

Plant Pathology Fact Sheet

**Sample submission protocol for diagnosis of
Thousand Cankers Disease in Walnut**

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Thousand cankers disease (TCD) is a fatal disease of black walnut (*Juglans nigra*), and most recently, butternut (*Juglans cinerea*). The disease complex involves a fungus that is carried to trees by the walnut twig beetle, causing numerous cankers on branches and killing trees 5 to 6 years after infection. The disease complex is widespread in the western U.S., and has recently been identified in Tennessee, Pennsylvania, and Virginia. As of this printing (February 2012), thousand cankers disease has not been identified in Kentucky.

Infected trees begin to show symptoms within 3 years after initial infection. Early symptoms include branch flagging, wilting or yellowing of leaves, or canopy dieback from the top down (FIGURE 1). On branches, “thousands” of small cankers (dime to quarter-sized) develop under bark (FIGURE 2). These cankers are not visible on bark surfaces. Cambium tissue dies as cankers expand to girdle branches. Rapid tree death ensues after initial infection. Tiny beetle exit holes and “galleries” can be found on dead wood.



FIGURE 1. EARLY SYMPTOMS OF THOUSAND CANKERS DISEASE ON WALNUT. (PHOTO: CURTIS UTLEY, CSUE, BUGWOOD.ORG)

Thousand cankers disease is an emerging pest that may cause severe losses in forests and landscapes in Kentucky and throughout the eastern U.S. Persons suspecting thousand cankers disease should submit suspect walnut samples to the UK Plant Disease Diagnostic Laboratory (PDDL) through local UK County Extension offices. Recommended sampling protocols are as follows:

1. Collect branches as early in the season as possible, when fungal and beetle activity is highest.
2. Submit walnut samples to PDDL (via your county Extension office) as soon as possible after collecting, preferably within 24 hours. Do not store samples due to risk of sample deterioration.
3. Avoid collecting wet or damp samples. Wet wood shipped in plastic bags may become “moldy,” resulting in difficult fungal isolations.
4. Collect samples only from live, symptomatic trees. Select symptomatic dying or recently dead wood, as beetles and fungi will be more prolific in this type of sample. Do not collect fallen limbs from the ground.
5. Branches should be 10 to 12 inches long and at least 1 inch in diameter.
6. Collect 6 to 10 branches from each tree. Do not remove bark.
7. When possible, mark the upward-facing side of each limb. Often beetles are found on the top side of branches.
8. Ship branch pieces in plastic bags with a dry paper towel inside to absorb moisture. Do not wrap branches in aluminum foil.



FIGURE 2. SMALL CANKERS DEVELOP UNDER THE BARK (PHOTO: NED TISSERAT, COLORADO STATE UNIVERSITY, BUGWOOD.ORG)

For more information on TCD, see:
[NA-PR-02-10](#) from the National Forest Service, [National Pest Alert](#) from the North Central IPM Center, or the [photo gallery](#) at Bugwood Forestry Images.

If you suspect TCD, contact:
Your local [County Extension Office](#) or [Office of the State Entomologist](#)

*Adapted from:
University of Tennessee Thousand Cankers
Disease Survey by J. Grant and M. Windham*

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