Pest Update (July 27, 2016)

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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.

Plant development

We are right on schedule for plant development this year, maybe still a little ahead. The summer-flowering billard spireas (*Spiraea* x *billardii*) are in full bloom along with our other summer favorites, Ural falsespirea and smokebush.

Timely topics

Trees and the current drought

Symptoms of drought injury on trees

A dry summer is not only stressful for people, pets and livestock, but for our trees and other vegetation. Trees require a tremendous amount of water to meet their functional needs and long-term shortages can influence growth and survival. Trees signal their water deficit through a number of symptoms. The most common changes in appearance are:

- Lighter green to yellow-green foliage
- Leaf scorch around the margins
- Wilting leaves
- Leaves dropping prematurely

These stressed trees will also often have stunted shoots and may produce more seeds than typically seen for a tree. Conifers will often produce an abundance of cones the second year of a drought.

Trees that are stressed by drought are also more susceptible to insect borers and canker diseases. Bronze birch borer attacks on birch are more common during drought years. Twolined chestnut borer is often associated with declining oaks during drought.

How much water does a tree need in the summer?

Just how much water does an established tree need during our hot summers? This depends on a number of variables but two key ones are the size and species of tree. Almost all the water absorbed by a tree on a summer day is lost out of the leaves through transpiration. This process moves water from the roots, up through the trunk and branches and releases it as water vapor from small holes in the foliage. Only one or two percent of the water is used for meeting the

needs of the tree for photosynthesis and other functions. While water is "lost" through transpiration that does not mean it was wasted. The water vapor from the leaf helps cool the foliage surface, often as much as 10° to 15°F. The transpiration stream is also the mechanism that pulls water through the tree without the tree having to do any work. Each leaf may be transpiring about one-tenth of an ounce of water per day during the summer. A mature elm tree may have more than 150,000 leaves so the tree may transpire more than 100 gallons of water in a single hot summer day!

There are also difference among the many tree species in the amount of water they transpire. Conifers with their thicker, waxy needles lose less moisture than a broadleaf tree such as an oak or maple with their wide, thin foliage. However, the differences among tree species is not as important as size. The larger the tree, the more water it requires.

Trees required water during the summer and the general rule-of-thumb is they need about one inch of water per week. Unfortunately, rains are not that dependable in South Dakota and we can get three inches one day and nothing for the next two months.

Watering needs for trees during July in South Dakota

Diameter (inches at 4.5 feet)	Canopy spread (feet)	Weekly water needs (gallons)
3	5	12
6	10	45
12	20	180
18	30	400
24	40	700

Ideally this amount of water is provided to the tree every week, rather than double or triple the amount every two or three weeks. The water should also be applied slowly so that it soaks into the ground rather than runs off. The area to be watered should be from the trunk to a distance out equal to about half the height. While tree roots often extend as far out as the tree is tall, the majority of roots are closer to the trunk.

The water chart will provide the equivalent of about one inch of water. To check to see if you are adding this amount, place an empty coffee can within the sprinkler zone and run the sprinkler until you have about 1 inch of water in the container. Also check to be sure the water is infiltrating the upper foot of the soil

as this is the zone for the majority of absorbing roots. After the first watering or two, dig a narrow hole by hand to a foot deep and check to be sure the soil is moist. If not, additional water may need to be applied or the water applied at a slower rate.

Frost damage to spruce

Numerous calls this summer are regarding the wilting and distortion of spruce shoots and needles. While herbicides have been identified as the causal agent for some of this damage, frost is suspected for the reason for these symptoms on many other spruce.

Spruce shoot expansion occurred a little earlier than normal due to the warm spring. Unfortunately, the tender shoots were just beginning to expand when the May frost occurred across the state. This resulted in many spruce producing wilted and distorted shoots and needles. The injured needles often have a yellow-green color rather than whitish-green to bluish-green.

The injury is most apparent on trees in areas when cold air drains so trees in a depression may present these symptoms, but not the spruce on the tops of the hills. Also trees on the outer row, and more common the trees on the south end of an east-west belt will be affected. Young trees, less than 6 feet, the entire tree may show symptoms. More mature trees may only have drooping shoots on the lower 3 or 4 feet of the canopy.

The affected spruce may recover from this injury. But if the shoots are not setting buds along their length and are dry and brittle, these are indicators that the shoot is dying. Since spruce do not readily set new buds farther back along the older branches or trunks, severely frost damaged trees may die next year or become much distorted.

E-samples

Cotoneaster leaf crumpler (*Acrobasis indigenella*) is most commonly found on cotoneaster, but is an occasional pest of crabapples. The larvae consume the foliage in mid to late summer and construct a home from the dead leaf fragments, silk and frass pellets (insect poop with a little fiber). The insect does not feed on enough foliage to harm the plant, the real problem these “homes” detract from the

appearance of the plant. The crumpler has only one generation per year with the adult moths flying in early July. Eggs are laid in July and once hatched the larvae begin to form these clumps which they overwinter in before resuming feeding in the spring. Insecticides containing Carbaryl or Acephate as an active ingredient are effective at this time of year to kill the young larvae before they form new clumps.

Earwigs and pill bugs in trees. I am receiving more pictures of the European earwig (*Forficula auricularia*) and pill bugs (*Armadillidium vulgare*) with the question; *What do I spray to keep these bugs from killing my tree?* When tree owners notice loose bark or cavities in their trees they often pull the bark away and these two critters drop out. They immediately become suspects A and B, but they are innocent! They like to hide during the day in dark, damp places like under loose bark or beneath pots or mats. They do not feed on trees so are not the reason for the bark falling off the tree – that is usually due to a canker disease or sunscald. Earwigs and pill bugs are scavengers feeding on dead and dying plant material and even other dead insects. Earwigs will also feed on healthy perennial and vegetable leaves so they are responsible for some of the leaf notching people are noticing in the garden plants. The European earwig arriving in our area only about 20 years ago so these relatively large earwigs are expected to increase in numbers in coming years. They do not crawl in people's ears at night. While there is a lot of dead organic matter between some folk's ears, this feeding behavior is just a myth.

Ichneumon wasps (*Megarhyssa*) are out flying. These insects have very long ovipositors they use for laying eggs deep inside trees, not to sting people. That still does not mean they are not scary. These insects can be more than an inch long and then add another two or three inches for the ovipositor. Fortunately they use this "stinger" to place eggs in or on borers in trees. After the eggs hatch the larvae feed on the still living borer before pupating and bursting out to become adults to find other prey (remember the movie *Aliens* when the creature come out of Kane, the executive officer, it's something like that).

Leaf blister on maples (*Taphrina*) is appearing in the state. This disease has very similar symptoms to maple anthracnose but there are a few differences. Leaf blister may result in some blistering of the leaf, almost appearing as small galls. The leaves also have spots, usually more rounded and the spots or blotches do not follow veins, but will cross them. Both diseases occasionally appear in our state, usually if we have a wet spring, and there is no rule that both cannot be found on the same tree (or leaf!). Also it really does not matter which pathogen is involved as the treatments are the same – nothing. Once the symptoms are seen it's too late to treat. These diseases results in nothing more than having to rake fallen leaves that start dropping now and they are not a serious threat to the tree.

Pear slug (*Caliroa cerasi*) is not a slug but a sawfly. These are specialized members of the bee and wasp order that slit (saw) plant tissue to lay their eggs. The adult female emerges from pupae in the soils during late spring. She cuts slits in the leaves to lay her eggs and these hatch in about 10 to 15 days. The larvae look a slimy olive green tapered worm. They only feed on the upper surface of the leave and usually between the veins, a pattern referred to as windowpaning due to the appearance of a damaged leaf. Heavily infested leaves will turn brown particularly if injured by the first and second generation of slugs. The first generation of larvae are usually out in June, the second in August, so we are between larvae at this time, meaning you probably will see the damage without seeing the slug. However expect to find some on the leaves in another couple of weeks. Pear slug is usually only a problem on pears and cherries. Insecticides containing Carbaryl are very effective against the larval stage but usually the natural enemies of the slug provide adequate control

Spindle (pouch) gall *(Phytoptus emarginatae*) on plums are a common sight right now. These galls are the work of an eriophyid mite. The eriophyid mites on *Prunus* (apricot, cherry and plum) form an elongated spindle gall, the most common eriophyid mite on maples form a round bladder. These eriophyid mites spends most of their short lives in the gall. This is where Mom and Dad mite meet (Mom

actually builds the gall through her feeding, Dad is fairly useless), raise a family of little mites and kick the teenage mites out of the house later in the season. Eriophyid mites have only two pair of legs, not the usual four pair found with other mites and since they are wingless, their mobility is severely hampered. They are so tiny that the wind carries them to other hosts. The galls do not harm the tree or even the leaves, so no need to treat them nor are there many effective mite pesticides anyway.

Samples received/site visits

Brown County **Please identify this tree.**

This is the Ussurian pear (*Pyrus ussuriensis*), a tree that probably deserves more use as a windbreak tree.

Grant County **What is wrong with these crabapples?**

The olive drab botches and yellowing are common symptoms of the fungal disease apple scab. While the symptoms appear at this time of year, the primary infection occurred during our wet spring when the buds were expanding. There is no effective treatment for the disease once the symptoms appear.

Moody County **What is wrong with this spruce?**

Well, it's not a spruce but a concolor fir (*Abies concolor*). These can be attractive evergreens but are better adapted to the sheltered environment in our communities than out in the country. The discolored and stunted needles are due to the exposure to our winter winds.

Stanley County **Is this verticillium wilt?**

We are working on culturing the pathogen and will let you know in another week.

Tripp County **What is this fruit?**

This yellow fruit is from a chokecherry (*Prunus virginiana*). Some chokecherries produce yellow or yellowish-red fruit rather than the typical dark purple fruit. The yellow fruit is sometimes called chokeless chokecherry as the fruit is often sweet and mild compared to the sour flavor of the common chokecherry.

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