Pest Update (June 28, 2017)

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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 particular 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

The smooth hydrangeas are in full bloom now, a little earlier than most years. Sometimes it has been the middle of July before these summer-blooming shrubs are flowering.

Emerald ash bore - Update

The recent confirmation of emerald ash borer in Buena Vista County in Iowa, a mere 80 miles from South Dakota, is heightening concern about its eventual presence in South Dakota. The day is certainly getting closer. Confirmed infestations are found in the Omaha, Nebraska and Minneapolis-St. Paul Minnesota metro areas and now in about half the counties of Iowa.

The *Update* will provide weekly information on the location of emerald ash borer confirmed in South Dakota or a bordering county of an adjacent state. ***At this time no emerald ash borer infested trees have been identified in the state or an adjacent county of a bordering state.*** The nearest infestations are highlighted in red; the Twin Cities of Minnesota; Buena Vista County and the counties in central Iowa and the Omaha-Council Bluff area of Nebraska and Iowa.

I received only three dying ash pictures this past week. All were the redheaded or banded ash borer (*Neoclytus*). The galleries in the dying trees were meandering and also departed deeper into the wood. Emerald ash borers spend most of their life as larvae just beneath the bark without burrowing deeper into the wood.

I also had a log with a D-shaped hole submitted. It was an exit hole from an *Agrilus* but the willow borer, not the emerald ash borer, as the log was a crack willow. The bark on willows can become deep and furrowed so logs are sometimes confused with other hardwoods.

Treatments to do now

Apple maggot (*Rhagoletis pomonella*) is the most serious apple pest and treatments now.

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, should be flying and placing eggs on the developing apples in another week or two and will continue egg-laying for another month. Once the eggs hatch the larvae burrow into the apple. The apple maggot pupates in the soil and probably will be emerging as an adult beginning in late June this year. However, egg laying does not really begin until a week or so later so there is still time plenty of time to begin treatments (even if any eggs are laid now, the egg is either crushed by the expanding fruit or the larvae cannot survive in the high-acid of the newly developing apple). 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^{R}. 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^{R} at most hardware stores or you can buy the completed "apples" from the Internet, try www.GardensAlive.com.

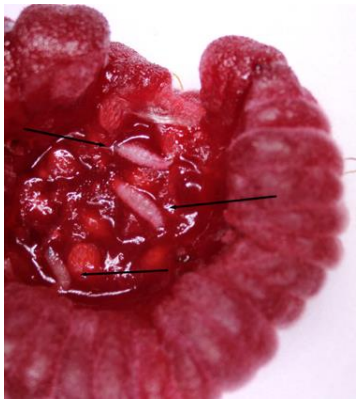
Still another possible control measure is to spray Kaolin clay on the fruit. The clay is not a true pesticide but it irritates the adult apple maggot and they tend to fly to other fruit. The clay must be reapplied if we have some heavy rains so expect to

make several applications during a season. It often takes at least three applications to work. The clay is sold as 'Surround At Home^{R} and can also be obtained from www.GardensAlive.com.

Timely Topics

Spotted wing drosophila is infesting fruit in South Dakota. The first reports came in this week from southeastern South Dakota in strawberries. The spotted wing drosophila (*Drosophila suzukii*) is a small vinegar fly that was first discovered in the United States in 2008 and since that time has moved throughout the country and into our state. It is a very tiny fly, a small fraction of an inch, so cannot fly far. How did it get everywhere so quickly? You guess it – people and their vehicles.

This fly is a particular problem with small fruits, in our state the currants, elderberries, grapes, raspberries and strawberries. It also will infest aronia and cherries. It is becoming a major headache as the female cuts into the ripe fruit with a saw-like ovipositor to inject the eggs beneath the thin skin of the fruit. The eggs hatch in one to three days and the larvae quickly swarm the inside of the fruit rendering it into mush. There is nothing worst (well one thing) than collecting a tray of raspberries, placing them in the refrigerator and the next day having nothing but a tray of slime. The "one thing?" Biting into the fruit and noticing an off-taste and texture and realizing you ate a fruit filled with these worms! Yum! Actually you might not notice them at all and according to the literature eating them is not harmful to humans – just gross.



The short life cycle means that there are multiple generations per year so this insect can easily, and quickly, destroy a crop. Since the insect attacks only ripe fruit, fruit that will be harvested very soon, there are fewer insecticide options available to producers and home fruit growers. The insecticides are applied to kill the adults before they lay their eggs. Once the eggs are inserted into the fruit there are no effective treatments. Insecticides containing spinosad or Malathion, to name two possible treatments, may be used but applicators must follow the label as to crops, intervals between treatments and interval before harvest.

The best way to tell when the insect in in the area (other than find damaged fruit) is monitoring with traps. The insect does not appear to overwinter very well in South Dakota, temperature below about 20^{o}F are fatal, so most of the population is killed except those protected by deep leaf litter or even in cracks in home

foundations. It takes some time for the population to build up so we usually do not see the insect until late June to mid-July depending on the summer temperatures so June-bearing strawberries and summer raspberries sometimes escape infestations but apparently not this year as everything seems to be a little early.

Photo credit for SWD: Mary Roduner, former SDSU Extension Consumer Horticulture Field Specialist.

What to do about hail-damaged trees

We have experienced a lot of hail this last week across much of eastern South Dakota and into Minnesota. There were numerous reports of pea to golf ball size hail in some storms. This large hail caused some damage on ornamental plants including trees. Leaves were shredded off as well as small twigs and even branches. Small thin-barked trees also had their bark damaged and there are lots of trees with the trunks having blotches of torn and missing bark.
There is not much that can be done after the storm. If a branch is left snapped and hanging from the impact of hail stones, it should be cleanly cut back to the limb or trunk attachment. There is no value in painting these cut with a pruning paint or wound dressing and the use of these products may actually increase decay.

The wounds along the trunk can be traced with a sharp knife to remove torn bark that is hanging but no additional treatments will help. The wounds do not need to be traced into any particular shape nor will any paint or dressing reduce decay.

If the tree is in part of the state experiencing drought watering is probably the best treatment to reduce the mechanical stress of the hail. These trees are often more vulnerable to borer and diseases and watering will improve the tree's ability to tolerate these pests.

E-samples

Cottony ash psyllid – as if we needed another problem on ash

As if ash does not have enough problem in the Midwest, there is another exotic threat. Right now we are seeing defoliation and foliage distortion on black ash (*Fraxinus nigra*), Manchurian ash (*F. mandshurica*) and their hybrids, 'Northern

Gem' and 'Northern Treasure.' The culprit is a small psyllid called the cottony ash psyllid (*Psyllopsis disrcepans*). This sucking insect was discovered in the early 2000s feeding on black ash in Alberta, though it may have appeared earlier in the United States. The insect is native to southern Europe.

The adults are slightly smaller than 1/8-inch and resemble miniature cicadas as they fold their wings roof-like over their body. The nymphs are a little smaller, wingless and flatter. The nymphs are responsible for most of the damage, extreme leaf curling, it almost appears as severe herbicide injury. There are two generations per year, with the first generation of nymphs out in mid-June, hence the recent appearance of the damage. Another generation of nymphs will be out in mid-August, but this second generation is not as damaging as most of the foliage has harden off by then and is not as susceptible to injury. Eggs are the overwintering stage.

We have seen this insect in our state for at least six or seven years and it has been discussed in past *Updates*. Fortunately the cottony ash psyllid do not attack green ash (*F. pennsylvanica*) or white ash (*F. americana*). These ash, particularly green ash, are often attacked by the ash leaf curl aphid (*Prociphilus fraxinifolii*) an insect that causes leaves to loosely curl into clumps.

Once you see the damage it is really too late to treat. If you catch the damage just as its starts, an insecticide containing acephate, and labelled for this use, can be applied. This insecticide is a foliage systemic treatment and will kill the insects as they feed (but not remove the damage). 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 can prevent the problem from occurring next summer.

Cottony maple scales (*Pulvinaria innumerabilis*) are becoming very noticeable on maples, though the insect can also be found on hackberries and elms**.** 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 scale loses its ability to move and remain stationary for the remainder of its short life.

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 an insecticidal soap soon, about the time littleleaf lindens are in bloom and repeat ten days later (but see note on littleleaf lindens below). Be sure to read the label on the soap before applying to sliver maples as some formulations may injury the foliage. A soil drench of an insecticide containing imidacloprid can also provide effective management of the scale on tall tree, but the drench should be applied in early June, rather than now, to ensure good distribution of the pesticide through the tree's canopy. However, the best control for scales is all their natural enemies so often the best treatment is just to allow nature to do its work.

Important note: as the picture clearly shows, lindens are also 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.

Cankers and dieback are common on mature and stressed poplars and cottonwoods. There are a number of pathogens responsible for these problems, *Cryptodiaporthe*, *Cryptosphaeria* and *Cytospora* to name three of the more common fungi. The cankers often begin as just a slightly sunken area of the bark, sometimes with reddish-brown fluid bleeding from the edges. The bark covering the canker becomes cracked and may peel away revealing a dark, wet sunken patch. Watersprouts may appear adjacent to the cankers. Canker diseases do reduce the structural strength of the wood and infected trees may snap off at or near these cankers. Management of canker diseases do not involve sprays – except sprays of water – since maintaining or improving tree health is the only means of protecting trees.

Samples received/site visits

Beadle County **A hackberry *Agrilus* (and other problems)**

This is a hackberry that has lots of problems. The leaves have the typical hackberry nipple galls formed by *Pachypsylla celtidismamma* along the twigs appear some galls created by hackberry budgall psyllid (*P. celtidisgemma*). The hackberry nipple gall is just some distortions on the leaves but the hackberry bud gall maker can kill the buds lining the twigs leaving the tree to appear a little more open.

Many of the leaves were cupped and this is a common reaction to exposure from drift of growth regulator herbicides. Hackberries are very sensitive to drift, almost as sensitive as tomatoes, and curled leaves are a common sight.

But an additional stress is from a hackberry borer, *Agrilus paracelti*. This is a native cousin of the emerald ash borer however it attacks hackberries. This hackberry borer spends most of its life as a larvae burrowing through the inner bark of the tree and emerges in June to feed on the leaves, mate and lay eggs on its host. Since it is a native borer the only susceptible trees are ones already declining so spraying for the borer is not the preferred treatment but improving the tree's health.

Brookings County FL1700015 **Chlorotic maple**

This is a common problem as noted in the *Update* about two weeks ago. We are seeing a lot of chlorotic maples during the past few weeks and while there are treatments for this disorder, the best treatment is to avoid planting maples on alkaline soils, at least those with a pH 7.4 and above.

The maple sample also had lecanium scales (*Parthenolecanium*) along the twigs. These appear as hardened brown shells, about 1/8-inch across that are attached to the bark. The eggs will be hatching soon (occurs about the time lindens are in bloom) and the crawlers should be treated with insecticidal soap. These soaps are best as they do not harm the natural enemies of the scales which do most of the control of these insects. If the tree is too large to treat with soaps (more than 6-feet tall), either ignore this problem as the tree is generally big enough that the sap loss to these insects is minimal or hire a professional tree company to provide a treatment.

Lawrence County **Pine needle scale on spruce**

Typically you see a few pine needle scales on spruce. Apparently this scale is as poor at tree identification as some of my students. However often it is only a scale or two on an occasional branch. The sample submitted was covered in settled crawlers, the nymphs that were finding a home on the expanding needles to begin to feed by sucking sap from the foliage. This tree, while a spruce, was in a development that had spraying for mountain pine beetle. Repeated, widespread use of insecticides for management of the mountain pine beetle can kill the natural enemies of scales resulting in a population buildup. Now that most mountain pine beetle sprays have come to a halt we will probably see the scale populations return to normal in a year or two as their predators and parasites return.

Minnehaha County FL1700016 **Possible herbicide injury**

The sample was of browning “burned” foliage and these symptoms are associated with drift from sulfentrazone-containing herbicides such as Authority. However, these same symptoms can be associated with a range of diseases and disorders. The foliage would have to be tested for the presence of this chemical and then linked to an applicator.

Perkin County **Discoloration on spruce needles**

The banding on the needles is not due to a disease, a living pathogen, but a disorder, a non-living agent. Usually the disorders associated with these symptoms on spruce are either winter-burn, drought, high salts or herbicide. That is still a long list and I will stop by the site in early July to see if we can determine the exact cause for these symptoms.

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