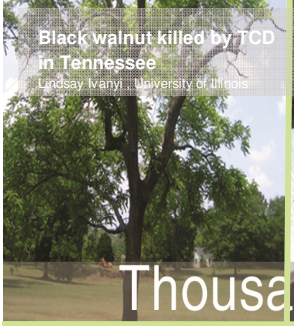
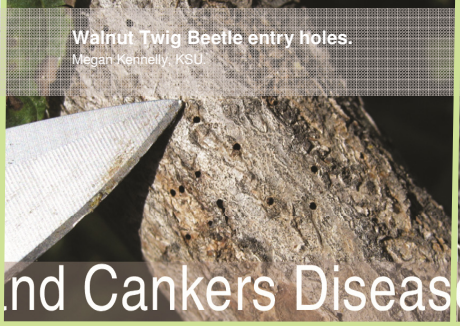


Black walnut killed by TCD in Tennessee
Lindsay Ivanyi , University of Illinois



Walnut Twig Beetle entry holes.
Megan Kennelly, KSU

Walnut Twig Beetle & holes on walnut branch.
Kathy Keatley Garvey, UC Davis.

Crown thinning & dieback associated with TCD.
Curtis Utley, CSUE., Bugwood.org

Thousand Cankers Disease & the Walnut Twig Beetle

The presence of Thousand Cankers Disease (TCD) in the eastern region significantly increases the risk to black walnut (*Juglans nigra*) trees in Illinois. Black walnut is a highly valued tree, both economically and environmentally; it is also highly susceptible to TCD. If found in Illinois, this disease would threaten native black walnut stands as well as negatively impact black walnut timber, nuts, and nursery production. In response to this threat, on February 1, 2012, the Governor of the State of Illinois issued a proclamation which established a regulatory framework to protect the walnut resource of the state. The proclamation restricts the movement of certain regulated articles into or through Illinois and establishes a process by which individuals and businesses can continue to move those articles without endangering the state's walnut resource. The basis of the regulatory framework is a compliance agreement administered by the Illinois Department of Agriculture. Individuals and businesses wishing to move regulated materials into or through Illinois originating in a Thousand Cankers Disease infested area must first enter into a compliance agreement with the Department and the regulated article must be accompanied by a phytosanitary certificate from the originating state verifying the material complies with the conditions of the compliance agreement. All regulated articles originating in areas not known to be infested with Thousand Cankers Disease must be accompanied by proof of harvest location or the wood by county and state. Specific provisions of the regulatory framework can be found in the ***Governor's Proclamation*** and the ***Compliance Agreement***.

List of TCD Compliance Agreement Holders

The following is a short discussion of the basics of Thousand Cankers Disease, its history, the walnut resource of Illinois, and the current status of state regulations to curb its spread.

Thousand Cankers Disease Basics

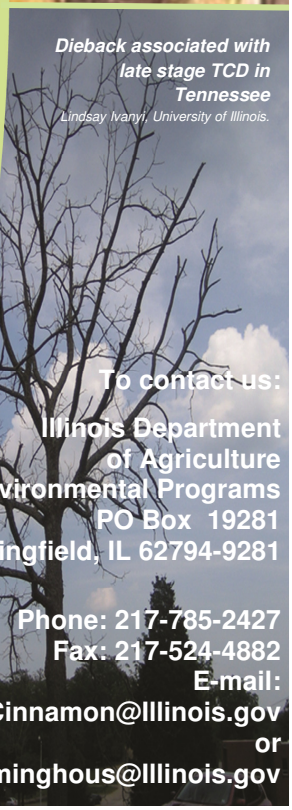
- TCD is a fungal disease complex that primarily affects black walnut.[2,9,13, 14]
- TCD is a result of the combined activity of the fungus (*Geosmithia morbida)* and the walnut twig beetle (WTB, *Pityophthorus juglandis* Blackman).[2,9,13]
- The WTB is the only known vector, though others may exist. It is native to North America (Arizona, New Mexico, California, and certain areas of Mexico).[2]
- WTB carry and introduce fungal spores into the tree when they form galleries in the phloem. [2,9,1,13]
- The fungus colonizes the area around the galleries, forming cankers. These cankers disrupt the flow of nutrients throughout the tree, causing dieback, decline, and eventually, death of the tree. [2,9,13]
- TCD has also recently been found to affect Butternut trees (Juglans cinerea) in the state of Oregon.
- There are no known current strategies for managing TCD.[9]

History of Thousand Cankers Disease in the United States

- Widespread mortality of black walnut has been reported in the western region for many years – Utah (1992), Oregon (1992), and Colorado (1991).[2,9,11,13,14]
- Mortality was first attributed to environmental conditions (drought), but mortality rates continued to increase after precipitation returned to normal in 2004. It was then that The WTB became associated with the dieback occurring in Colorado.[13]
- In 2008, *Geosmithia* was isolated from declining walnuts in Oregon, Utah, New Mexico, Colorado, and Idaho.[9]
- Soon after TCD was confirmed in California and was believed to be widespread.[9]

HISTORY CONTINUED BELOW

Cankers caused by *Geosmithia morbida.*
Ned Tisserat, Colorado State University, Bugwood.org



Dieback associated with late stage TCD in Tennessee
Lindsay Ivanyi, University of Illinois.

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- States known to have TCD in the western region include: Washington, Oregon, Idaho, California, Nevada, Utah, Arizona, Colorado, and New Mexico.[2,9,11, 13]
- The true distribution of this insect/pathogen complex is unknown.

Thousand Cankers Disease in the Eastern Region of the United States

- The Tennessee Department of Agriculture confirmed the presence of TCD in the state on August 5, 2010. This infestation is believed to be 10-20 years old and walnut decline in the area was previously attributed to drought stress.[5]
- This first confirmation in the eastern region poses a significant threat to black walnuts in their native range.
- On June 24, 2011, TCD was confirmed in Chesterfield County, Virginia.4 n
  The Pennsylvania Department of Agriculture confirmed the presence of TCD in Bucks County, PA on August 9, 2011.[10]

Walnut Resource in Illinois

- Approximately 12% of Illinois is forested (4.4 million acres). Of that forested land in Illinois, 53% of the forest cover consists of oak and hickory. Included in the hickory family is black walnut.[6]
- We estimate that nearly 2.3 million acres of Illinois forests may contain black walnut and are thus susceptible to TCD.
- These numbers do not include cultivated stands of walnut that occur throughout the state or urban trees.
- Average Annual *Net* Growth of Black Walnut in Forests = 144 Million Board Feet[1]
- Illinois ranks 5th in the U.S. with regard to volume of black walnut growing stock on timberland.[12]
- Volume of Black Walnut Sawtimber Trees in Forests = 885 Million Board Feet (for 11 inch diameter trees or larger) [1]
- Black Walnut Trees Harvested per Year = 120,000 *based on Doyle log scale using 20" diameter tree with saw-log of 16' per tree[1]
- Walnut Board Harvested per Year = 15.6 Million Board Feet[1]
- Value of Black Walnut Harvested per Year = $13.1 million (paid as stumpage price to owner) or $18.3 million (paid as logs at mill price to loggers) *lowest conservative estimates of log value sold from forest without added value of veneer. Does not include added value of manufacturing, re-selling, export, or retail products. [1]

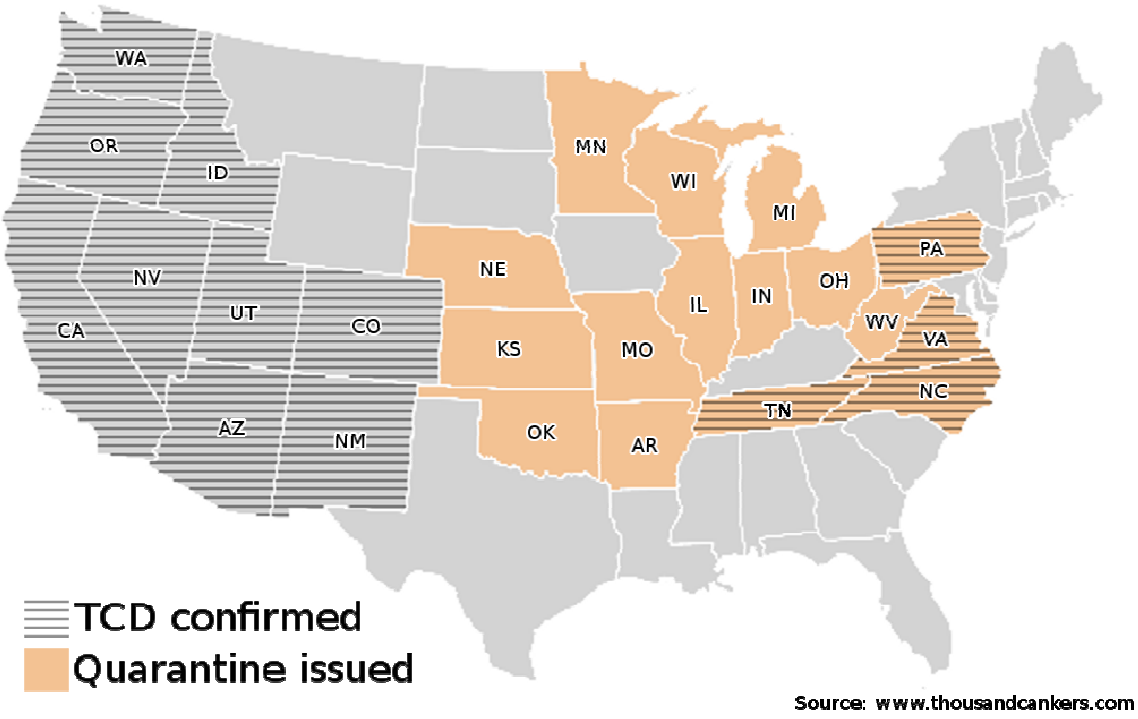
Illinois at Risk

- Any activity that allows rapid movement of commodities also allows the development of fast-moving pathways.
- Illinois has 2 of the largest rail gateways: Chicago (nation's primary rail gateway) and East St. Louis.[7]
- Illinois has an interstate highway systems of >2,000 miles and >34,000 miles of other highways. Three coast-to-coast interstates (I-80, I-90, and I-70) pass through Illinois.
- Illinois has over 1,000 miles of navigable waterways. [7]
- Potential long-distance pathways of dissemination include: raw timber (veneer quality logs, saw logs, burls, stumps), firewood, wood packing material, nursery stock, scion wood for grafting, nuts, and natural spread.[9]
- A key pathway of forest pest movement is raw wood, particularly with bark still intact.[9]
- Compliance agreements are held by 43 firewood importers according to the Illinois Department of Agriculture. Emerald ash borer (EAB) state compliance agreements number 1329 while there are 159 federal EAB compliance agreements.
- University of Illinois Extension Forestry states there are significantly more than 100 sawmills in Illinois.
- Solid wood packing material (SWPM) is a potential pathway for the movement of exotic bark beetles, including WTB as SWPM is often made of unprocessed raw wood. The National Wooden Pallet Association estimates that 1.2 billion pallets are currently in circulation in the United States, with 93% of all goods moving on those pallets. [9]
- Illinois Department of Agriculture has more than 700 certified/licensed nurseries and over 3,400 certified nursery stock dealers.

Regulation of Walnut and Walnut products

- Several states in both the eastern and western regions have enacted regulations to limit the movement of walnut and walnut products.
- States confirmed with TCD: Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah, Washington.
- States that currently have TCD Regulations: Arkansas, Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, Oklahoma, West Virginia, Wisconsin[14]
- Confirmed TCD with Quarantine issued: North Carolina, Pennsylvania, Tennessee, Virginia

Distribution of Thousand Cankers Disease as of July 12, 2013



Source: www.thousandcankers.com

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