

Pest Update (May 23, 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



If we look at the thermometer, rather than the calendar, we are now into summer. This is typical South Dakota weather; cold and snow, followed by a brief period of pleasant weather that is quickly followed by heat and humidity.

This has compressed the flowering period of many plants and shrubs that are normally blooming a few weeks apart are not flowering within a week of one another. The crabapples are just about finished blooming and the buckeyes/horsechestnuts have already started (as seen in this picture of a Ft. McNair horsechestnut).

This also means the treatment window for many pests is condensed and we are spraying for a quite a few pests over a relatively short time period.

Treatments to do now

Now that the growing season is in full swing there are numerous treatments to be applied. These treatments are necessary to protect the plant from becoming infested or infected by a pest or pathogen. Waiting until you see symptoms of an infestation or infection is usually too late for effective treatments.

Clearwing ash borer treatment with an insecticide containing permethrin as an active ingredient also begin now. The bark must be sprayed to protect the tree as the insecticide will kill the adults as they are walking on the bark to lay their eggs. The insecticide will also kill the newly hatched larvae before they burrow into the wood. Systemic treatments to kill the insect once it burrows into the tree are generally ineffective so injecting a pesticide or pouring one around the soil are not practical means of managing this borer.



The adults are usually out flying about a week or so after Vanhouttee spireas begin to bloom and the shrub started flowering a week ago. You will know the adults are flying when you see the pupa skins (picture above) sticking out of the emergent holes on infested trees



Now that buckeyes are blooming, bronze birch borers are emerging from infested trees. **Bronze birch borer** (*Agrilus anxius*) is a native insect that attacks birch. It is a close relative to the emerald ash borer so they both make a D-shaped hole as the adult emerges from the tree. The time to treat birch trees is now as the female beetles are finding places on the bark (usually near a branch union) to lay their eggs. The bark can be sprayed with an insecticide containing permethrin as the active ingredient with a second application in about three

weeks. Insecticides containing imidacloprid can also be used as a soil drench in the fall to kill newly hatched larvae the following year so it's too late now for these treatments to be effective. If the canopy has dieback back more than about 40% the tree is too far gone for treatments.



Bronze birch borers colonize almost every birch species with their favorites being Asian and European species such as the cutleaf European white birch. The river birch is very, very rarely attacked by bronze birch borer and can be considered a borer-free alternative to other species.



Cedar-apple rust galls on the junipers have expanded during the past week and this is an indicator to begin treatments to protect susceptible apples and crabapples from cedar-apple rust. The galls form on the junipers (cedars) and release spores that infect the apples and crabapples. The infection on apples and crabapples results in discolored foliage and fruit and premature drop of the leaves. Fungicides containing Myclobutanil as

the active ingredients can be applied beginning now and repeat three more times at 7 to 10-day intervals. Captan, a common fungicide for apple scab is NOT effective against cedar-apple rust.



Codling moth adults are flying and laying eggs on the newly forming apples. Once the larvae hatch, they will burrow into the developing apple, usually near the base of the fruit, resulting in a trail of brown, powdery frass through the apple. This frass often extrudes from the entry hole as in the picture to the left.

The treatment is usually Malathion, though there is much evidence that carbaryl (Sevin) provides better control. The first treatment begins about 10 to 20 days after petal fall, as the fruit just begins to form and then three more applications spaced about 10 days apart. This treatment will also control **plum curculio**, an insect that cannot usually get through the tough skin of an apple, but the egg laying leaves the fruit dimpled and distorted. The picture to the right shows bird pecks (the large hole) and plum curculio damage (the dimples).



The other option is **bagging the individual apples** using the Japanese fruit bags when the apples reach about ½-inch diameter. This is no guarantee of control as the fruit may become infested before that size, but they do provide reasonable control of this pest and many others as well as improve the shine to the fruit.

And finally, if you want to hang jugs of bad smelling liquid to attract codling moths and repel unwanted visitors at the same time consider mixing **molasses and water** in a 1:7 solution with a few drops of dishwashing soap. Pour this solution into a one-gallon milk jug with the top cut out of it and hang from the tree. The fermenting mix is attractive to codling moths (as well as wasps and critters) and they *may* prefer this to your apples. It also creates a mess if you bump the bucket while mowing your lawn.....



Diplodia tip blight first application of a fungicide should be applied now. Tip blight is probably the most common disease of pines, particularly Austrian pine. Symptoms in early summer are the new needles becoming brown and stunted (as seen in the picture below). Twigs may be infected and become stunted and deformed. The treatment is a fungicide containing thiophanate-methyl, propiconazole or chlorothalonil (labeled for control of this

disease) just before the bud sheaths have opened and should be happening soon. Timing is critical, once the bud sheaths have opened and the candle begins to form, it's be a little late to begin the first application and this is the one that provides most of the protection.

Pine needle scale, also called white scale, is an armored scale, one that forms a hard, waxy covering over their body. The eggs overwinter beneath mom's shell and hatch occurs about the time common lilacs are in bloom. The mobile immature, called crawlers, move out to the new needles, settle down, insert a "beak" into the needle and begin to suck out sap. The crawlers lose their legs

and develop a hard shell (at least the females, the males develop wings and fly). The eggs are laid under mom and then she dies. This is completed by mid to late July and we usually see a second generation in late summer.



The female's dried shell remains on the needle for years, so it always looks like a bigger problem than what it really is. The natural enemies of the scale generally keep the scale population in check, so treatments are not always needed. If treatment is necessary use 2% horticultural oil or insecticidal soap as these do little harm to the natural enemies of scales (however, read and follow label directions and precautions carefully as a misapplication can

cause needle discoloration. Insecticides containing acephate are also effective, but harm natural enemies. All applications should be made beginning in mid-May (about one week after Tatarian honeysuckle blooms) and another application mid-July.



The new shoots are expanding on spruce so it's time to apply a fungicide to protect against **rhizosphaera** or **stigmata needlecast**. These are the most common foliage diseases of blue spruce. These diseases cause the older foliage to turn yellow by midsummer and then purplish-brown. Usually small black fruit bodies can be found in the spring lining the stomata along the needles. Stigmata needlecast fruiting bodies have fuzzy edges (as pictured above)

while rhizosphaera fruiting bodies are smooth (as pictured to the right). The disease results in premature needle drop and a thin and discolored canopy. The disease can be managed by an application of chlorothalonil now and a second application in about two weeks. If the needlecast is due to Stigmata the applications may have to continue every 10-days till August. It is important to treat the entire canopy, not just the lower branches when treating for Stigmata.



Treatments to begin soon

Cottonwood borer treatments can begin soon. The adults will begin to emerge in June to lay eggs at the base of the trunk of young cottonwood trees. This is an unusual insect in that you probably will not see the emergent holes

from the adults as they may emerge underground, from the root flare, and burrow up to the soil surface. The adults feed on the leaves – mostly the petiole – resulting in premature leaf drop but the biggest problem is the feeding activity of



the larvae. The larvae upon hatching quickly burrow in the lower trunk and roots. The tunneling results in disruption of the movement of food from the leaves to the roots and reduces the structural strength of the trunk so often the young trees snap off close to the ground. Management use to be digging out the larvae with a pocket knife in late August but I doubt many people have that much time on their hands. The easiest and most effective is to treat

the lower trunk with a permethrin product anytime between now and the third week of June (note: read the label carefully, not all permethrin products are labeled for borers).

In addition to the cottonwood borer (*Plectrodera scalator*), we also have a **poplar borer** (*Saperda calcarata*). The primary difference between the two on cottonwoods is that the cottonwood borer attacks young trees and these often break off at the ground, while the poplar borer attacks mature trees and its activity results in stem dieback. The poplar borer creates ribbons of finely shredded wood that line the wood surrounding the exit hole.



We should begin shearing pines now. Pines set only terminal buds, not along the new shoots as do spruce and fir, so the only time to shear them, removing a portion of the current season's shoot growth, is during the candle phase where the expanding new shoot is still tender. Removal of a portion of the shoot during this time will allow the new shoot to set buds. If the pine is sheared after the new growth has completed expansion and hardened, no new buds will be set, and the shoot will

dieback after the older needles are shed, usually in a couple of years. Shearing begins now and can be performed until the new needles along the candle are about ½ the size of the older needles. After that time, probably in a few more weeks, it will be too late. Shearing is only necessary if shaping an ornamental pine such as a mugo pine to keep it more compact.



Other than Christmas trees (and mugo pines) we do not usually shear pines in a formal shape.

Timely Topics



male cones lower in the tree contributes to cross-pollination with other trees.

Sex and Trees. Pine male cones are creating some questions this past week. I have received calls asking what this dust is coming out of their pine trees. The dust is pollen being released from the male cones. These are usually attached near the tips of the lower branches. The female cones, which forms the woody cone with seeds, are higher up in the canopy. Since most conifers produce both male and female cones, the thought is that having the



Pines are not the only trees having sex currently. I have seen (and received picture) of elms that are loaded with seed. The disked seed compressed within a round wing is called a samara, develops in the spring and there are years when the seed crop is especially abundant. This seems to be the case this year with the Siberian elms (*Ulmus pumila*). I have seen a few trees that the entire canopy is more seed than leaves! These trees will recover, not that

recovery is much for a Siberian elm. Even healthy trees seem to have a lot of dead twigs and branches. Probably the most noticeable effect this summer will be the gap in foliage when the flowers and seeds were produced. These do not fill in with leaves later in the summer.



Emerald ash borer update



Surveys have been on-going to determine the extent of the Sioux Falls infestation but no sampled tree outside of northern Sioux Falls has been found infested. Obviously not every tree, or even most trees, in the city have been surveyed and there is the possibility that a few trees outside of this area may be infested. However, it does appear that most infested trees are confined to one area of the community.

The emerald ash borers that have been exposed beneath the bark are either larvae or pupae. I expect that we will begin to see emergence sometime around June 1. Beginning Tuesday, the

city of Sioux Falls is restricting the removal and pruning of ash. This action is part of an effort to slow the spread of the insect through the community. Emerald ash borer adults do not typically fly very far and will often lay eggs on the same tree from which they emerged. Removing and pruning ash during the summer can result in the movement of the adult insect in the brush and chips as tree companies move material during the day as part of their operations.



Pruning and removal of ash for public safety (hazard trees and line clearance), storm-damage or construction are still permitted. Pruning and removal will resume later this summer, after Labor Day, when the flight period of the adults is completed. However, movement of any ash should be within the quarantine area. Movement of ash wood and raw wood products from within the quarantine area to other areas of the state, at any time, requires a permit.

We are in the 'sweet spot' for treatments of the emerald ash borer. The most effective treatments for mature trees – those more than 6 to 8 inches in diameter (measured at 4.5 feet above the ground) is by trunk injection. This must be done by someone with a commercial applicator license.

The treatments protect ash trees from becoming infested -1) killing the adults as they feed on the leaves before laying eggs and 2) killing the newly hatched larvae as they burrow into the tree. They can also eliminate infestations already in the tree so you can still inject an infested tree, kill the existing population of larvae and restore the tree's health.

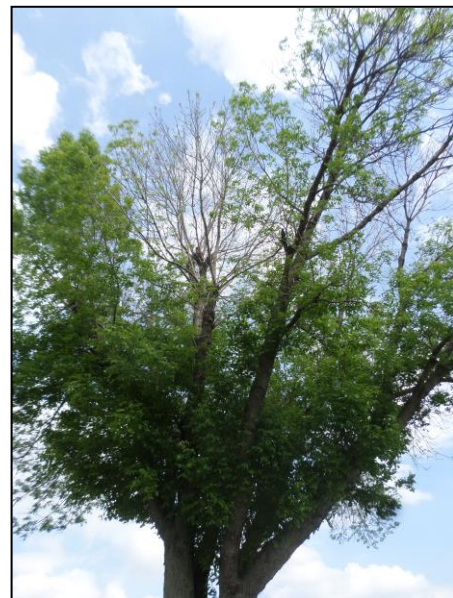
The best candidates for injection have less than 5% canopy decline from emerald



ash borer (picture to the left). These trees have an intact vascular system that will distribute the insecticide throughout the tree. If the tree has between 5% and 35% canopy decline, the injection is generally effective, though as the decline approaches 30% (picture below) there may be too much disruption of the vascular system to permit good uptake and distribution of the insecticide. Beyond 35% the likelihood of recovery with injection is very low and these trees should be removed.

There are very few infested trees that have more than 35%

canopy decline and most of ash within the community are still not infested. If ash tree owners begin injecting their healthy tree this spring and early summer and remove their poorly structured and declining trees this fall and winter, we can slow the spread of this insect and stretch out the impact of the outbreak. If ash tree owners choose to do nothing, there is a high probability that there will be street after street of standing dead and crumbling ash trees within the next eight years. And once these trees are removed or collapse, there will be nothing to provide greenery and cooling shade.



Now is the time to select the trees you want to save (and remember injections are an on-going process, every two or three years, not just once) and have them treated, begin removing the ones you don't want to save this winter, and then replant with anything but maple. The city of Sioux Falls already has too many maple trees and there is always the possibility that a new insect or disease could come in and wipe them out.

We planned too many American elms and once they died from Dutch elm disease, we planned too many ash and now that they are beginning to die, let's not repeat the mistake!

Look what your neighbor has planted, and plant something else! Your local garden center or nursery can provide with many choices that are adapted to your yard and needs.

E-samples



Maple bladder galls are beginning to appear on silver maple leaves. The galls are due to the feeding of a very small eriophyid mite called (you guessed it) the maple bladder gall mite (*Vasates quadripedes*). The mites overwinter under the scaly bark of the trunk then move to the expanding leaves in the spring. The mites feed on the underside of the leaves causing a pouch or bladder to form. Eggs are laid in this bladder and the young mites live and feed within this protective structure. The galls turn color during the season from green to red to black and usually the color is what catches the eye of the tree's owner. The mites and the galls do not harm the tree, the leaves are still able to manufacture food,

so no management is needed. Besides, once the galls are noticed, it would be too late for any treatments as nothing can remove the bumps (unlike pimple treatments for acne plagued teenagers!).



Oystershell scale (*Lepidosaphes ulmi*) on willow in the Black Hills. There are lots of reasons for willows to decline (that seems to be their typical appearance!) but one of the most overlooked agents in mature trees is the oystershell scale. The adult female scale is immobile and has a hard, gray to brown, comma-shaped shell over her body.

Eggs overwinter beneath the shell of their now dead mom and begin to hatch in late May. The nymphs (referred to as crawlers) are very small and a pale yellow so very easy to overlook. The females walk around for a few days before finding a suitable place to insert their long tube-like mouthpart beneath the bark. They suck sap from the tree, not directly from the phloem but individual cells so they are not honeydew producers such as the soft scales.

Usually the populations are very well managed by their numerous natural enemies. However, very heavy infestations can result in dieback and decline in the trees. Apply horticultural oil when the crawlers begin to move, about the time lilac flowers begin to fade (last week). Read and follow label directions very carefully to avoid damaging the foliage.

The summer oils can be phytotoxic if misapplied. Do not apply oils when the foliage is wet, or the relative humidity is above 90% or either event is predicted to

occur within 2-days of application. Also, do not apply when the air temperature is above 85°F. Even if applied properly, oils may injury maples and walnuts.

Commercial applicators can also use dinotefuron as a soil treatment. This insecticide is absorbed into the tissue and kills the crawlers as they feed. This is the only effective systemic treatment, other systemic active ingredients such as imidacloprid are not useful in managing armor scale populations. Commercial applicators have more effective treatments.



Sapsucker damage are a perennial issue on many trees and is often confused with borer. Some tree owners notice the holes drilled into their trees and assume these are holes created by borers as they emerge from the tree. Nope, these are made by a bird, called the sapsucker (*Sphyrapicus*). These birds are not drill holes to look for insects, but for sap.

A quick way to separate them is sapsucker drill holes are made in a distinctive pattern, running in parallel rows around the trunk. The emergent holes of most borers are more of a random pattern. The holes drilled by sapsuckers are also about 1/4-inch diameter which is larger than many borers.

The walnut tree owner did not notice the holes last fall and said they appeared this spring. That is not too unusual. Walnut has a sweet sap, not as sweet as maple, but still sweet enough to be boil down into a syrup. The birds also seem to prefer this sap and will drill holes into the trunks during the spring when the sap is at its sweetest and flows easily.

Sample received/site visits

Faulk County

What is wrong with this willow?



First, it's a willow. These trees are not known for their longevity or pest resistant. While they can be nice trees and live for several decades or more, they often succumb to a multitude of diseases and insects in their mid-twenties. The trick to survival – water and lots of it.

This sample shows the galleries of several insects, one being a long-horned beetle which is a common borer in dead and dying trees. The other insect emerged from the D-shaped holes....No, its not the

emerald ash borer but the willow borer, a native *Agrilus* that infests declining willows.

The problem here is not the insects, though they can hasten the demise of the tree, it's environmental. Since I cannot see the tree, what environmental stress may be involved but too little water and too much salt are the most common stressor of willows.

Moody County

What are these spruce thinning?



It is not often that the pest is found in the bag. When the sample arrived, there were some somewhat confused spruce needle miners and their black frass pellets. These insects begin their larval stage feeding inside the needles during later summer. Once they have fed for a while inside the needles they become too large (kind of like the jeans not fitting any more) and move out. They bundle needles together with silk to form a shelter as they continue to feed in the

spring.

Once they finish feeding, about now, they form a nest in the needles to pupae for a month. The adults begin flying around the end of June. These are the small (1/2-inch) brown moths you can find flying about the spruce about dusk on a late June or early July day. The females lay a row of eggs on the underside of the newest needles.

The best treatment for the summer is to wait until the end of June and spray the tree with an insecticide containing Sevin or Malathion to kill the adults as they emerge from the nests. The spray must have sufficient pressure to penetrate the nests.

Pennington County

What are the spruce declining?



Spruce decline for any one (and usually several) of many possible causes from canker to poorly drained soils. There are many spruces within this community that are declining, and they appear to be infested with two sucking insects, the pine needle scale (picture to the left and see information under **Treatments to do now**) and the spruce bud scale (picture on next page). These two insects are generally minor problems, but the

trees are heavily infested by both!

What would cause such an outbreak to occur? It may be related to the repeated spraying of pine trees for mountain pine beetle. During the epidemic (which ended a year ago) the only way to protect your pine from becoming infested was to spray an insecticide on the bark to kill the adult beetles as they landed and before they burrowed inside to lay eggs. Since the beetle introduce fungi into the tree which aids in the tree's quick demise (the tree dies within a year), injections to kill the beetle in the tree were not effective.



While the state and federal forest health staff recommended to limit spraying to a few key trees on a property, there was widespread treatments of acreages with some spray companies offering a per acre price. This lead to an excessive use of chemicals in some areas and the outcome was to also kill any predators and parasites that attack scale insects. Since scales are protected from many sprays, their populations could expand with the loss of the natural enemies that keep their numbers in check.

We saw an increase in scales last year on pines and spruce throughout the Black Hills. I expect we will see an increase in scale populations again this year. However, with mountain pine beetle spraying coming to an end, the natural enemies of the scales will have their populations rebound and the scale outbreak should end within another year or two.

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