Pest Alert

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Northeastern Area
State and Private Forestry
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Thousand Cankers Disease

Dieback and mortality of eastern black walnut (*Juglans nigra*) in several Western States have become more common and severe during the last decade. A tiny bark beetle is creating numerous galleries beneath the bark of affected branches, resulting in fungal infection and canker formation. The large numbers of cankers associated with dead branches suggest the disease's name—*thousand cankers disease*.

The principal agents involved in this disease are a newly identified fungus (*Geosmithia* sp. with a proposed name of *Geosmithia morbida*) and the walnut twig beetle (*Pityophthorus juglandis*). Both the fungus and the beetle only occur on walnut species. An infested tree usually dies within 3 years of initial symptoms.

Thousand cankers disease has been found in many Western States (figure 1). The fungus and the beetle have not been found east of the Great Plains. However, a number of factors suggest that this disease could establish in eastern forests: the widespread distribution of eastern black walnut, the susceptibility of this tree species to the disease, and the capacity of the fungus and beetle to invade new areas and survive under a wide range of climatic conditions in the West.

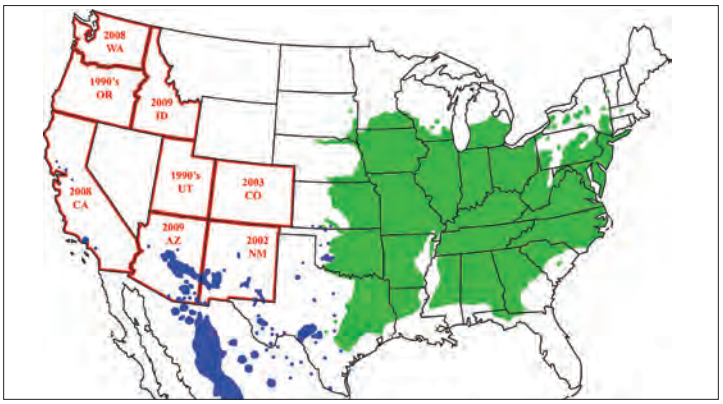

Figure 1. Thousand cankers disease has been confirmed in eight western states (outlined in red) as of April 2010. The year when symptoms were first noted is given. Native distributions of four species of western walnuts (blue) and eastern black walnut (green) are also shown. Eastern black walnut is widely planted in the West, but not depicted on this map.

Disease Symptoms

The three major symptoms of this disease are branch mortality, numerous small cankers on branches and the bole, and evidence of tiny bark beetles. The earliest symptom is yellowing foliage that progresses rapidly to brown wilted foliage, then finally branch mortality (figure 2). The fungus causes distinctive circular to oblong cankers in the phloem under the bark, which eventually kill the cambium (figure 3). The bark surface may have no symptoms, or a dark amber stain or cracking of the bark may occur directly above a canker. Numerous tiny bark beetle entrance and exit holes are visible on dead and dying branches (figure 4), and bark beetle galleries are often found within the cankers. In the final stages of disease, even the main stem has beetle attacks and cankers.

Figure 2. Wilting black walnut in the last stages of thousand cankers disease.

Figure 3. Small branch cankers caused by *Geosmithia morbida*.

Geosmithia sp.

Members of the genus *Geosmithia* have not been considered to be important plant pathogens, but *Geosmithia morbida* appears to be more virulent than