



## What's Killing My Walnuts— How To Find Help

For the last decade, we have watched as the granulate ambrosia beetle (GAB) formerly the Asian ambrosia beetle spread into the southern region of walnut. Now we are asked to watch for the possible invasion of the thousand canker disease (TCD) complex into the eastern United States assuming we cannot prevent its invasion from the western United States. For both pest problems, we need to watch our walnut trees for symptoms that include leaf flagging or yellow wilted leaves on one or more branches (also symptoms of several, less important problems), dead or dying branches retaining dead leaves, and emergence of epicormic sprouts on large branches and main stem. Aggressive sanitation through the rapid removal and burning of infested trees will be needed to control these two pests. As growers, we need to recognize these pest problems in our tree plantings and have access to experts that can confirm what the causal agents are before we unnecessarily remove trees. Where do we find these experts and how do we collect samples and ship them without spreading potential pests?

In 2002, the Secretary of Agriculture established the Animal and Disease and Pest Surveillance and Detection Network to develop a network linking plant and animal diagnostic facilities across the country. As part of this action, the National Plant Diagnostic Network (NPDN) was created to focus on protection of agriculture and natural ecosystems from plant diseases and pests. According to their website at <http://www.npdn.org/>, the specific purpose of the NPDN is to provide a nationwide network of public agricultural institutions with a cohesive, distributed system to

**The following is a partial list of web links that will take you to the sample submission forms for the listed states:**

**Colorado:** <http://plantclinic.agsci.colostate.edu/>  
**Illinois:** <http://plantclinic.cropsci.illinois.edu/pdfs/PlantClinicForm09.pdf>  
**Indiana:** <http://www.ppd.l.purdue.edu/PPDL/pubs/PPDL-1-W.pdf>  
**Iowa:** <http://www.extension.iastate.edu/Publications/PD31.pdf>  
**Kansas:** [http://www.entomology.k-state.edu/horticultural\\_insect\[1\].pdf](http://www.entomology.k-state.edu/horticultural_insect[1].pdf)  
**Kentucky:** [http://www.ca.uky.edu/agcollege/plantpathology/extension/pdd\\_lab.html](http://www.ca.uky.edu/agcollege/plantpathology/extension/pdd_lab.html)  
**Michigan:** <http://www.pestid.msu.edu/SubmittalForms/tabid/61/Default.aspx>  
**Minnesota:** <http://pdc.umn.edu/Howtosubmitasample/index.htm>  
**Missouri:** <http://extension.missouri.edu/explorepdf/miscpubs/mp0604.pdf>  
**Nebraska:** <http://plantpathology.unl.edu/plantpestdiagnosticclinic>  
**Ohio:** <http://ppdc.osu.edu/>  
**Oklahoma:** <http://entopl.okstate.edu/pddl/pdidl-form.pdf>  
**Pennsylvania:** [http://www.ppath.cas.psu.edu/Plant\\_Disease\\_Clinic.htm](http://www.ppath.cas.psu.edu/Plant_Disease_Clinic.htm)  
**Tennessee:** <http://eppserver.ag.utk.edu/redbook/pdf/IDspecimenform.pdf>  
**West Virginia:** <http://www.wvu.edu/~agexten/ipm/identify/orndisid.htm>  
**Wisconsin:** <http://www.plantpath.wisc.edu/pddc/forms/GeneralIntakeForm.pdf>

quickly detect high consequence pests and pathogens that have been introduced into agricultural and natural ecosystems, identify them, and immediately report them to appropriate responders and decision makers. To accomplish this mission, the NPDN has invested in plant diagnostic laboratory infrastructure and training, developed an extensive network of first detectors through education and outreach (for example, see the First Detector Program training modules found at the [http://www.npdn.org/webfm\\_send/435](http://www.npdn.org/webfm_send/435) website), and enhanced communication among agencies and stakeholders responsible for responding to and mitigating new outbreaks.

The NPDN program is divided into five regions, each with a lead university that coordinates regional activities. Regional centers are located at Cornell University (Northeast region), Michigan State University (North Central region), Kansas State University (Great Plains region), University of Florida

at Gainesville (Southern region), and University of California at Davis (Western region). Regional centers ensure all participating Land Grant university and state diagnostic facilities are alerted to possible outbreaks and/or introductions and technologically equipped to rapidly detect and identify pests and pathogens such as the thousand cankers disease. The Center for Environmental and Regulatory Information Systems (CERIS) at Purdue University serves as the central repository for archiving select data collected from regions in the NPDN National Repository.

Most participating Land Grant university and state diagnostic facilities have developed their own forms and recommendations as how to prepare and ship samples to their laboratories. Diagnostic fees typically ranged from \$10 to \$37 to visually examine your specimen and an additional \$5 to \$25 to plate out fungal organisms or to identify causal insects. Diagnostic fees are typically doubled if samples

are sent to a laboratory in a neighboring state. The following regional websites provide links to the state diagnostic laboratories within the five regions:

**Great Plains Plant Diagnostic Network (GPDN):**

<http://www.gpdn.org/>

**Northeastern Plant Diagnostic Network (NEPDN):**

<http://www.nepdn.org/>

**North Central Plant Diagnostic Network (NCPDN):**

<http://www.ncpdn.org/>

**Southern Plant Diagnostic Network (SPDN):**

<http://www.sepdn.org/>

**Western Plant Diagnostic Network (WPDN):** <https://www.wpdn.org/>

Within the geographic areas of greatest concern for invasion of the thousand cankers disease, the NCPDN webpage provides links to the state diagnostic laboratories in Michigan, Iowa, Illinois, Indiana, Ohio, Wisconsin, Minnesota, and Missouri while the GPDN webpage provides links to laboratories in Kansas, Colorado, Nebraska, Oklahoma, and Texas. See top of page 6 for a partial list of web links that will take you to the sample submission forms for the listed states.

The Sample Submission/Detection Report Form developed by USDA Forest Service Forest Health Protection should be an acceptable alternative to the state forms when submitting tree branches if you do not have internet access or have problems finding and downloading your state's form.

**What To Collect:**

It is best to wait until you see branches with leaf yellowing or flagging of leaves or very recently killed branches that have retained dead leaves so you can cut out branch pieces that include both infested and healthy wood. Samples of deadwood only have too many secondary pests to identify cause of the pest problem. When selecting branches to sample,

SPECIMAN SUBMISSION/DETECTION REPORT		# _____
Forest Insect/Disease Damage		Date Received _____
<b>Part A</b> - Instructions: PLEASE PRINT. Please be as complete as possible. <b>Complete only Part A.</b> See the instructions on submitting samples in the accompanying article. Mail payment for diagnostic fees and the completed form along with your branch samples to the Plant Disease Diagnostic Laboratory in your state.		
YOUR NAME:	DATE:	
YOUR ADDRESS:	PHONE NUMBER: E-MAIL ADDRESS:	
LOCATION WHERE SAMPLE WAS COLLECTED: (Be as specific as possible, Postal zip code, Township, Range, Section, etc.)		
OWNERSHIP: (National Forest, State, Private, etc.)		
TREE SPECIES AFFECTED:	TREE SIZE:	Seedling Sapling Mature Old-Growth
PART OF TREE DAMAGED: (Circle Answer[s])	Roots Cone/Seed	Bole New Foliage
	Branch Old Foliage	Leader Twigs Other _____
EXTENT OF DAMAGE: (Approximate acres or number of trees involved)		
PATTERN OF DAMAGE: (Circle all that apply)	Lower Crown One Tree	Mid Crown Scattered Trees
	Low Areas	Upper Crown Groups of Trees
		Random No Association with Terrain
STAND TYPE: (Circle Answer)	Plantation Shelterbelt	Natural Nursery
		Ornamental Seed Orchard Other _____
OTHER PERTINENT INFORMATION (i.e., were any insects present, their color or size, etc):		
<b>Part B</b> - To be completed by Laboratory Diagnostician for USDA Forest Health Protection.		
DATE REPLIED:	STAFF MEMBER: E-mail/PHONE NUMBER:	
METHOD OF RESPONSE:	Letter E-mail	Other _____
HOST: _____	PEST: _____	
HOST GROUP: _____	PEST GROUP: _____	

examine the bark for small round holes between healthy and damaged tissues. Using a carpenter's draw knife or pocket knife, whittle away the surface of the bark without cutting into the cambium. Examine the inner bark and cambium for isolated dark areas with visible tunneling that may or may not be filled with fungal growth or for round holes that go into the wood. If discolored cambium or holes are found, this is the branch section you need to cut out to submit for diagnosis of thousand canker disease or granulated ambrosia beetle. If possible, cut branch segments 12 to 24 inches long with a diameter of 2 to 4 inches.

Wrap branches with dry paper toweling or clean newspaper and include more than one specimen if available. Place samples in a plastic bag (use zip-able bags if possible) and then enclose inside another plastic bag before sealing with tape. If live insects are present, we are currently recommending that the sample should be placed in a home freezer for 48 hours before mailing. Freezing should kill the insects, but usually not any associated fungi, allowing the laboratory to culture and positively identify the fungal pathogens including *Geosmithia sp. nov.*, the causal agent of thousand canker disease.



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Double bagged specimens, sample submission form, and check for diagnostic fees should be packaged in a sturdy box or crush-proof container with additional paper to prevent shifting. One packaging option is to use the Priority Mail medium (\$10.70) or large (\$14.50) flat boxes which have weight restrictions for Domestic of 70 pounds. Boxes should have all seams taped and be marked in the lower left-hand corner with "Frozen Infested Walnut Wood Samples" so the laboratory personnel use appropriate protocols to receive, diagnose, and dispose of the specimens. Mail packages early in the week to avoid weekend lay-over at room temperature. For walnut growers without access to the internet, call the number within your state for information on what the diagnostic fees are and where to send your infested walnut wood samples:

- Arkansas:** 501-676-3124
  - Colorado:** 303-271-6620 or 970-491-6527
  - Illinois:** 217-333-0519
  - Indiana:** 765-494-7071
  - Iowa:** 515-294-0581
  - Kansas:** 785-532-5810
  - Kentucky:** 859-257-8949 or 270-365-7541 ext 228
  - Michigan:** 517-355-3504
  - Minnesota:** 612-625-1275
  - Missouri:** 573-882-0623
  - Nebraska:** 402-472-2559
  - Ohio:** 614-292-5006
  - Oklahoma:** 405-744-9961
  - Pennsylvania:** 814-865-2204
  - Tennessee:** 615-832-5850
  - Texas:** 979-845-8032
  - West Virginia:** 304-293-8835)
  - Wisconsin:** 608-262-2863
- In summary, if you want to learn more about the thousand canker disease,

check out the <http://mda.mo.gov/plants/pests/thousandcankers.php> website. If you have symptoms described in this article or on the website, seriously consider sending samples to the plant disease diagnostic laboratory in your state to determine if a problem exists. When submitting samples, you should provide as much information as possible on sample submission forms so the information from your state's diagnostic labs can become part of the national system and help us better understand the distribution and ecology of the new pests on walnut and butternut.

*Prepared by Jerry Van Sambeek and Jenny Juzwik, members of the Thousand Canker Disease Technical Working Team, with assistance from several NPDN staff and the USDA Forest Service Forest Health Protection staff.*

## Property/Boundary Lines

### Do You Know Where Yours Are?

By R. Scott Brundage, Certified Forester #1443

Being a professional forester for 51 years and a Consulting Forester for the last 30 years, I have been amazed to find that a majority of woodland owners do not know exactly what land they own. Most owners know where some of the corners are and some of the property lines, particularly if there is a fence, but do not know for sure where all the lines are.

If you are going to manage your woodlands properly, you need to know where the property lines are. Why? If you are going to have a timber sale, the forester has to know where the property line is so no trees are marked and cut on the neighbor's property. In Missouri, State Statutes have a triple damage section concerning trespass. Therefore, as a Consulting Forester, if I mark for sale trees on your neighbor's land and they are sold, I am liable for triple damages. If a landowner does not know or have marked or fenced his property lines, I stay away 100 or more feet from where he thinks the line is, or I just will not take the risk and turn down the sale job. The same holds true for a Timber Stand Improvement (TSI) crew who will kill undesirable trees and

vines to release and let grow the valuable desirable crop trees. If the woodland owner puts in access roads, water-lines, skid trails, log yarding area, for example, he should/must know where the property lines are.

When a forest landowner calls and asks me to help him, we set a time and place to meet. When I arrive on the job, I always have an up-to-date Plat Sheet of the area, an aerial photo, an aerial photo with topographic lines and another aerial photo of the property with the soils map superimposed on the landowner's property. All this is available from a computer except the Plat Sheet. I encourage landowners to collect the same "tools" for their property so that they can become more familiar with it.

As mentioned before, the forest landowner must know exactly where their property lines and corners are. Usually, there are two choices to solve the problem. One is cheap and the other very expensive. I always pick the cheap alternative whenever possible.

The following is the fun and cheap way to relocate the old marked property lines. Remember, for many, many years, the land was owned by several to many previous owners. Each of those owners had to know where the property

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