

Thousand Cankers Disease on Walnut: Tulare County Update

By Elizabeth J. Fichtner, Farm Advisor

An emerging disease known as “Thousand Cankers Disease” has caused extensive dieback and mortality of eastern black walnut (*Juglans nigra*) in several Western States. In 2008, symptoms of the disease were first observed in urban and suburban black walnut plantings in California; however, the disease has since been found in commercial English walnut orchards, including several orchards in Tulare County. The risk of the disease to commercial walnut orchards is yet unknown; however, the symptoms of the disease on English walnut are dramatic. As suggested by the name, an infected tree will develop an extensive number of bleeding cankers (Figure 1). An introduction of the pathogen and vector to the native range of eastern black walnut in the United States could threaten the species in native forests and in commercial black walnut orchards.

The Pathogen and Vector: Thousand cankers disease is caused by a fungal pathogen (*Geosmithia* sp.) that is vectored by a native bark beetle called walnut twig beetle (*Pityophthorus juglandis*). Though referred to as a “twig beetle”, the beetle actually prefers branches larger than the diameter of a thumb, including main trunks and scaffolds. It is an aggressive feeder and produces an aggregation pheromone that attracts a mass migration of walnut twig beetles to the tree. The beetles introduce the pathogen to the tree during gallery formation (Figure 2). Cankers are formed at infection sites; as disease progresses, these cankers may coalesce. A small beetle hole (approximately 1 mm diameter) can be seen in the center of each canker. Note that the beetle hole is the main diagnostic characteristic that differentiates thousand cankers disease from shallow bark canker, a bacterial disease.



Figure 1. Symptoms of Thousand Cankers Disease in Tulare County.



Figure 2. Walnut twig beetle emergence holes (A). Cankers are associated with beetle galleries (B).

Status of Thousand Cankers in California and Tulare County: The disease has been found in commercial walnut orchards in Sutter, Solano, Yolo, Tulare, and San Benito Counties. To date, the disease has been found in three orchards in Tulare County and every incidence of the disease in Tulare County was found while I was visiting an orchard on a farm call. Consequently, the disease may be more widespread and unreported as yet. In Tulare County, the disease has been found on both black walnut rootstock and on Paradox rootstock, as well as on English walnut. Generally, the disease has been observed on declining English walnut trees; however, a recent finding suggests that initial infection of black walnut rootstock may initiate tree decline and mortality. We are currently trapping walnut twig beetles at several sites in Tulare County to determine the seasonality of beetle activity.

Help Determine the Risk of Thousand Cankers Disease to English Walnut: As with any emerging disease, little is known of the life cycle of the pathogen and vector as well as the risk of the disease to commercial walnut production. The first step in recognizing the disease is to closely observe bleeding cankers to determine whether a walnut twig beetle hole is present. Don't bypass trees with shallow bark canker symptoms without taking a closer look! If you think you have found an incidence of Thousand Cankers Disease in your orchard, please contact me (559-684-3300 or ejfichtner@ucdavis.edu).

Don't bypass trees with shallow bark canker symptoms without taking a closer look!

For more information, visit the following websites:

Department of Entomology at UC Davis: <http://entomology.ucdavis.edu/news/walnuttwigbeetle.html>

UC IPM Online: <http://www.ipm.ucdavis.edu/EXOTIC/thousandcankers.html>

Colorado State University: http://www.ext.colostate.edu/pubs/insect/0812_alert.pdf