

ORNAMENTAL PEST AND DISEASE UPDATE

August 24, 2007

Drought Stress

Future Implications

By Alan Windham

Just as the Easter freeze was an outdoor classroom on the effects of cold temps on herbaceous and woody ornamentals, the drought of 2007 reminds us of the effects of inadequate water on our ornamental plants. This drought has to be a worst case scenario following the Easter freeze. Plants were already stressed and had to use stored energy in carbohydrates to replace foliage destroyed by the freeze. As this drought is affecting the total physiology of non-irrigated plants, we will see smaller leaf buds, smaller leaves, shorter shoots and fewer flower buds on many plants this year and next.

The effect of water stress of plants varies from species to species and often depends on the intensity or level of stress. Loss of turgidity and wilting is a common symptom on some plants. Premature fall color shows up on plants that stop producing chlorophyll in leaves. Leaf scorch is a symptom seen on flowering dogwood and other woody plants. Many plants will sacrifice older leaves, while young leaves and meristematic tissue in young shoots survive. Trees such as red buckeye will sometimes shed all of their leaves by late August, but stems and buds are viable. Some evergreen plants, such as holly, laurel and boxwood, give very little warning that they are in trouble until it's too late. A healthy looking Japanese holly will go from green to totally brown, once it passes the permanent wilting point, which is the point of no return, when the addition of water is pointless.

This drought also makes some woody plants more susceptible to canker diseases. Fungal canker diseases are caused by pathogens such as *Botryosphaeria*, *Phomopsis* and *Seiridium*. Expect to see shoot dieback of rhododendron, azalea, Leyland cypress and many other woody plants. Drought stress generally increases the damage from canker diseases, which are basically localized infections. Leaves and stems above the canker usually die once the canker girdles the stem. Whole plants may be killed if the trunk or main stem is infected and girdled. I suspect we will see more shoot dieback and the death of marginal plants and young trees from these



Moderate leaf scorch due to drought stress on a semi-mature flowering dogwood in a Nashville landscape.

diseases. A former UT graduate student found that woody plants exposed to severe water stress are still more susceptible to canker disease infection even after the drought ends.

When samples arrive at the lab with symptoms of drought stress, it's interesting to engage the grower in a discussion on their watering methodology. Often we will be told that the plant was watered thoroughly or religiously. The latter certainly means different things to different people. In some cases overwatering can be as much of a problem, as underwatering. Just because you have an irrigation system doesn't mean that you have to see it run everyday. Watering regimens vary by plant type, exposure, soil type and age of plant. It has been a trying summer for anyone growing ornamental plants or turfgrass. Here's hoping that 2008 will bring more favorable weather for gardening and growing.

To find out more on drought stress, go to these resources:

[Drought Tolerant Trees SP570 UT Extension](#)

[US Drought Monitor](#)

[NOAA Drought Information Center](#)

Drought and Wood-Boring Insects

By Frank Hale

Stressed trees and shrubs are generally more susceptible to attack from various wood-boring insects. Catches of granulate ambrosia beetle adults (formerly Asian ambrosia beetle) were much higher than usual this spring. This pest tends to primarily attack trees in the late winter when the plants are still dormant and supposedly more vulnerable to infestation. Since most trees did not regain their foliage for about a month after the Easter freeze, I wonder if these trees were also more vulnerable to borer damage. I did notice a crape myrtle in my own yard that was attacked by the granulate ambrosia beetle since the freeze. I sprayed the crape myrtle with permethrin soon after seeing the tubes of frass being exuded from 1 mm holes in the trunk. Only time will tell if the plant will survive the attack. Day after day of 100 °F and higher temperatures are definitely not helping.

Dr. Jason Oliver, entomologist at the TSU Nursery Crop Research Station in McMinnville mentioned that he often can spot borer infested trees, especially maples, during the summer by their premature change to fall foliage color. He said that he has been able to discern flatheaded borer damaged tree trunks in late October.

What can we expect this year and next? Borer damage should increase, especially to weakened trees and shrubs. I would definitely be looking out for an increase in southern pine beetle activity over the next few years. There have already been reports of southern pine beetle outbreaks in the Chickasaw State Forest and State Park in Hardeman and Chester Counties.

The use of irrigation, mulch, and protective insecticide applications will be especially important. Some pests such as banded ash clearwing, locust borer, and the second generation of root collar borer, American plum borer, and magnolia borer attack trees in the late summer or early fall so chemical control is important at that time. Peak activity for many other borers occurs in the spring through mid-summer. Refer to Commercial Insect and Mite Control for Trees, Shrubs and Flowers, PB1589 for timing of insecticide applications for wood-boring insects on woody ornamentals.

For further reading:

[Common Tree Borers in Tennessee](#)

By Frank Hale, UT Extension

Wood-boring insect damage to young shade trees: A, Flatheaded appletree borer damage to red maple; B, Flatheaded appletree borer damage to flowering dogwood (note frass in the wound); C, Die-back to ash from the banded ash clearwing borer.



Bacterial Leaf Scorch of Shade Trees

By Alan Windham

The drought of 2007 is also affecting symptom development of bacterial leaf scorch (BLS) of shade trees. I have noticed many oaks in Tennessee that have leaf scorch and/or a shrinking canopy associated with bacterial leaf scorch. BLS is caused by an organism called *Xylella fastidiosa*. It is spread by leafhopper and treehopper insects. The only good news is that spread to adjacent trees is sometimes slow. In many cases, trees will scorch for several years, canopies will thin and the affected tree will die. In most cases, this is a terminal disease. Trees should be removed before they become a hazard or when their aesthetic value has diminished.



Advanced symptoms of bacterial leaf scorch on a pin oak.



Mature pin oak infected with bacterial leaf scorch. Symptoms may appear in mid-summer to early fall.

Pin oak, red oak, shingle oak, sycamore, red maple, mulberry and hackberry are common hosts. There are also numerous weed hosts of *X. fastidiosa* which may act as reservoirs of the bacterium.

Irrigation during dry periods may prolong the life of the tree. Unfortunately there are no curative treatments. Antibiotics such as oxytetracycline may be injected in low volume or high volume into affected trees, but at best this annual treatment may lead to remission but does not cure the tree. Research has not demonstrated that there are reliable treatments for BLS.

For further reading:

[Bacterial Leaf Scorch of Landscape Trees](#) by W. Clatterbuck, UT Extension

[Bacterial Leaf Scorch](#) by J. Hartman, Univ of KY



Marginal scorch of a pin oak leaf infected with bacterial leaf scorch.

Insect of the Week

Velvet Ants

By Frank Hale

Cicada killer wasps were the prevalent insect reported during most of July and early August. Another parasitoid wasp, the velvet ant or cow killer has been heavily reported over the last few weeks. While they are fiery red and have a painful sting, they are not imported fire ants as some might tend to assume. While the male velvet ants keep their wings and lack a stinger, the females are wingless and are the ones usually seen crawling on the ground. They are densely covered with short red setae or hairs. This is considered a warning coloration to potential predators so keep your distance. The females are about 0.75 inch long with black legs and a black band across the otherwise red abdomen. The adults feed on nectar and they can produce a squeaking sound during mating or when harassed. After mating, the females search for the pupal chambers of other species of bees or wasps on which to lay an egg. The resulting wasp larva feeds and develops on the host and soon pupates and becomes an adult. Some will spend the winter as a prepupa or pupa and emerge by the next summer.



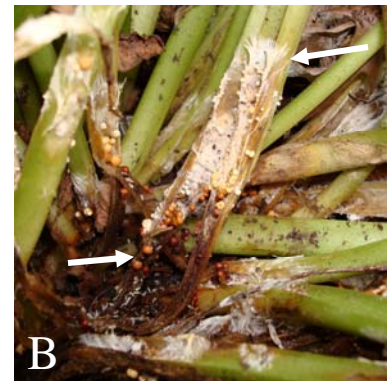
Velvet ants: A, male; B, female.

Drought Stress or Disease?

By Alan Windham

While visiting the woodland garden at a botanic garden in Georgia a few weeks ago, I noticed some perennials that at first glance appeared to be showing the effects of the drought. Leaves were exhibiting leaf scorch as you would expect from water stress. However, upon closer inspection, it became clear that this was a disease, southern blight, caused by the fungus *Sclerotium rolfsii*. This fungus thrives in hot weather, which has been in abundance this month. The key to identifying southern blight is looking at the stem or in this case the leaf petiole for signs of white mycelium and small, spherical sclerotia that are white (immature), tan (semi-mature) to mahogany (mature). While the white, mycelium is the business end of the fungus, the sclerotia are important for survival until next summer.

Sanitation is a primary control measure. For perennials, infected leaves need to be cut back below the infection. It's important to remove all plant material that has mycelium or sclerotia attached. This might include dead leaves and organic debris on the soil surface. Fungicides can be used as a preventative. Terraclor (PCNB), Contrast (flutolanil) and Heritage (azoxystrobin) are each labeled for southern blight management.



Southern blight could be confused with drought stress on many plants such as hosta (A). Mycelium and sclerotia of, *Sclerotium rolfsii*, the fungus that causes southern blight on the petioles of hosta leaves (B).

Fungus of the Week

Ganoderma lucidum

This specimen was brought to our attention by a neighbor of Ellington Agricultural Center. *Ganoderma lucidum* is generally considered a weak parasite to saprophyte (feeds on plant tissue already dead) growing on decaying logs, stumps or roots of deciduous trees. When you see this type conk at the base of a tree, it's not a good sign. I have seen *Ganoderma* species on hemlock, honey locust, oak, maple and black cherry. In this case, the specimen at the right was growing at the base of a mimosa that fell in a storm and took out a neighbors fence. The fungus had caused a "white rot" and destroyed much of the root system and trunk, weakening the tree structurally.

This fungus is in a group called polypores as it has minute pores on the underside of the cap, rather than gills associated with many mushrooms. It's been calculated that a good size *Ganoderma* conk can produce billions of basidiospores per day; and continue to do so for months.

Ganoderma curtsii may be the same species as *G. lucidum* I have seen it at the base of oaks. A look alike species found on hemlock logs is *G. tsugae*. You will see more of these in the Smokies in the future if we don't get the hemlock woolly adelgid under control.

A shelf or bracket species, *G. applanatum*, has been given the common name "Artists' Conk" as pictures may be etched onto the pore surface.



Precautionary Statement

In order to protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store, or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label. Persons who do not obey the law will be subject to penalties.

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