UTAH PESTS fact sheet

UtahState University COOPERATIVE EXTENSION

Published by Utah State University Extension and Utah Plant Pest Diagnostic Laboratory PLP-015pr August 2011

Thousand Cankers Disease of Walnut
(*Geosmithia morbida*)

Claudia Nischwitz, Extension Plant Pathologist • Marion Murray, IPM Project Leader

What you should know

- Thousand cankers disease is caused by the fungus *Geosmithia morbida*.
- It is transmitted by the walnut twig beetle (*Pityophthorus juglandis*).
- Once symptoms are visible, trees can die within 2 to 3 years.

INTRODUCTION

Thousand cankers is a newly recognized disease of walnuts, caused by a fungus (*Geosmithia morbida*) that is spread by the walnut twig beetle (*Pityophthorus juglandis*, Fig. 1). The beetle is endemic to the native range of Arizona walnut (Arizona, New Mexico, and Chihuahua, Mexico), and was first identified in Utah in 1988. Widespread mortality of black walnut in the early 2000s in Colorado and Utah led to the discovery of the pathogen-vector complex. The name of the disease comes from the numerous necrotic lesions (cankers, Figs. 4a and b) found on the cambium of infected trees (Tisserat et al. 2009). The fungus kills black walnut trees (Fig. 2) often within 3 years of the development of the first symptoms (Cranshaw and Tisserat 2008).

HOSTS

Black walnut (*Juglans nigra*) and black walnut hybrids are very susceptible to *Geosmithia*. California walnuts (*J. hindsii, J. californica*) and Persian walnuts (*J. regia*) are slightly susceptible. Cankers do not seem to form on Arizona walnuts (*J. major*) (Cranshaw and Tisserat 2008).

SYMPTOMS

It may take several years of insect and fungal attack before symptoms are visible, starting with yellowing leaves and thinning tree crown. As the disease progresses, foliage wilts, larger branches die, and eventually the tree dies (Fig. 2) (Tisserat et al. 2009). Minute exit holes caused by the twig beetle can be found on the trunk (Fig. 3).

Fig. 1. Walnut twig beetle (*Pityophthorus juglandis*)[1]

Fig. 2. 400-year old black walnut killed in northern Utah

Fig. 3. Exit holes caused by the walnut twig beetle

VECTOR

The walnut twig beetle (*Pityophthorus juglandis*) (Fig. 1) is a minute beetle (size of a grain of rice). Its life cycle is not fully understood, but it is believed in Colorado to have two or more generations (Cranshaw and Tiseratt 2008). Adult beetles fly from April through October to black walnut, lay eggs on large limbs and tree trunks rather than on small twigs as the name implies. Larvae then tunnel into the cambium where they feed until pupation. Emerging adults carry fungal spores of *Geosmithia* to other trees (Tisserat et al. 2009).

DISEASE CYCLE

The walnut twig beetle carries and deposits the fungus in the galleries it creates in the cambium of the host tree. *Geosmithia* then colonizes and kills the cambium and phloem tissue surrounding the gallery. Cankers form around every twig beetle feeding site, resulting in thousands of small cankers that coalesce to several large ones, which eventually leads to tree death.

MANAGEMENT

Once the fungus has colonized the host tissue, it will continue to grow, and systemic and contact insecticides targeting the beetle do not prevent progress of the disease (Frank and Bambara 2010). The best management strategy in Utah is to prevent introduction of the beetle and the fungus to areas where it does not already occur through early detection and destruction of infested trees (Frank and Bambara 2010).

Figs. 4 a and b. Canker symptoms surrounding beetle galleries shown on the surface of the trunk (top) and just under the bark (bottom).

REFERENCES AND ADDITIONAL SOURCES

Cranshaw, W., and Tisserat, N. 2008. Pest Alert: Walnut twig beetle and Thousand cankers disease of Black walnut. Colorado State University. http://www.ext.colostate.edu/pubs/insect/0812_alert.pdf

Frank, S., and Bambara, S. 2010. Walnut twig beetle and Thousand cankers disease in NC. North Carolina Cooperative Extension. http://www.ces.ncsu.edu/depts/ent/notes/O&T/trees/note158/Walnut%20Twig%20Beetle%201000%20Cankers%20Disease.pdf

Tisserat, N., Cranshaw, W., Leatherman, D., Utley, C., and Alexander, K. 2009. Black walnut mortality in Colorado caused by the walnut twig beetle and Thousand cankers disease. Plant Health Progress. http://www.plantmanagementnetwork.org/pub/php/research/2009/walnut/

Image credits

[1]Whitney Cranshaw, Colorado State University, bugwood.org

Precautionary Statement: Utah State University Extension and its employees are not responsible for the use, misuse, or damage caused by application or misapplication of products or information mentioned in this document. All pesticides are labeled with active ingredients, directions for use, and hazards, and not all are registered for edible crops. "Restricted use" pesticides may only be applied by a licensed applicator. The pesticide applicator is legally responsible for proper use. USU makes no endorsement of the products listed herein.

Utah State University is committed to providing an environment free from harassment and other forms of illegal discrimination based on race, color, religion, sex, national origin, age (40 and older), disability, and veteran's status. USU's policy also prohibits discrimination on the basis of sexual orientation in employment and academic related practices and decisions. Utah State University employees and students cannot, because of race, color, religion, sex, national origin, age, disability, or veteran's status, refuse to hire; discharge; promote; demote; terminate; discriminate in compensation; or discriminate regarding terms, privileges, or conditions of employment, against any person otherwise qualified. Employees and students also cannot discriminate in the classroom, residence halls, or in on/off campus, USU-sponsored events and activities. This publication is issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Dept. of Ag., Noelle E. Cockett, Vice President for Extension and Agriculture, Utah State University.