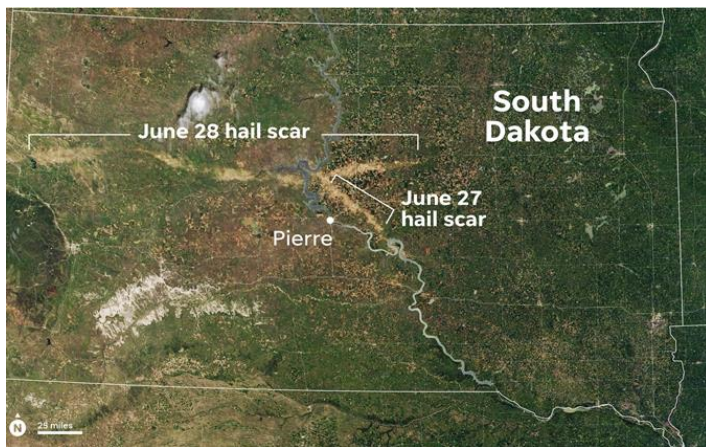


Northern ash sphinx (*Sphinx chersis*) was found feeding on the foliage of the trees. This is one of the hornworms (it has a flexible spine – the horn – on the its hind end). The most common hornworms in our state are the whitelined sphinx (*Hyles lineata*) and the tobacco hornworm (*Manduca sexta*). The whitelined sphinx is the “hummingbird moth” which can be found zipping to and fro to feed

from flowers during around dusk. The larvae feed on a wide range of hosts from apple to peonies. The tobacco hornworm is our most common tomato hornworm and flies at night, so the adults is seldom seen.

The northern ash sphinx is also a hummingbird moth and can be found in the early evening dashing from flower to flower. The larvae are pale bluish or reddish green with oblique pale stripes that are bordered by a darker green. The larvae can be treated with most insecticides used for defoliators, common active ingredients are Acephate and Carbaryl. These can be applied when the larvae are first noticed in the tree.

Hail damage



Many areas of South Dakota experienced hail during the storms that have popped up at the end of June. The swath of damage from Spearfish to Pierre was so intense, evidence of the damage could be seen from space! (Photo credit: NASA)

Some of the area along the

interstate between Rapid City and Spearfish were among the hardest hit. The tree damage was very confined as the path across the state was relatively narrow but if trees were in this path they were severely impacted. Tony, a forester with the South Dakota Department of Agriculture, sent me this picture of a cottonwood tree stripped of its foliage. Most of the deciduous trees that were defoliated will send out new foliage this summer but the loss of foliage and the energy demand of producing new leaves during the summer will leave the trees stressed. The trees may also become canker ridden as the hail wounds provide an entryway for disease.



E-samples

Fall webworm (*Hyphantria cunea*) is apparently on the march, a little early as this is not Fall. They are tent-making insects that feed in colonies on trees, but there are a few differences between the tent caterpillars and fall webworm. First,

the tent caterpillars appear in the spring while the fall webworm larvae feed during late summer. Second, the tents of the tent caterpillars typically are constructed in the interior of the tree at branch crotches while the fall webworm nests form at the branch tips and are wrapped around twigs and leaves.



Third, the primary hosts differ with tent caterpillars generally feeding on fruit trees while the fall webworm is found on chokecherry and walnut. There are other hosts, of course, and I can find tent caterpillars, particularly the forest tent caterpillar on ash, maples and other hardwoods and at this time of year I find fall webworms on chokecherry (as seen in the picture), cottonwood and maples as well as walnut, but they certainly seem to prefer chokecherry and walnut as a home and meal.

Fall webworm adults are white moths that fly during early July with the females depositing eggs in masses on foliage. Eggs hatch soon afterward, and the pale larvae form loose nests and feed throughout the late summer months. The nests often appear as a few randomly masses dotting the canopy of the tree but as the larvae grow, more nests appear. I have seen young chokecherries almost completely wrapped in silky webbing from this insect. After completing their feeding, the mature larvae drop to the ground to pupa to spend the winter beneath debris and litter.



An otherwise healthy tree can withstand several years or more of defoliation by this insect. Sometimes we find dieback on small chokecherries that have been repeatedly defoliated but on mature cottonwoods and walnuts there seems to be no outward expression of cumulated defoliation; they seem to continue to grow just fine.

There really isn't much needed to treat for this insect. The nests are already forming and the damage to the host tree is minimal. A contact insecticide such as one containing carbaryl, cyfluthrin, or permethrin as the active ingredient will kill the larvae as they feed, and these can still be applied (or my favorite Captain Jack's Dead Bug Brew – an organic alternative). If they are used, be sure to spray the foliage, not just the nest, as the insects leave the nest to feed on foliage at night and this is when they will pick up the pesticide. Pruning off the

nests while the insects are still inside may do more injury to the tree than the feeding, however, removing the nests with a rake or other object will destroy the webworms' shelter and reduce survival. Burning the nests might be entertaining but will injure the tree (and possibly the arsonist) and other trees and nearby structures.



Worms in the willows. I had a picture sent in about a worm in a willow tree. This is the elm sawfly (*Cimbex americana*) larvae. The adult females “saw” a slit in the leaves to lay about 10 or 12 eggs per leaf and these eggs usually start hatching in 10 days. The larvae can become almost two inches long by maturity (about 1-inch now) and they are light green or yellow-green with a single middorsal dark or black stripe.

They feed along the margins of elm and willow leaves, usually in groups, devouring the entire leaf in the process before moving to another leaf. I have seen some trees almost completely defoliated by mid-August. Another common symptom of an infestation is the ground beneath the tree is covered with the very fine frass pellets (insect poop) from these insects. Once the larvae are finished feeding they drop to the ground to pupae with the adults emerging the following spring (Interesting note: not all the cocoons open in the spring. Some pupae do not become adults until spring of the following year so cocoons forming in the soil this year may either produce adults next summer and the following summer!).

The insect does not appear in large numbers every year, nor is it widespread. It is more common to find elm sawflies on a few trees scattered across the state, but you will find pockets of defoliated trees in towns and in windbreaks. The treatment is an application of an insecticide containing Carbaryl when the larvae are first noticed on the tree. The larvae are still small enough to be treated, but it should not be delayed much longer.



The **yellow spotted jewel beetle** (*Buprestis confluenta*), also known as the green metallic wood borer, is still the most common insect submitted as a picture for the emerald ash borer. The adults are about 3/4-inch long with yellow flecks on the wing covers that may be wide spread to almost confluent. The under-color is a coppery brown. The larvae feed in dying cottonwoods, aspens, and poplars. The insect is found throughout the state.

This is a close (and native) relative of the emerald ash borer, at least in the same family, Buprestidae. However emerald ash borer is narrower, shorter (less than 1/2-inch long) and coppery without spots.

Sample received/site visits

Haakon County

What is wrong with my maple?



The real problem is this is a red maple (*Acer rubrum*) trying to grow in Philip. Philip is a place red maples go when they did something wrong in a previous life. There are two problems with growing red maples in much of the state, let alone Philip. First, they do not tolerate seasonal temperature fluctuations very well. While many red maples may be adapted to USDA Plant Hardiness Zone 4 (which includes Philip), Zone 4 in Philip SD is different than Zone 4 in Penobscot ME. While they both have similar average minimum January temperatures, Philip is subject to more extreme temperature swings in the fall and spring as the trees are going dormant and coming out of dormancy. This makes the tree more susceptible to

“winter” injury. Second, the soils in Philip are very alkaline and this limits the solubility of certain microelements such as iron and manganese. While these elements are present in the soil the alkalinity reduces their absorption into the tree, so the leaves become chlorotic. This is the reason for the yellowish almost golden foliage. The disorder can be treated by trunk injections of these elements, but this will need to be repeated every few years for the life of the tree.

Lawrence County

Why is the maple turning red?



This is the Sensation boxelder (*Acer negundo* ‘Sensation’) which is an attractive ornamental tree, meaning it does not look like the typical boxelder. The tree tends to form a straight stem, rather than crooked, and the fall foliage color is an attractive deep red. However, it's not fall yet so this color is premature. Early color change is often due to some problems related to the soils or roots. Flooding, poorly drained soils, or even planting too deep, have all been associated with this problem. In this instance it appears to be a combination of planting depth and soil drainage. This can be avoided by planting trees at the proper depth – so the first major root is just beneath the soil – and planting on a slight

berm.

Pennington County
looks burned?

Why do these cottonwood leaves

First the sample was so moist that mold was forming in the bag and that can make identification more difficult. Always place a dry paper towel in the bag to absorb some of the moisture from the fresh tissue.

The problem appears to be Marssoninia leaf spot (*Marssonina*). This is a fairly common problem on cottonwoods and poplars, especially during years with wet, spring weather. The disease starts out in the spring as dark brown flecks on the leaves but over time these coalesce to form blotches that appear blackened or bronzed. The disease also results in lesions on the petioles (and even shoots) which can reduce water movement into the leaves which also contributes to the scorch appearance.



Turner County

What kind of bush is this and are the berries edible?

I usually get several samples of Tatarian honeysuckle (*Lonicera tatarica*) now that the paired orange-red berries are out. The fruit is not highly poisonous but can cause illness in some individuals, especially children. Leave it for the birds.

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