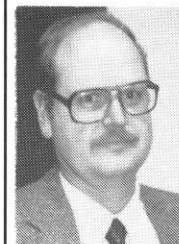


Caution: Drought Effects Can Be Confused with Oak Wilt

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Symptoms Provide Clues for Field Diagnosis*

By Bob Mugaas, Minnesota Extension Service



Even though 1990 rainfall amounts were more normal in much of the state, the effects of three drought years were still very visible. Oak trees have been hit especially hard. A bark boring insect that attacks weakened oak trees, the two-lined chestnut borer, is aggravating the problem. Many people are confusing drought mortality with oak wilt, and sometimes it can be extremely hard to tell what caused the tree to die. By recognizing the differences in the symptoms of oak wilt and drought mortality, correct diagnosis can be made.

The symptoms of drought mortality on oaks generally appear during the last half of the summer, while oak wilt symptoms are more prevalent during the first half. Both problems will cause the tree to die from the top down. If the leaves are turning brown uniformly, staying pretty much the same size as healthy leaves, and staying on the tree, suspect drought damage. If the leaves are wilting (affected crown looks thinner than the rest of the tree), turning color at the edges and tips of the leaves before the base and midrib, and falling soon after discoloration, suspect oak wilt.

Trees dying of drought often will be more random throughout a stand, although trees on south-facing slopes, in areas of recent construction, or on the edges of new openings will be more susceptible. Normally this problem will take months or years to kill a tree. During 1990, trees were dying in as little as a couple of weeks. Sprouts along the trunks of these trees are common, as are sump sprouts after the trees are removed. If other species of trees in the area are also dying, this too points to an environmental problem like drought.

Oak wilt spreads primarily through grafted root systems forming an infection center that expands as the fungus moves from diseased trees to adjacent healthy trees. In other words, trees dying of oak wilt will typically be found in groups. Red

oaks are very susceptible to oak wilt, and once symptoms appear they die within a couple of weeks, even days. White oaks are very resistant to oak wilt, and if they become infected, they can take much longer to die. If many oaks start dying in a stand all at once, this is probably oak wilt; this disease does not spread that quickly. Stump sprouts usually do not form after an oak wilt-infected tree has been removed, and if they do, the sprouts dies very quickly.

If symptoms become hard to distinguish, lab sampling may be necessary. Remember that a sample from a branch showing current wilt symptoms is necessary. The twig or branch sample should be 6 - 10" long and at least one half inch in diameter. Keep the sample cool after it is cut until you mail or bring it in. If you mail it, put it in a paper envelope (don't add water) and mail it early in the week (Monday or Tuesday). Lab analysis takes 2 to 3 weeks. Send samples to the Shade Tree Lab, Minnesota Department of Agriculture, 90 West Plato Blvd., St. Paul, MN 55107-2094.

The first wave of drought mortality on oaks in 1990 occurred in the first half of July. Trees extremely low on energy (starch) reserves entering the year used it up putting out the spring flush of leaves. They simply ran out of gas. These trees leafed out and died back very quickly.

The second wave of drought mortality on oaks in 1990 started in mid-August. This was expected and the timing has to do with the life cycle of the two-lined chestnut borer. The adult borers emerge from infested trees in June, and after feeding for a few days, seek out weakened oaks to lay their eggs. The eggs hatch every couple of weeks later and land larvae burrow through the bark to begin feeding in the cambium (where the water-conducting system of the tree is located). They continue feeding throughout the summer, and by the

middle of August the water-conducting system is disrupted to the point that the crown of the tree starts drying out. Although the borer hastened the death of the tree, drought was the primary cause. The two-lined chestnut borers will only attack weakened or stressed trees.

If oak wilt is diagnosed, control may be necessary to save other nearby oaks. Brochures on oak wilt and its control are available by calling the Minnesota Department of Agriculture office at (612) 296-3349, or contact your local Extension office. If drought/two-lined chestnut borer is the problem, watering is critical. If the tree(s) are more than 50% brown, survival is unlikely. Instead, concentrate on the healthy trees. Apply mulch around the base of the tree out to about 5' away (chipping the tops of removed trees is an excellent source of mulch material). This will help retain moisture for the tree and will keep roots cooler. Water trees during periods of dry weather. Do this by laying a hose under the tree and letting it run for a couple of hours. Move the hose around from time to time. (NOTE: Larger scale irrigation methods may be more practical for golf course situations. However, the principles remain the same). The object is to get the soil moist 6-10" down. Fertilizing to promote root growth can be done in the fall or spring while the trees are dormant. Nitrogen should not be applied as it promotes crown growth and can throw the tree into a more unbalanced and stressed condition. Nothing special needs to be done with the wood from the trees that are cut down. Destroying or covering it will not significantly reduce the two-lined chestnut borer population as this insect is common throughout oak forests. It is much more important to maintain oak trees in a healthy condition so this borer cannot successfully attack it.

*Adapted from an article published in the OVERSTORY Newsletter by Dave Stephenson, Minnesota Department of Agriculture.