

Thousand Cankers Disease

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Thousand Cankers Disease (TCD) is a fatal disease affecting several types of walnut trees (*Juglans* spp.) with significant mortality observed in black walnut (*Juglans nigra*) (Figure 1). Walnut trees become infected by TCD as a result of the boring activity of the walnut twig beetle (*Pityophthorus juglandis*) which spreads a fungus, *Geosmithia morbida*, to susceptible hosts. The fungus is weakly pathogenic, and it takes many beetle attacks to eventually kill trees. Although extensive black walnut mortality has been reported in the western U.S. since the 1990s, it has only recently been associated with this beetle-fungus complex [1].

Range

The walnut twig beetle is native to the states of California, Arizona, New Mexico, and northern Mexico. Its western range has expanded, however, to Oregon, Washington, Idaho, Utah, Nevada and Colorado [2]. In most of these states, TCD is generally found wherever walnut twig beetles and susceptible walnut species exist. While originally viewed as a western disease, a 2010 outbreak of TCD in Knoxville, Tennessee signified the first record of the disease east of Colorado [3]. Since that discovery, either the walnut twig beetle or TCD has been recorded in Maryland, North Carolina, Ohio, Pennsylvania, Virginia [2]. As of 2013, TCD has been reported on black walnut and English walnut (*Juglans regia*) in Italy [4].

Symptoms

Upon finding walnut trees, walnut twig beetles will enter twigs and small branches and both feed and produce galleries (tunnels) for their young within the phloem (sugar-conducting tissue). Aside from

Figure 1: Black walnut affected by TCD exhibiting crown dieback

Photo credit: Bud Mayfield, USFS Research Entomologist



pinhead-sized entrance holes and slight cracking, affected trees generally show no external symptoms.

However, once a layer of outer bark is removed, oblong, fungal cankers surrounding beetle entry holes and galleries are visible. Over time, the cankers bleed and stain the phloem (Figure 2).

Figure 2: Walnut twig beetle entrance hole (left) and fungal staining on cankers under the bark (right)



While TCD is not systemic and can only be spread by the boring activity of the walnut twig beetle, high levels of beetle activity will lead to many cankers forming, coalescing, and girdling twigs and branches. Restricted water and nutrients lead to a yellowing of leaves, followed by brown, wilted foliage and the gradual decline of the crown. The growth of bushy sprouts on the lower trunk of the walnut may occur during the later stages of infection [5]. Over several years of continued beetle attack, the tree will die.

Management

Currently, there are no preventative or therapeutic treatments for trees infected with TCD. Stopping the spread of wood infested with walnut twig beetles and promoting the health and vigor of existing walnut trees are key prevention strategies. Comply with regulations to restrict the transport of unprocessed wood out of quarantined areas. Irrigate trees to reduce stress, maximizing their resistance to TCD. Remove walnut trees with less than 50% live crown to prevent the buildup of walnut twig beetles in the trunk and larger branches.

Please contact your Bartlett Arborist Representative to learn about management strategies.



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References

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