

# **Pest Update (August 12, 2020)**

**Vol. 18, no. 27**

**John Ball, Forest Health Specialist SD Department of Agriculture,  
Extension Forester SD Cooperative Extension**

Email: [john.ball@sdstate.edu](mailto:john.ball@sdstate.edu)

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

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 dying 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.

## **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.

Plant Development.....	2
Timely topic	
Emerald ash borer updates.....	2
Development in trees	
Bacterial blight in tree lilacs.....	2
Dutch elm disease update.....	3
Stem Girdling Roots (SGR).....	4
E-samples	
Cottonwood petiole gall.....	6
Elm leaf beetles.....	7
Eriophyid gall mites on basswood.....	8
Fall webworm.....	8
Monster vines in the trees.....	9
Samples received/site visit	
Marshall County (a tale of planting too deep).....	9
Stanley County (oystershell scale on ash).....	10
Turner County (seedlings and fabric).....	10

## Plant development for the growing season

Dry is the word. Much of the state (other than the southcentral and east central parts of the state) has not seen precipitation for a while and drought intensity is either abnormally dry or moderate drought.

Watering is recommended for trees and if possible, windbreak seedlings, particularly conifer seedlings. A common recommendation for reducing winter burn is to water just before freeze up. That is too late. The best time to water to avoid winter burn is August and September so the tree goes into fall healthy.

## Timely Topics

### ***Emerald ash borer update***

#### **Life stages detected in sampling**



Emerald ash borer sampling continues in Sioux Falls and Canton. The majority of larvae are still second instar though there are far more third instar than a week ago. We measure the width of the head capsules to determine instar. The head capsule is about 0.3-0.5 mm wide for 2<sup>nd</sup> instar, and 0.6-0.8 mm for 3<sup>rd</sup> instar)

The third instar are larger insects and their galleries (tunnels) are longer and larger. These are the ones that significantly disrupt the transport of photosynthates (sugars manufactured by the leaves) to the roots. Trees that were injected earlier this spring (or last year) should be spared the damage done by these larger larvae.

### ***Bacterial blight on tree lilac***



The shriveled, water-soaked leaves and blackening tips on lilacs are symptoms of the bacterium *Pseudomonas syringae* pv *syringae*. The disease is appearing throughout the state this summer.

Bacterial blight occurs on all lilacs but is most common on white-flowered lilacs. Since the only flower color for the tree lilac (*Syringa reticulata*) is creamy white, all tree lilacs, the Chinese (*S. reticulata* subsp *pekinensis*), the Japanese (*S. reticulata* subsp *reticulata*) and the Amur (*S. reticulata* subsp *amurensis*), are susceptible to the disease.

The disease has a very similar presentation as fireblight, another bacterial disease which does not affect lilacs. The presentation can also be confused with the symptoms of verticillium wilt though the leaves on affected shoots usually turn yellow rather than black.

Bacterial blight begins as small, water-soaked spots on the leaves. These spots enlarge, and eventually the affected leaves wilt and turn brown or black with the shoot often showing a shepherd crook. This separates from verticillium wilt where the leaves turn yellow, wilt and fall.

The only treatment is to remove infected branches back to the trunk. This pruning should be done during dry weather when the leaves and shoots are not wet. The hand pruners should be sprayed with Lysol Disinfectant, or a bleach solution (note bleach is corrosive) to avoid spreading the disease (or prune during the winter when infection is low).

The disease can also be managed with a spray of a copper containing fungicide applied in the spring just before bud break. While the disease is caused by a bacterium, not a fungus, this fungicide treatment seems to reduce the problem.



Generally, infected lilac survives the disease with pruning and perhaps a year or two of copper fungicide treatments.

In my experience, sanitation pruning, and copper fungicide treatments are holding actions rather than eliminating the disease. I have tree lilacs that we have treated over the past decade that have been pruned so much they are mere shells of their former selves and still keep declining.

I read that the Ivory Silk tree lilac (*S. reticulata* 'Ivory Silk') is resistant to the disease but I have not seen any difference in infection between this cultivar and others.

### ***Dutch elm disease***

South Dakota community forests are faced with two significant threats, Dutch elm disease and emerald ash borer. These two pest are lethal threats – they kill their hosts – and they affect the two most common trees in communities. South Dakota communities were once graced with the high, arching canopies of American elms. It was considered the ideal street tree, fast growing and tolerant of urban sites.

Dutch elm disease was confirmed in the Ohio in 1930, thought it probably had been there for at least a decade before it was noticed. The disease did not reach South Dakota until the 1960s and was confirmed in Minnehaha in 1967 and spread

across the state reaching Harding County by 1985. More than 70% of the street trees were American elm in many South Dakota communities. Even into the 1990s it was possible to drive down elm lined streets in communities such as Brookings. The annual loss rate was about 2 to 4% a year but that means a community will lose about a quarter of their trees in 10 years.

The disease is transmitted from tree to tree via two means, 1) root grafts between infected and healthy trees and 2) bark beetles carrying the spores from tree to tree. Root graft infections are tree-killer. The disease can spread quickly from tree to tree and this is why the disease spread down an entire street very quickly.

Bark beetle transmission is a little slower. The disease usually is first confined to a branch or two as the beetle tend to burrow in smaller (2 to 4 inch) diameter branches. If you are quick, you can even prune out these infected branches and stop the disease before it spreads. This is usually not practical but there are Prairie Province communities that have effectively used this strategy. Prompt pruning also helps reduce future infections. Elms infected by the pathogen begin to produce chemicals that *attract* more bark beetles to them which means the tree may be quickly overcome by multiple new infections – death by a thousand cuts.

Not every beetle carrying spores will start an infection. Sometimes the spores die before they germinate (too wet, too dry etc.) and sometimes there are not enough spores to start the disease. Other times the tree is able to defend itself and wall off the new infection so it does not spread. But if an infection does begin, the tree releasing volatiles to call in other beetles increases the chances of new infections starting.

Most community focus on the prompt (within 2-weeks of symptoms appearing) removal of infected trees. Some communities and tree owners also treat their trees to prevent the disease from killing their elms. The disease can be prevented by injecting fungicides into the root flare. These chemicals are carried up into the canopy and can make the infection court unsuitable or stop fungal growth.



This past week we treated some beautiful American elms in Pierre. The trees were isolated elms, so no risk of root graft infections, which is critical as treatments do not protect from root graft infections. The process uses tubing to inject the fungicide into the tree under low pressure. These treatments are highly effective and I know properties that had ten widely-spaced elms or more and now only have the few they have been treating for the past thirty years.

But there is a sad note to treatments. Occasionally I have someone contact me about their dying American elm. They had been treating it for more than ten year



but now that it is one of only a few elms left in the neighborhood, they thought it was safe to discontinue treatments. It is not, never is nor will be. The treatments are fungistatic, they can stop fungal growth. Once the treatments stop, any infection that was being held in check can now quickly expand.

Elms have not disappeared from the landscape and are even rebounding. There are American elms that still being planting in communities. The Princeton elm (*U. americana* 'Princeton'), St. Croix elm (*U. americana* 'St. Croix') and the Prairie Expedition elm (*U. americana* 'Lewis and Clark') are American elm cultivars that have shown a high tolerance to Dutch elm disease. Tolerance means symptoms develop when the trees are inoculated with the pathogen but they tolerate the disease and recover. While these tree are good candidates for community planting, they should be used sparingly as they can still become infested and die.

There are also Asian elms that are adaptable to much of the same range as American elm and show some of the same characteristics – fast growth and tolerant to urban soils. These trees are resistant to Dutch elm disease. Resistance means a tree does not develop symptoms if inoculated with the disease.



Two of my personal favorites are the Accolade elm and Discovery elm which are both cultivars of the Japanese elm (*U. davidiana* var *japonica*). They are fast growing (the picture is one only a couple years in the landscape from a 5-foot whip) and have attractive foliage and form.

There are many other Asian hybrids, but many have some Siberian elm (*U. pumila*) in the complex crosses in their ancestry. The problem with a little Siberian elm in your genes is that leaf feeding insects (both the elm leaf beetle – see E-samples in this Update – and the European elm flea weevil) seem to find Siberian elms tasty. You can easily spot these cultivars such as Vanguard elm (*U. x* 'Morton Plainsman') which is a Siberian, Japanese elm cross, by the extensive leaf feeding damage by this time – the leaves are filled with holes.

### ***Stem Girdling Roots (SGR)***

This week I stopped to look at a row of littleleaf lindens that are street trees in Brookings. All are presenting normal, dark green leaves in a dense, pyramidal canopy except one. The one has a thinning canopy of small, chlorotic leaves. I noticed this starting last year but did not stop to see why until last weekend.



Once I walked up to the tree, the cause was obvious, stem girdling roots. A large root was wrapped around squeezing into about half the trunk. Think of these roots as pythons, squeezing the life out of the tree. However, in this instance the “snake”, tree, is squeezing itself.

A stem girdling root is a root that is imbedded against the trunk and is compressing the tissue beneath the bark. This compromises the transport of sugars from the leaves to the roots and water and nutrients from the roots to the leaves. Trees with SGR will present with thinning canopies of stunted, yellowing leaves.

Stem girdling roots begin with an abnormal root, either cut in the nursery or left pot bound. This can be correct at planting by pruning away the root that is beginning to circle rather than spread out away from the trunk. If only a root or two needs to be severed, the young tree will recover. If there are several roots requiring pruning, its probably best not to purchase the plant.



The other problem is planting the tree too deep so that the trunk is partially buried. You cannot easily have a root girdle a trunk if the trunk is completely above ground. The key to avoiding SGRs is to buy only quality plants that do not have circling roots and then plant these trees properly, so the trunk is above the ground.

## E-samples

### *Cottonwood petiole gall*



Cottonwood leaves with small bumps are falling. This is the **cottonwood petiole gall aphid** (*Pemphigus populitransversus*). If you break open one of the galls, you will find one or more white, fuzzy nymphs. These soon will become winged aphids that exit from a

slit in the side of the galls and fly to the alternate host, mustard, or canola plants. They remain on these plants until fall when they return to the cottonwood to lay eggs. Once the eggs hatch in



the spring, the nymphs move out to the new petioles to feed. The nymphs also inject growth regulators into the petioles causing the petiole to form a gall around them. While the loss of foliage might appear alarming (and raking annoying), the aphids do little harm to the trees.

### ***Elm leaf beetle***



This is an insect I have not had to discuss in the Update for more than 10 years – a blast from the past! This is the elm leaf beetle (*Xanthogaleruca luctuosa*). The elm leaf beetle was the most common defoliator of elms until the European elm flea weevil (*Orchestes alni*) which almost completely displaced it. However, a tree owner in the Hot Springs area found his elms covered by these insects and the ground litter with the larvae.

The elm leaf beetle is a problem with the elms and the elm owners. First, the insect, both the adults and the larvae, are leaf feeders. The adults chew irregular round holes in the foliage while the larvae skeletonize the foliage, feeding between the veins, which leaves a lacy appearance. The result of all this damage is browning leaves that fall prematurely.

If that was not bad enough, the elm leaf beetle adults like to come inside your house for the winter. They do not cause any damage to the house, usually happy to stay in crevices and between walls, but it is a nuisance. Something else to vacuum up or get away from the cat.

The larvae are just about finished feeding and are dropping or crawling to the ground to mass around the trunk. Here they will pupae in the soil and emerge yet this fall to move into your house. Next spring, the adults that survive winter emerge from their hiding places to feed on the leaves and lay eggs. There are two generations per year.

The easiest way to manage them is to treat the leaves in the spring to kill the adults and larvae. The elm leaf beetle is susceptible to many different insecticides and those (labelled for use on elm leaf beetle) that contain carbaryl, permethrin or Spinosad will work.



The other, longer-term, management is avoid planting Siberian elm, their favorite food, or any hybrid elms that have Siberian elm in their lineage.



### **Galls on basswood leaves**



Basswood (American linden, *Tilia americana*) leaves are developing these elongated, pimple-like galls on the upper surface of the leaves. These galls may be greenish-yellow to brown and are often clustered together. These galls are due to feeding by eriophyid mites which causes the leaf to develop abnormal tissue around the feeding site – the gall. The mite (and the young mites) live inside this protective shelter.

The galls may look unpleasant – no one likes pimples (except perhaps Dr. Pimple Popper on the TLC channel). Dr. Sandra Lee does do pimple treatments on people but on trees we do not need to treat. Just let them be as they do not harm the tree at all.

### **Fall webworm**

The yellow to brown, tufted larvae are more than 1/2-inch long and moving outside of the nests so the calls and pictures are coming in. The webworm differs from tent caterpillars in time of feeding (spring for tent caterpillars and late summer for webworms) and where they form their nests (interior, near branch crotches, for tent caterpillars and exterior, out on the branches for webworms). The fall webworm favorite foods are cottonwoods, chokecherries and walnut, but almost any hardwood tree species will do. It is a myth that since they are feeding on leaves that will soon drop anyway that no damage is caused – the next month or so is a time of high productive for leaves and the loss of them will leave the tree going into winter with fewer reserves.



Control for the larvae is fairly simple when they are small – less than 1/2-inch – either just tear the nests open and let the predators and parasites after them or treat with Spinosad, a naturally-derived product (sold to the public as Captain Jack's Dead Bug Brew) which give the worms a bad case of the stomach flu. Once they become larger, more than 1/2-inch, insecticides containing carbaryl or permethrin may be used as a foliar spray. Usually one application is sufficient to kill most of the insects. Another option is the use of Acephate (as Lepitect for commercial applicators) as a basal soil injection next year to kill the larvae as they



begin to feed. However, this product is not recommended for cottonwoods so, as always, read and follow label requirements.

### ***Monster vines in the trees!***



This year some trees and shrubs in shelterbelts and roadside ditches are covered with a rambling vine. This is particularly noticeable now as the vines are covered with clusters of larger white starry blooms – impossible to miss.

This is not an invasion of some alien plant, but the native wild cucumber, *Echinocystis lobata*. Why the widespread appearance this year and not last? Blame the rains over the past two year. The vine performs best in moist soils near ponds and streams. While most of the state is too dry to allow much develop this year, it is appearing in belts from

Brookings to Miller where summer rains have been more plentiful.

Wild cucumber is a member of the cucurbit family and has as relatives the tastier cucumber, pumpkin, and squash. While the wild cucumber does produce a fruit in the fall, it is anything but edible. The 2-inch oval green fruit is covered with soft spines. If you cut into the fruit it is nothing more than two cavities, each containing two seeds held in place by webbing – not much to eat (and do NOT eat them)! They were, however, used as beads by the Dakota.

The vines do provide benefits for game and songbirds. The rambling vines provide good cover and concealment from their predators. That is about all they are good for. If they sprawl out into corn or soybean field they can interfere with the harvest.

The vines can become so massive that they shade out small trees and shrubs. While it takes a lot of vine to block enough light that it harms the small tree or shrub, this does occasionally happen. Larger trees and shrubs have enough foliage surface area that the vines rarely interfere with their development even if they appear to be completely engulfed by them.

If you do try to remove the vines from small trees or shrubs, be careful. The tendrils hold very tightly and must be cut away. Merely pulling the vine can result in broken branches and uprooted woody plants.

Since it is an annual plant, if we do not receive as much rain next year, it not likely to grow to the monster. No long-term control is necessary.

### **Samples received/Site visit**

## Marshall County

### A sad tale of planting too deep



I found myself in Britton last week and noticed some familiar trees. Almost 15 years ago to the day I reported in the *Update* on a site visit where two young Crimson King Norway maples were much smaller than the third tree. They were planted at the same time – three year earlier – and the homeowner wondered if there was a borer problem.



Probing around the bases of the trees revealed that the two smaller trees had been planted too deep, the bud union was below the soil surface while the other two trees had their bud union (the point where the root stock and scion meet) about 2 to 3 inches above the ground, just where it should be. The larger one was planted properly.

Now 15 years later, all three trees are still alive but the two are still stunted and have grown very little.

Planting too deep does not necessarily mean the tree dies, but it may never thrive.

## Stanley County

### Dying ash, not emerald ash borer



If you drive through Pierre, you might notice all the dying ash. It looks like an emerald ash borer apocalypse. But its not this invasive beetle. Instead it is a major, and long running, infestation of the oystershell scale (*Lepidosaphes ulmi*).

The insect overwinters as an egg beneath the dead adult female scale's shell. The eggs hatch in the spring, about the time lilacs are in bloom, and the mobile nymphs - called crawler – move along the twigs and branches until they find a feeding site and begins sucking the sap. The adult sucks the sap from the twig or branch and is stationary, staying at this one feeding site for the remainder of its (short) life.

There are two generations for this scale during the growing season in many areas of the country but here on the Northern Plains there is only one so the treatment window is just after the crawlers hatch, late May or June. The best treatment at this point is probably to do nothing. There are very few new scales on this year's growth and the scales on the older shoots are long since dead (just the shells will remain for years as zombie scales).

The population that reached its peak about two years ago is declining and any insecticide treatment may kill more of the natural enemies of the scale than the scales.

Turner County      **What may be wrong with these trees? They died back to the ground but some are coming back from the roots.**



The deciduous trees and shrubs showed an interesting darkened and constricted area of injury just above the root collar and the conifers looked baked. I have seen this type of injury before where the dark fabric is either adjacent to the seedlings or lying on the seedlings. Fabric, while cooling the soils, does heat up the air just above the fabric and sometimes this causes heat injury that girdles the stem – usually the affected trees sprout back from the roots.

The South Dakota Department of Agriculture and South Dakota State University are recipients of Federal funds. In accordance with Federal law and U.S. Department of Agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, or disability (Not all prohibited bases apply to all programs.) To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

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