

OHIO Woodlands, Water, & Wildlife

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Oak Wilt in Ohio

Amy Stone, OSU Extension, Lucas County

While oak wilt has been around for a very long time, there seems to be a new level of interest from Ohioans. We are receiving questions from green industry professionals, woodland owners and the general public concerned about their oak trees and the threat of oak wilt. With this growing curiosity, we thought that this was a perfect time to get the word out about this disease and the importance of not pruning oaks at this time of the year, especially if you are in an area where oak wilt has been confirmed.

It is also important to note that not every dead or dying oak tree has oak wilt, or that it should be assumed that oak wilt was the cause. Brown falling leaves can be a result of other living and non-living pests. While this article can't address every potential problem with oaks, readers will be armed with what to look for and where to submit samples for confirmation if they suspect oak wilt.



Oak Wilt Symptoms
Ryan Armbrust, Kansas Forest Service, Bugwood.org

THE PEST

Oak wilt (*Ceratocystis fagacearum*) is a serious and often deadly vascular disease of oaks (*Quercus* spp). The fungus grows in the water conductive tissues (sapwood) of the host plant. The fungus plugs the vessels with its own mycelium and spores, but it also causes a defensive reaction by the tree to stop the fungal spread by actively plugging its own vessels. These processes both interfere with water uptake and cause a wilting syndrome which often results in death of the plant.

The oak wilt pathogen can be spread in two ways. It can be spread overland by a picnic or Nitidulid beetle, or underground through root grafts.

The symptoms described on an infected tree include:

- flagging or the turning of branches in the tree's canopy to a brown color
- leaves turning brown usually at the tips and working back towards the petiole
- premature leaf drop in the summer
- rapid decline of the canopy – often described as it happened overnight
- sapwood streaking in branches or fungal mats on the trunk may also be present, but not always evident

If oak wilt is present in an area and nothing is done to manage its spread, the disease typically radiates outward and the number of infected trees increases as time goes on. The spread of the disease is relatively slow, but the progression can dramatically impact the health of a predominant oak forest, a landscape dominated by oaks, and parks or areas with oaks in the inventory.

It is common for the call to be received after year two when oak trees in close proximity have died in consecutive years.

SAMPLE SUBMISSION

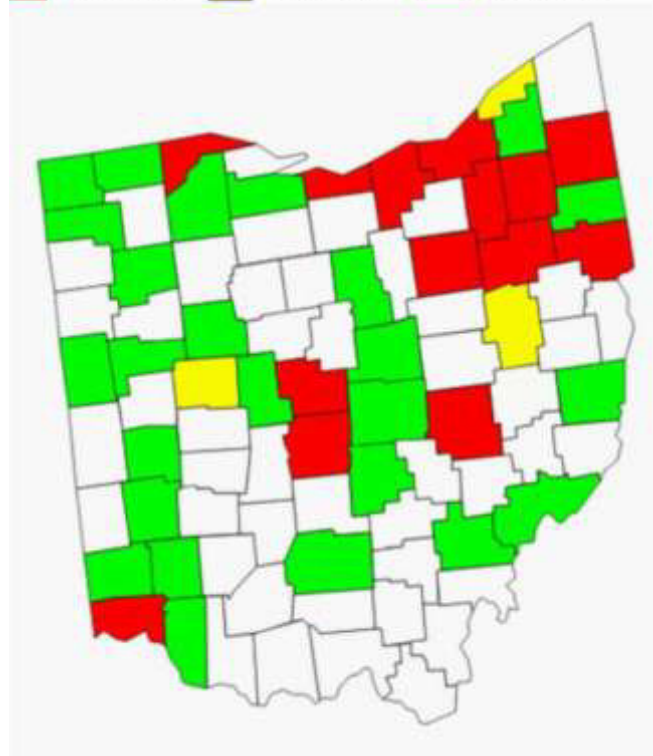
Conclusive diagnosis can only be made in specialized laboratories, such as The Ohio State University C. Wayne Ellett Plant & Pest Diagnostic Clinic. The clinic is located on the Ohio Department Agriculture campus in Reynoldsburg, Ohio. Additional information including

sample forms, the mailing address where samples should be submitted and diagnostic fees can be found on the website at: ppdc.osu.edu/

If you suspect oak wilt, the quality of sample that you submit to the lab for confirmation is key. Selected branches should be partially wilted or in-transition, with symptomatic leaves progressing from the tip of branches inward to the trunk. Branches that are totally wilted, dry, or dead should be avoided as they will not be viable and could give a false negative.

Oak Wilt Map - Plant Pest Diagnostic Clinic 2017

■ Confirmed
 ■ Suspected
 ■ Not Detected



Ideally, the branch samples should be at least 1" in diameter and cut into 6" - 8" lengths. Smaller diameter branch samples can be acceptable but only if the sapwood is very moist, and samples have been kept cool until they arrive at the lab. Samples should be overnighted early or mid-week, or hand delivered to the lab as soon as samples are collected in the field. It is important that collected samples don't ride around in a vehicle, especially when it is warm, allowing them to dry out quickly.

Additional details on collecting field samples are described in this USDA Forest Service publication, How to Collect Field Samples and Identify the Oak Wilt in the Laboratory. The publication is available online at: fs.usda.gov/naspf/publications/how-collect-field-samples-and-identify-oak-wilt-fungus-laboratory

THE HOSTS

All oaks are not created equally – at least when we are

talking oak wilt. While all oaks are susceptible to this disease, those trees in the red or black oak group are more susceptible. That red or black oak group includes:

black	<i>Quercus velutina</i>	scarlet	<i>Quercus coccinea</i>
pin	<i>Quercus palustris</i>	northern red	<i>Quercus rubra</i>
sawtooth	<i>Quercus acutissima</i>	shingle	<i>Quercus imbricaria</i>
shumard	<i>Quercus shumardii</i>		

Oaks in the white group are more tolerant and may even survive infections.

MANAGEMENT OF OAK WILT

Do you live or work in an area that is known to have oak wilt? Remember, oak wilt can be spread in two ways – overland and underground. Overland spread can be avoided by ensuring that trees are never wounded between April 15 and July 1 in Ohio. An even more stringent approach is to avoid wounding oaks throughout the growing season, April 15 – October 1. If pruning is absolutely necessary during the growing season, covering the wounds with a latex paint is recommended. This will deter the picnic or Nitidulid beetles that are known to spread the disease from tree to tree.

If oak wilt has been confirmed, management options include trenching, tree removal and preventative fungicide applications to protect neighboring trees. Once a tree is showing signs of oak wilt, it probably too late to stop the pathogen, unless of course you have a tree in the white oak family.

If there are other oaks trees in the area, trenching might be a logical tool in the toolbox. The purpose of the trenching is to disrupt root grafts and ultimately the underground movement of the pathogen from one tree to another. A double trench is usually recommended as a means to protect not just the oaks immediately surrounding the positive tree, but the next “ring of trees”. The second trench can be thought of as an insurance policy, just in case the pathogen has spread beyond the tree exhibiting symptoms.

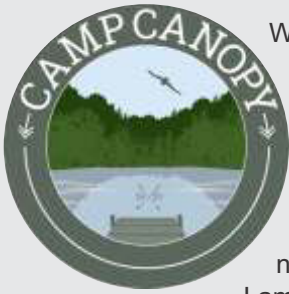


Trenching for Oak Wilt
Joseph O'Brien, USDA Forest Service, Bugwood.org

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Canopy: Discover Forestry. Discover Wildlife. Discover Adventure.

Marne Titchenell, Extension Wildlife Program Specialist



With people spending less time outdoors, hunter and angler participation declining, and youth becoming more and more disconnected, many in the natural resources field are working to get people back to nature. As an Extension educator,

I am fortunate to have many opportunities to connect Ohioans to nature. One such opportunity that I particularly enjoy is Camp Canopy, where teens spend an entire week outdoors, rain or shine, exploring, asking questions, and learning about forestry, wildlife, ecology, and more.



"My favorite thing about this camp is being outside and enjoying nature." ~ 2016 camper

An opportunity to spend a week outside and enjoying nature - that is what Camp Canopy has been offering teens since roughly 1950. Yep, it's been around for a long time, undergoing several name changes along the way (it was most recently known as Ohio Forestry and Wildlife Conservation Camp). Despite the new name, Camp Canopy remains heavily rooted in forestry and wildlife. Camp is supported by the Ohio Forestry Association (OFA) and the OFA Foundation. Myself, along with my camp co-directors Jeremy Scherf with the Ohio Division of Forestry, and Emilee Hardesty with the Ohio Division of Wildlife, work with OFA to plan the week at camp.

What does a week at camp look like? Every day, campers are learning how to ID trees and Ohio wildlife, collect forest data, monitor wildlife populations, and how

Ohio's forests and other natural resources are managed. This year we will have classes on mammal trapping, reptile monitoring, and outdoor survival skills!

*"I didn't know how much there was to natural resources management until this week!"
~2016 camper*

*"I came from a suburban viewpoint and mostly misunderstood silviculture methods until now."
~2017 camper*

Camp is held every year at the beautiful FFA Camp Muskingum in Carroll County during the second week of June, and is open to incoming high school freshman through graduating seniors. We work closely with FFA Camp Muskingum to give campers a fun, summer camp experience. In addition to the forestry and wildlife info-filled days, campers also enjoy campfires, night hikes,

woodland hikes, and time for playing sports, swimming, kayaking or canoeing, and fishing!

Not only is Camp Canopy connecting youth to nature, fostering an appreciation for natural resources, and creating a sound foundation of forestry and wildlife knowledge, it is also giving high schoolers the chance to interact with professionals in the field. Every year, over 30 professionals from state and federal agencies, NGOs, and Ohio colleges/universities teach at camp. Campers are encouraged and given time to interact with class instructors, especially those considering a degree or profession in the field of natural resources. In addition to networking opportunities, campers are given the chance to win scholarships to several Ohio universities and colleges, including The Ohio State University, Hocking College, and Ohio University.

"Camp has made me excited to learn about [natural resources] in college!" ~ 2015 camper

"I had thought about a career in forestry, but this camp has gotten me really interested in it." ~2017 camper

Despite the opportunities Camp Canopy provides, there are many pressures these days on a high school student's time. Between jobs, internships, sports, and other summer commitments, summer camp doesn't always rank as a top priority. Therefore, the challenge is getting teens to camp in the first place. Once they attend camp, many are hooked, which is obvious from the below comments!

"Keep doing what you are doing. It was a great educational experience. I had an amazing time."

"I seriously love this camp. I am definitely returning"
~ Campers from 2014-2017

If you think Camp Canopy might be right for someone you know, please share this article with them. Visit our website, www.campcanopy.com, for more information, including FAQs and sponsorship information. There are many organizations willing to sponsor a camper and help with registration fees. While on the website, be sure to sign up for our camp newsletter, Camp Canopy is Calling, to stay up-to-date on the latest Camp Canopy news.



Fifty Years of the School of Environment and Natural Resources

The School of Environment and Natural Resources (SENR) at The Ohio State University is celebrating its 50th anniversary! For 50

years, the school has distinguished itself as a leader of interdisciplinary science and education - impacting an ever-growing number of students, alumni, professionals, and stakeholders throughout Ohio and beyond.

On April 16, the School kicked off its yearlong anniversary celebration at the Environmental Professionals Network evening signature event and launched the first in a series of commemorative posters celebrating areas of impact the school has had over its 50 years. The first poster in the series conveys the interdependence of humans with the environment and features the environment as a place of enjoyment and refuge, but also as a resource to be responsibly and sustainably managed for generations to come. The forestry-themed poster will be unveiled at the May Environmental Professionals Network breakfast. Founded in 1968, the School of Environment and Natural Resources is proud to have had thousands of students, and hundreds of faculty and staff be a part of

the school's rich history, who are helping us realize our shared vision of a productive society in harmony with a sustainable and healthy environment.

This milestone provides an opportunity for us to honor and celebrate our past, but also to chart the next 50 years.

Join us in celebrating our 50th Anniversary and be a part of our next 50 years. Visit our celebration website at: senr.osu.edu/senr50 to learn more about our anniversary, including upcoming events.

Share your memories and stories of the School of Environment and Natural Resources

The school is gathering memories and stories to share on our celebration website. Your memory or story may focus on a funny or fond memory, interactions with an impactful mentor (e.g., instructor, faculty member, staff, graduate student) or camaraderie with fellow students or colleagues. Maybe you have a memory or story to share about an event or program the school offered that was meaningful or had an impact on you. Perhaps, you have a story about your accomplishments achieved while part of SENR, such as an award won, a job gained, or even being a first-generation graduate or overcoming other barriers you faced. Memories may be submitted online here: senr.osu.edu/memories

New Invasive Species Law Goes into Effect In September of 2014

The Ohio General Assembly granted the Ohio Department of Agriculture (ODA) the exclusive authority to regulate invasive plants species. Under the law invasive plants are defined as plant species that are not native to Ohio whose introduction causes or is likely to cause economic or environmental harm, or harm to human health as determined by scientific studies. After nearly two years of stakeholder outreach, new rules have been established and are effective as of January 7,



Autumn Olive fruit

2018. We are reaching out to make you aware of these new regulations and the list of invasive plants in the state of Ohio. These rules prohibit the sale and distribution of invasive plants in the state of Ohio. Further, the rules establish a committee which will advise ODA on matters regarding invasive plants. In some cases, businesses may have invested considerable time and resources into growing some of these plants. These rules include a grace period for the prohibition to take effect for some species, which allows businesses time to transition toward alternative plants to market as replacements. For questions regarding Ohio's Invasive Plant Regulations, please contact the Plant Pest Control Program at 614-728-6400. Division of Plant Health, Plant Pest Control, 8995 East Main Street, Reynoldsburg, OH 43068 | agri.ohio.gov | plantpest@agri.ohio.gov
The following plants are considered invasive in the State of Ohio effective January 7, 2018 except as otherwise noted:

Ailanthus altissima, tree-of-heaven
Alliaria petiolata, garlic mustard
Berberis vulgaris, common barberry
Butomus umbellatus, flowering rush
Celastrus orbiculatus, Oriental bittersweet
Centaurea stoebe ssp. Micranthos, spotted knapweed
Dipsacus fullonum, common teasel
Dipsacus laciniatus, cutleaf teasel
Egeria densa, Brazilian elodea
Elaeagnus angustifolia, Russian olive
Elaeagnus umbellata, autumn olive
Epilobium hirsutum, hairy willow herb
Fragula alnus, glossy buckthorn
Heracleum mantegazzianum, giant hogweed
Hesperis matronalis, dame's rocket
Hydrilla verticillata, hydrilla
Hydrocharis morsus-ranae, European frog-bit
Lonicera japonica, Japanese honeysuckle
Lonicera maackii, amur honeysuckle
Lonicera morrowii, Morrow's honeysuckle
Lonicera tatarica, tatarian honeysuckle
Lythrum salicaria, purple loosestrife
Microstegium vimineum, Japanese stiltgrass
Myriophyllum aquaticum, parrotfeather
Myriophyllum spicatum, Eurasian water-milfoil
Nymphoides peltata, yellow floating heart
Phragmites australis, common reed
Potamogeton crispus, curly-leaved pondweed
Pueraria montana var. lobata, kudzu
Ranunculus ficaria, fig buttercup, lesser celandine
Rhamnus cathartica, European buckthorn
Rosa multiflora, multiflora rose
Trapa natans, water chestnut
Typha angustifolia, narrow-leaved cattail
Typha x glauca, hybrid cattail
Vincetoxicum nigrum, black dog-strangling vine, black swallowwort
Lythrum virgatum, European and loosestrife (effective January 7, 2019)
Pyrus calleryana, callery pear (effective January 7, 2023)

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Once the trenching is complete, the infected tree should be removed and the wood handled properly so that the disease is not a continued source of the pathogen on the property, or moved somewhere else to start another point of infection. If you plan to use the wood for firewood, the wood should be stacked, covered and sealed with plastic to the ground so that picnic beetles can't access the wood and come in contact with the fungal mats or pads.

While chemical treatments are not always warranted, it can be an option when highly valuable trees are threatened after oak wilt has been confirmed in the immediate area. The applications of systemic fungicides have been demonstrated to be effective, particularly when applied as a preventative treatment. The only scientifically tested systemic fungicide showing any efficacy and labeled for use against oak wilt is propiconazole, available under the trade name Alamo. As with any pesticide, you must always read and follow the label accordingly. The best time of the year to inject trees is usually in the early spring. However, an application should occur as soon as the risk to a tree is realized, even if it is later in the growing season. Depending on the tree size and value, treatments should be applied every 12–36 months, with annual assessments.

Spread the Word

Now that you know about oak wilt, it is important to spread the word and raise awareness. Distributing copies of the *Oak Wilt Fact Sheet* can help with getting others familiar with the disease and have a basic knowledge of the cycle.

Often when a community is dealing with oak wilt and infect trees cross property-lines, educational programs can inform and encourage a community approach to the management of this pest. Some urban communities have adopted resolutions or management recommendations which may include the required removal of infected trees as a means to management oak wilt.

While we hope you don't have to personally experience oak wilt, you are armed with information about the pest and information on how to sample for confirmation.

Additional information about oak wilt can be found in the *Oak Wilt in Ohio Factsheet* authored by Pierluigi (Enrico) Bonello, with OSU's Department of Plant Pathology. The FactSheet is available online at: ohioline.osu.edu/factsheet/plpath-tree-02

Additional Resources:

USDA, How to Identify, Prevent and Control Oak Wilt: dec.ny.gov/docs/lands_forests_pdf/oakwiltusda.pdf

Calendar of Events

As always, check out the website for more up to date information and links for registration:
woodlandstewards.osu.edu

June	28th – Name that Tree – Defiance County
July	13th – Name that Tree – Ohio State University, Mansfield Campus 26th – Timber Marketing – Williams County
August	3rd – Tree Diagnostic Workshop, Ohio State University, Mansfield Campus 17th – Common and Uncommon Forest Pests, Ohio State University, Mansfield Campus



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Come find us at:

facebook.com/OhWoodlandStewards

Check Us Out On The Web!

Look for newsletter articles, links to fact sheets and other publications by browsing our site. Registration for upcoming Woodland Stewards classes may also be done electronically.

Website:

woodlandstewards.osu.edu

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