# Pest Update (April 8, 2020)

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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, 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…….…….. 1
Treatments to do now……2
Timely topic
A toilet paper substitute?.....…….…….. 2
Conifers and winter-burn……... 3
Herbicide carry-over…….. 4
Shrub pruning……. 4
E-samples
Albino squirrel?.....…… 5
Ash decay fungi……. 6
Black knot in chokecherry…… 6
D-shaped holes are not always emerald ash borer…… 7
Woodpecker damage on oak…… 8
Samples received/site visit
Minnehaha County (Diplodia tip blight on Austrian pine)……... 9
Stanley County (dicamba damage on Austrian pine)…….…....10
Union County (lightning strike on cottonwood)…….……..….10

## Plant development for the growing season

We are in the usual ups and downs of spring. A few days of warm temperatures – days in the 60s – followed by a short burst of cold. Last week the night temperatures in the Black Hills dipped to -3°F!

Still it's good working weather for most days and tree crews are taking advantage of it. The City of Brookings is out removing ash trees in anticipating of the day emerald ash borer is found in their city. These preemptive removals are a great means of "flattening the curve" once the insect is found in a community.

## Treatments to do now

**Tent caterpillars** can be treated right now by pruning. Tent caterpillars (there are three different species, eastern, forest and western), are common defoliators of mountainash, cherry, crabapples, apple, and plums. If you look at one of these trees right now you might find these globs of what appears to be molten glass around the twigs. These are the egg mass to the tent caterpillar. If these egg masses are pruned off and destroyed (don't just throw them on the ground, unless the mice eat them the eggs will still hatch) you'll save the tree from defoliation. The new egg masses do look like molten glass, very smooth and shiny. If the egg masses are a gray to white and have lots of holes in them, they are last season's egg masses and not a threat to your tree.

## Timely Topics

### *A toilet paper substitute?*

The least tragic outcome of the pandemic is the public's insatiable appetite for toilet paper. It is a common sight to walk through a store and find the entire aisle empty – for weeks. People are hoping someone will TP their house!

Substitutes are widely discussed (and keep in might almost all will clog sewer systems – some were meant only for the old outhouse). There is one that many campers are familiar with, the common mullein (*Verbascum thapsus*). This weed, found from road ditches in Brookings to the pine forests surrounding Custer, forms a rosette of large, thick, soft fuzzy leaves. Call it nature's answer to 2-ply Charmin.

The Eurasian native is a biannual. The first year the rosette of large leaves appears. The second year a tall, flowering spike forms and is covered with small yellow flowers. The early summer flowers start blooming first at the bottom of the stalk and progressively bloom up the spike as the growing season progresses. Later in the season, capsules develop that release the seeds. The seeds can remain in the soil for decades – one reason this can be a persistent weed, even with its value as TP substitute.

Caution: two very important points before anyone considers this as TP. First, you cannot flush the leaves down the toilet. It's back to the old outhouse again if you are using this substitute. Second, it can also cause skin irritation in some folks. This is not an area of the body you really want a rash so best leave this plant for a real backcountry emergency!

***Conifers and winter-burn***

We are seeing lots of winter-burn on conifers across the state. It is most apparent on spruce, especially Colorado spruce, and white pine (picture) but I have even seen ponderosa pines presenting symptoms of this seasonal disorder. As the temperatures warm there are increasing calls from panicked evergreen owners who are concerned with the appearance of yellowing or browning needles on their trees.

Often these trees were green for the winter but now with warmer days, but frozen or cold soils, the foliage is becoming discolored. The reason is the days are warm enough that the trees are transpiring, releasing water vapor to the atmosphere, but the water cannot be replaced quick enough from the cold soils.

This is a seasonal phenomenon, not a major concern as the trees usually green up once the ground thaws. However, sometimes the injury is more serious, and the needles go from yellow to brown to dead. It's hard to tell yet how serious the problem may be on a tree so delay any pruning until later in the season to give a chance for the color change to fade

And if it is not enough to have a tree turn yellow in the spring, you can buy one that is always yellow! This is a picture of the Scotch pine cultivar 'Golden Coin'. This introduction from the UK (1970s) is noted for its golden

foliage that intensifies through the winter and it can become almost a golden yellow by spring. The summer foliage is a pale green. The tree has a mature height of 12 feet and a spread of 8 feet.

***Herbicide carry-over***

I had a question from a conservation district about Broadaxe carry-over. The herbicide was used in a soybean field last year and this year a portion of the field will be planted to a windbreak. Broadaxe$^{R}$ contains sulfentrazone and S-metolanchlor and is used as a preemergent herbicide in soybeans. It provides long residual control of many broadleaf weeds. The question is how long to wait before planting?

First, this herbicide was on my list last year as a three-year wait. That means not planting until the spring of 2022. The three-year wait assumes the most susceptible tree species, usually conifers and legume trees, and soils conditions (dry, alkaline and low organic matter content) that "hold" the herbicide. It's the longest you must wait to be sure no injury will occur.

The absolute earliest is a minimum of one year but only with a representative bioassay to determine safety. This is the Broadaxe label requirement for "all crops not listed" and tree seedlings are considered a crop. This means 2020, this year, but only with the bioassay, which no one is likely to do.

I spoke with several crop consultants and herbicide specialists that work with trees and the consensus is two years at a minimum – 2021, next spring. This is a reasonable wait time and will provide safety for newly planted tree seedlings.

***Shrub pruning***

This is a great time to get out and do some last-minute dogwood pruning. The weather is warm, but the shrubs are still dormant. Dogwoods arise from multiple canes, which are long, relatively unbranched stems. The brightest colors, either red or yellow, are on the youngest canes. As the canes age the bases turn gray and usually all the canes more than three years old are gray except at their tips. The best way to have a colorful dogwood is to prune them at this time of year. This will maximize the number of young, colorful canes.

The best means of maintaining an attractive and natural appearance to these shrubs is to prune with heading cuts. This is a pruning cut that stubs off the cane at about 2-inches above the ground. These heading cuts result in the

formation of numerous new shoots arising just below the cut and these quickly grow as long canes. The heading cuts should be made cleanly and straight across the cane. Cutting at an angle is not necessary.

Loppers are the best tools to make these cuts as the long handles provide the leverage to cut through thick canes. However, on small canes, those less than 1/2-inch in diameter, a hand-pruner may be used.

While the pruning is accomplished by heading cut made near the ground, the number of canes removed may varies depending on the objective. If the dogwood is overgrown, almost choked-out by an excessive number of old, gray canes, all the canes can be pruned back. This is a technique referred to as rejuvenation pruning.

If the dogwood is not overgrown, then renewal pruning should be applied. Renewal pruning involves removal of about 1/3 of the oldest and largest canes. If this task is performed annually, then over a three-year time period, the entire dogwood shrub is completely renewed. This maintains a good balance of young and older canes and creates a colorful winter appearance.

## E-samples

### *Albino squirrel?*

Every now and then I receive a question that does not pertain to a woody plant. Since most people are home now they have a lot more opportunity to stare out their windows and see what is going on during the day.

One person noticed this unusual squirrel scampering around the tree. The color makes it hard to miss! She wondered if it was a new species. No, just a color mutation in one of our common squirrels. We have several squirrel species in the state with the eastern fox squirrel and eastern gray squirrel common to the eastern part of the state.

The albino squirrels in this region are usually the white version of the eastern gray squirrel. This is either due to albinism, a mutation of the gene for pigmentation, or a white morph, which is controlled by another gene. The true albinos, with the white due to albinism, will also have red eyes. However, most white squirrels are the white morph. This is not the best color when trying to avoid predators, but urban neighbors are fairly safe.

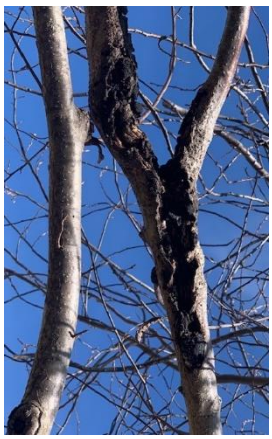
### *Ash decay fungi*

I also received this picture with the question about the “warty” growth on the tree. This is an ash tree, and these are conks, the spore-producing fruiting bodies, of a decay fungus. The fungus is probably the ash heart rot (*Perenniporia fraxinophila*), but it might be one of the other related species that infect ash. These fruiting bodies are usually seen along the upper trunk and large limbs and are often associated with dead branch stubs or cavity openings. The large pruning wound just above the fungus may have been responsible for this infection getting started.

The fungus is an indicator that the tree is severely decayed and that the upper trunk or large limbs could fail and fall. Infected trees should be evaluated and most likely removed if the tree is near homes or other areas where people could be injured or property damaged. These are not trees that should be treated for emerald ash borer once the insect is confirmed in the area. Otherwise these trees should be retained as the soft wood is suitable for excavation by birds creating cavity nests.

### *Black knot in Schubert chokecherry*

The question was what to do about these growths in their ‘Autumn Purple’ ash. First, it was not a purple-leaf ash, it’s a purple-leaf chokecherry, most likely the Schubert chokecherry (*Prunus virginiana* ‘Schubert’).



The growths are the galls formed by the disease black knot (*Apiosporina morbosa*) The cylindrical, black, rough textured galls on the branches are hard to miss and go by many descriptive names from “dead man’s finger” to “dog poop on a stick.” The disease is not only unsightly; it eventually girdles the affected branch through this often takes years. The disease is common on many cherries, particularly the ‘Schubert’ chokecherries, and some plums.

Spores are released from these knots in the spring and infection can occur from the time the buds are just beginning to expand (April) until shoot growth is

completed (early June). Infections can start during this period whenever the tissue is wet (after a rain) and the air temperature is above 60$^{o}$F.

The disease is not easy to manage, and I tend to lean towards killing infected plants – basal pruning – rather than attempt to cut out the knots. First, once susceptible, always susceptible. There is some resistance to this disease among chokecherries and some trees will never get the disease and others will always have it (or become infected again after pruning).

However, if you have a lot of time on your hands or the tree is important to you, prune out and destroy all the knots now. Prune infected branches back to a healthy branch or limb. If the disease has progressed to the trunk, just kill the whole tree. And if you have enough time on your hands to cut the knots out of this tree, remove all the knots on any other cherry or plum within a couple of hundred feet of this tree.

Second, even after you prune, you'll see new knots form the following year. The shoots infected last year only have a slight swelling to them at this time and are easily missed while pruning. The larger, blacken galls will not form from these swollen areas until this summer.

After all the knots are removed, fungicides can be applied to reduce future infections. Fungicides containing chlorothalonil that are labelled for stone fruits such as cherries and plums can be used to help manage this disease. The first application should be made just before bud-break and then on a 10-day interval until shoot growth has stopped (late May or early June). The treatments are to prevent the tender new shoots from becoming infected by the spores being released from the knots.

Fungicides containing chlorothalonil or captan should not be tank mixed with oils or applied within two weeks before or after an oil spray as plant injury may occur. Chlorothalonil application must stop at blooming for any tree you intend to harvest fruit for human consumption. The first applications are the most important so if flowering occurs before shoot growth ends (and expect this on cherries and plum) forgoing the last sprays will probably be okay.

***D-shaped holes are not always emerald ash borer***

We received a picture through the state's emerald ash borer web site "Report an Emerald Ash Borer Sighting", https://emeraldashborerinsouthdakota.sd.gov , of a tree trunk that showed D-shaped holes. The question, of course, was if these were from the emerald ash borer (*Agrilus planipennis*). The adult emerald ash borers emerge from D-shaped holes cut through the bark. The appearance of these holes is one of the indicators that an ash is infested.

But only if it's an ash tree. We have 16 other species of *Agrilus* in our state. They are all close cousins of emerald ash borer with one important difference – these are all native insects attacking their native hosts. This means the hosts have some tolerance to these insects and are only killed if stressed and weakened.

We can find D-shaped holes in woody plants due to these native borers from boxelder (*Agrilus masculinus*) to willow (*Agrilus politus*). While the holes in this picture were D-shaped, the wood was lighter than I typically see with ash (which is a lighter yellow). A conversation with the individual who sent the pictures revealed that the tree was a dead honeylocust in his windbreak. The insect responsible for the D-shape exit holes is most likely the honeylocust borer (*Agrilus difficilis*), a native borer.

***Woodpecker damage on oak***

Woodpeckers and oaks are still a bad combination. I received a picture of a bur oak that was declining and had the bark shredded from the twigs and branches. The problem is woodpeckers drilling into the bark searching for the small larvae of the **gall wasp** *Callirhytis flavipes*. During the winter these small, white larvae are found within the inner bark of the branches and twigs of mature oak trees and the trunks of young trees. The gall wasps emerge in the spring as adults and move to the newly expanded leaves where they insert eggs into the midrib, the central vein of the leaf. Once the eggs hatch, the larvae form a gall on the vein and live out their short lives within this structure. Adults emerge later in the season and lay eggs on the twigs and branches.

The galls formed by this gall wasp are not particularly harmful to the tree, no more than the many other galls that form on oaks. What makes this gall wasp a problem is the woodpeckers that feed on the larvae during the winter. The woodpeckers can shred most of the bark from young trees, enough that the trees are be killed by this injury. The trees that are not killed by the woodpecker activity, often have the tops killed back enough that the trees become misshaped and of little value as a windbreak tree.

Management of the problem is difficult. Some people have tried protecting their small oaks with Tanglefoot Bird Repellent$^{R}$ on the trunk. This is a sticky material that comes in a caulking tube and can be smeared on the trunk to discourage woodpeckers. This is a very time-consuming task and must be repeated every year. Insecticides to kill the gall wasps have not be completely evaluated yet. The timing for insecticide sprays is critical and the gall wasps are flying for an extended time period in the spring and late summer. Injecting insecticides to kill the larvae as they feed is still limited though emamectin benzoate, an insecticide used for emerald ash borer, is labelled for this use. We are planning to evaluate the effectiveness of these injections this year.

Not all trees are infested by the gall wasps. It is very common to find several bur oaks growing near one another and only one tree infested by the wasps. The bark on the infested trees appears to be less furrowed than the uninjured tree but this is difficult to evaluate as the woodpeckers have often removed so much bark it is hard to tell the origin texture.

## Samples received/site visits

Minnehaha County **Diplodia tip blight (follow up to e-sample)**

The original concern was borer (April 1, 2020 *Update*) but the holes in the trunk were just caused by sapsuckers. The tree appeared a little thin so there was a problem, but not one that could be diagnosed from a picture. A site visit was needed and once there it was apparent that fungal disease Diplodia tip blight (*Diplodia pinea*) was the problem.

Tip blight is probably the most common disease of pines, particularly Austrian pine. Symptoms in early summer are the new needles turning brown and wilting. The infected shoot tips become stunted. The disease is not usually a tree-killer, but will disfigure it enough you might wish the tree would die. The disease overwinters in the infected shoot tips and on the cones. When you pick up a cone you might see small black dots on the scales. These are the fruiting bodies that release the spore to infect trees.

One old management technique was to collect and destroy all the fallen cones. Sound easy enough but the spores are so light you probably would need to pick

up every cone in the neighborhood. The best means of managing the disease is with fungicides. The most common treatment is a foliage spray with a fungicide containing thiophanate-methyl, propriconazole, or chlorothalonil (labeled for control of this disease) applied just before the bud sheaths have opened. Timing is critical, once the bud sheaths have opened and the candle begins to form, it's a little late to begin the first application and this is the one that provides most of the protection. A second application is made about two weeks later.

A newer approach may be coming soon. A recent article in the journal *Arboriculture & Urban Forestry* (January 2020) found that injections of propiconazole were effective in managing the disease. The recommended time for injection was late fall when resin flow was reduced. This timing also provided an added benefit of having the fungicide in the tree prior to the spring infection period.

Stanley County **Dicamba injury on Austrian pine**

This is a follow-up to a previous visit that expanded to include herbicide testing. The pattern to the symptoms, and the symptoms themselves, were ones that are typically associated with herbicide drift. Only pines in the center of the windbreak were presenting symptoms, the ones on the edges were symptom-free. In addition, the pines along the outer row in the center were more affected than the trees in the interior.

The symptoms were discolored or missing needles along the shoots at the terminals. The terminal buds were alive but all the foliage beneath them were affected.

I collected needle samples and the analysis showed one growth-regulator herbicide – dicamba. The concentrations were not extremely high, but this is consistent with delayed testing. Dicamba is metabolized quickly and 30 days after the drift exposure the residue concentrations significantly decline.

The drift was made after the candles had fully expanded, so after mid-June, and probably before mid-October. While the herbicide responsible for the symptoms was determined as well as the time period of exposure, the big question is by who. Unfortunately, there is no test that can point to the source.

Union County **Lightning injury on cottonwood**

The concern was bark falling off the tree. When I inspected the tree, the cause was an old lightning strike. Cottonwoods are a favorite for strikes. It not because

of any internal properties specific to this species. They are not electrically charged or have a high metal content. It's just they are usually the tallest trees.

This was an old strike with a path that ran on one side from the top of the tree to the base in one long, almost straight pattern. A lightning strike generates a lot of heat and pressure (from the expanding heated air) and this can kill a strip of cambium all the way down the trunk. In this instance the cambium tissue was killed (and this is the tissue responsible for diameter growth) but the dead bark remained as a cover. As the tree continued to grow, this dead bark fell away.

Lightning strikes can kill a tree but it looks like this one is making a recovery. I was not able to find any damage roots so the stability is sound. The next step is to evaluate the trunk for extensive decay but that is the next visit.



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