

An aerial photograph of a dense forest. Most trees have vibrant green foliage. However, a significant portion of the trees in the center-left and center-right areas have lost their leaves, revealing bare, greyish-brown branches. Some trees show a mix of green and brown, indicating partial dieback. The overall scene suggests a forest under stress, likely due to a disease like Oak Wilt.

Wilt Not, Want Not: An Overview of Oak Wilt and Implications for CT

Elena Karlsen-Ayala, PhD

US Forest Service

Nate Westrick, PhD

CAES

2025 Forest Health Symposium CAES

CT Oak Wilt Working Group



Education

Coordination

Prevention



The Plant Disease Information Office



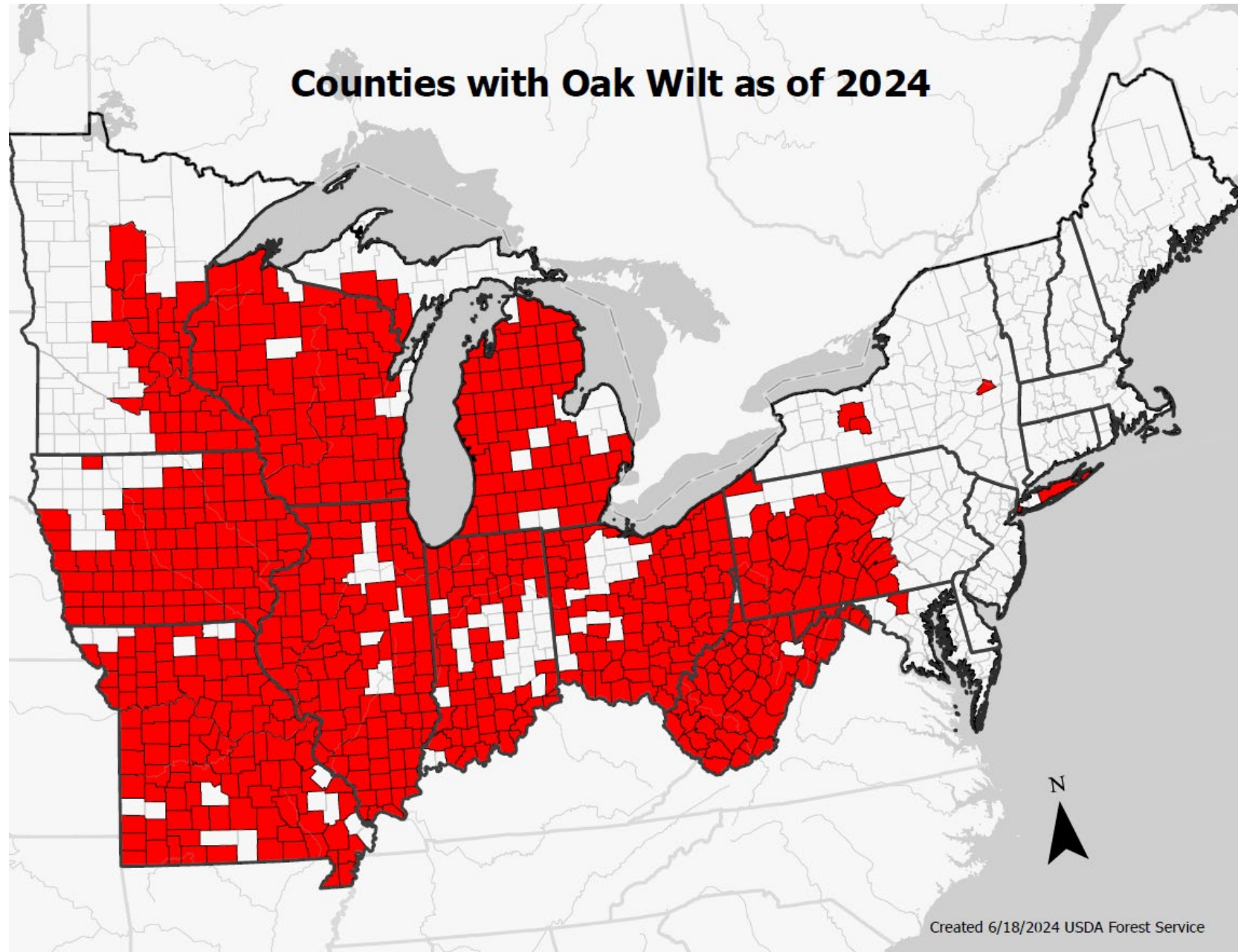
CAES

The Connecticut Agricultural Experiment Station

Putting Science to Work for Society since 1875

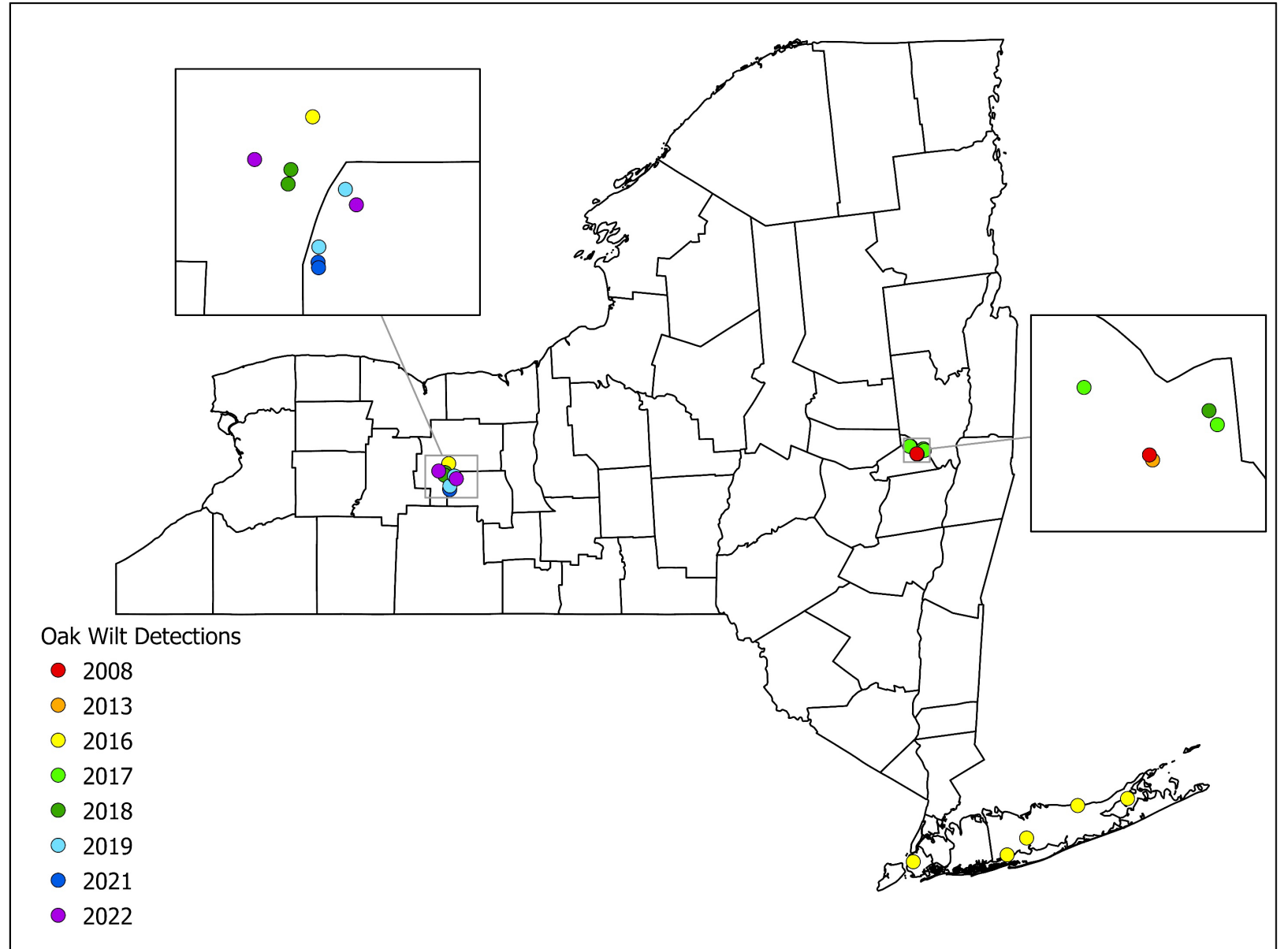
Oak wilt distribution

- First discovered in early 1940s in Wisconsin
- Currently found in 24 states
- First detected in NY in 2008 in Schenectady county



New York Overview

- 19 infections in NY state from 2008-2022
- ~\$1 million 2019
- Estimates in other states- tens to hundreds of millions



What is oak wilt?

- Fungal vascular pathogen
- Caused by *Bretziella fagacearum* (formally *Ceratocystis fagacearum*)
- Xylem limited
- Disrupts water transport
- Systemic



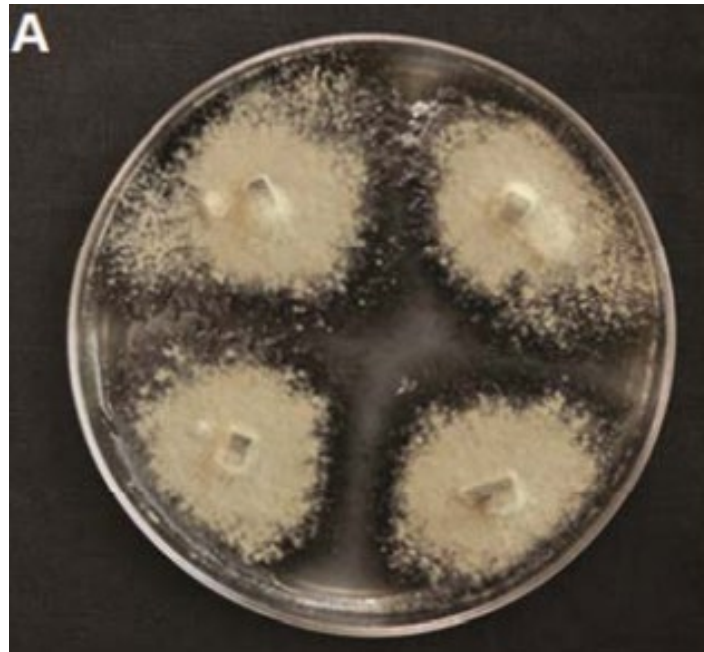
Julie Stachecki; MSU Plant & Pest Diagnostics



Kelsey McLaughlin

Bretziella fagacearum

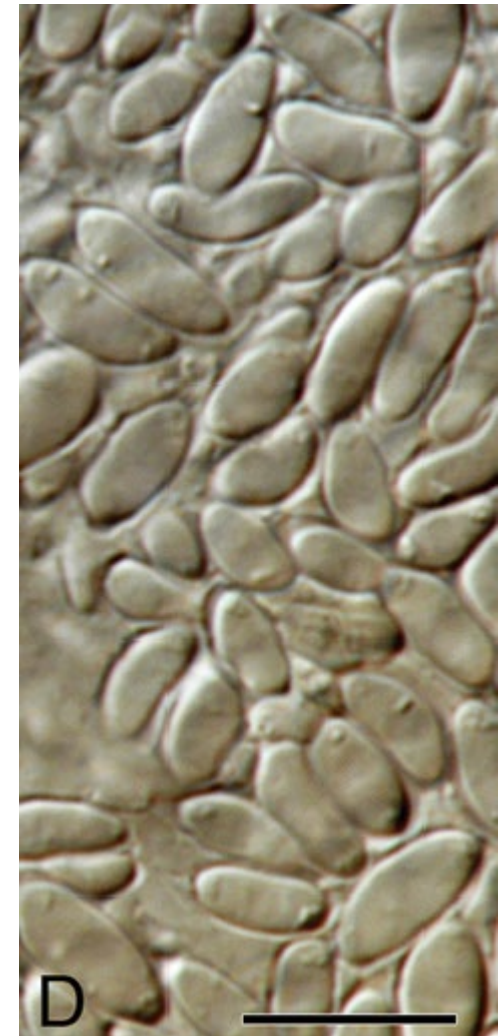
- Both asexual and sexual spores
- Poor saprophyte
- Not heat tolerant



Juzwik et al 2010



De Beer et al 2017



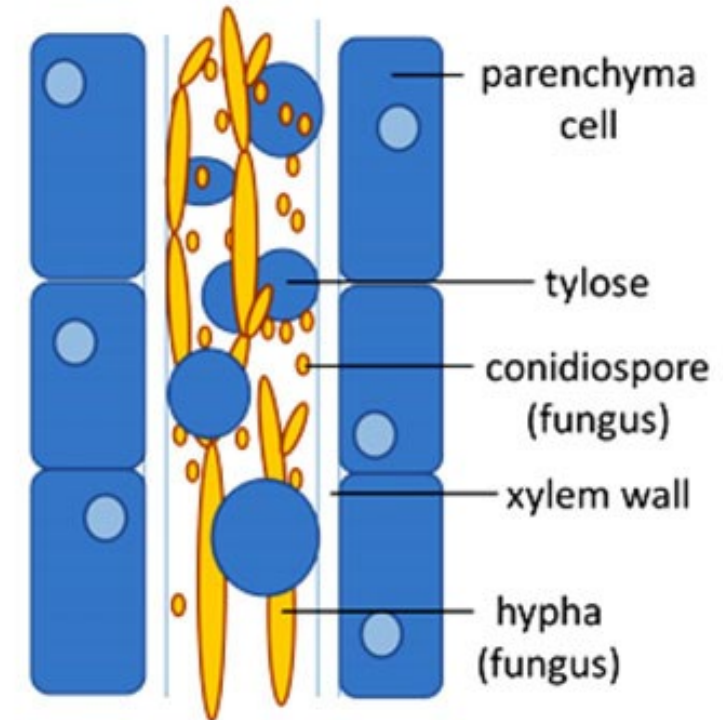
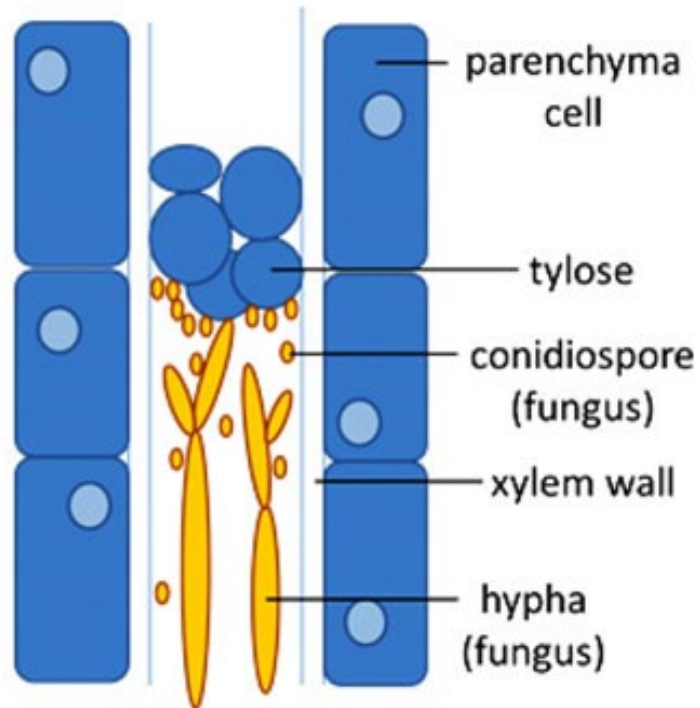
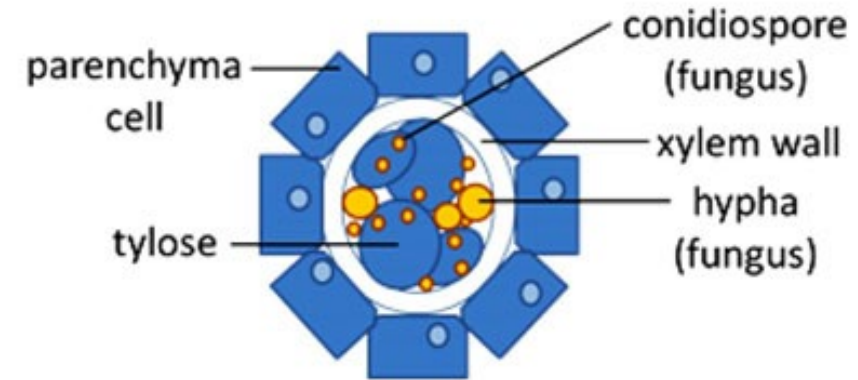
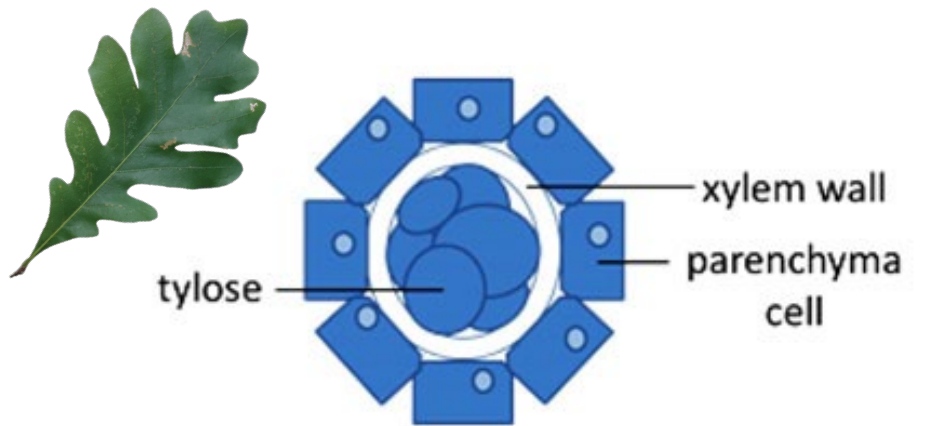
De Beer et al 2017

Tree Susceptibility

- **All oaks are susceptible**
- **Most susceptible:** Red oaks
- **Most resistant:** White oaks
- **Other hosts:**
 - Chestnut
 - Chinkapin
 - Tanoak



Tree Susceptibility



Early Symptoms

- Rapid leaf discoloration
 - Margins inward
 - Early summer
- Defoliation and wilt
 - Top of tree downward
 - ****Premature leaf drop****
 - Rapid Defoliation



I. Munk



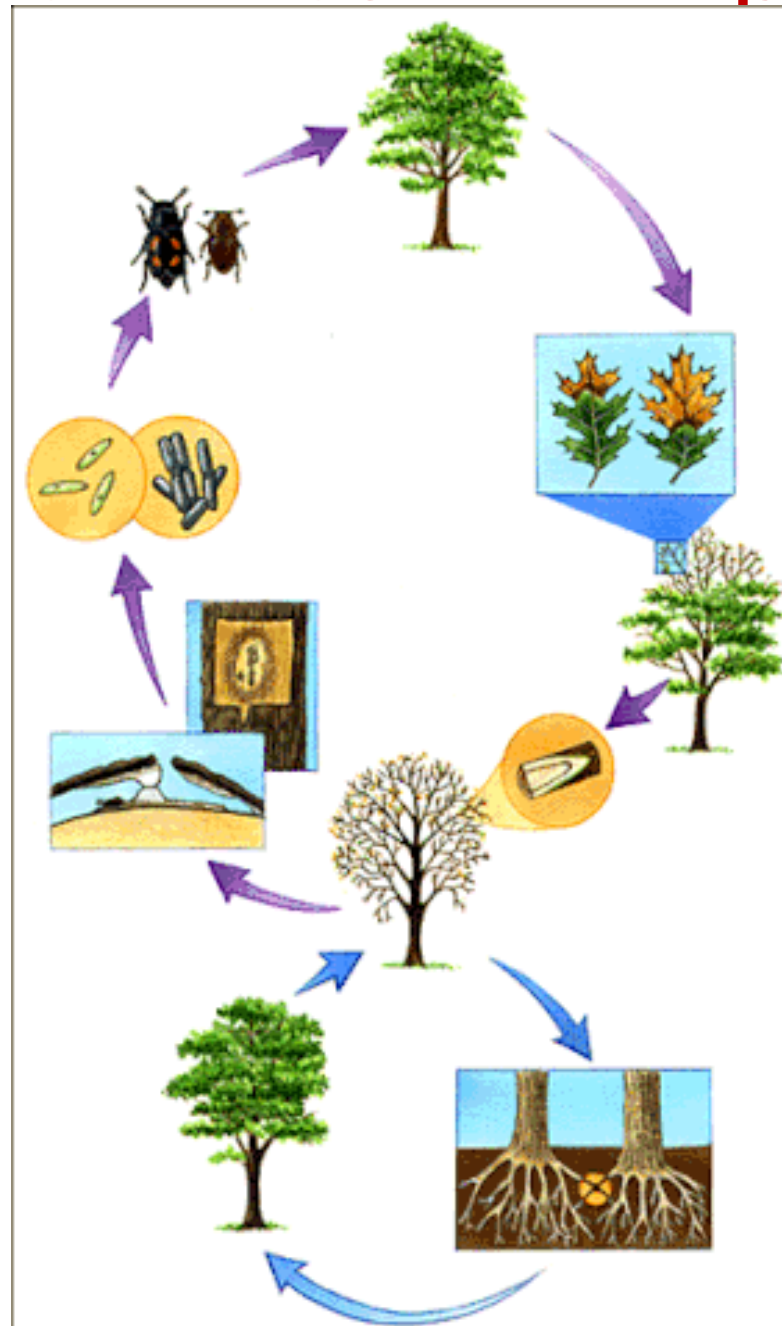
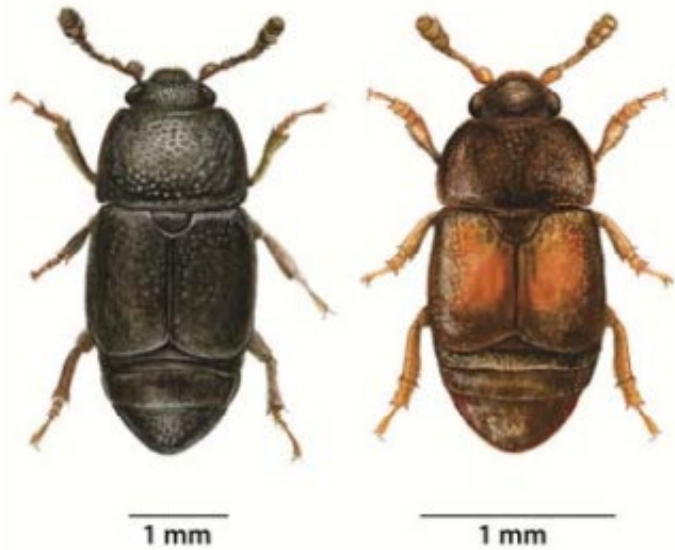
Late Symptoms

- Streaking in sapwood
- Cracks in bark
- Fungal spore mats
- Tree mortality:
3 weeks-6 months



5032042

How is oak wilt spread?

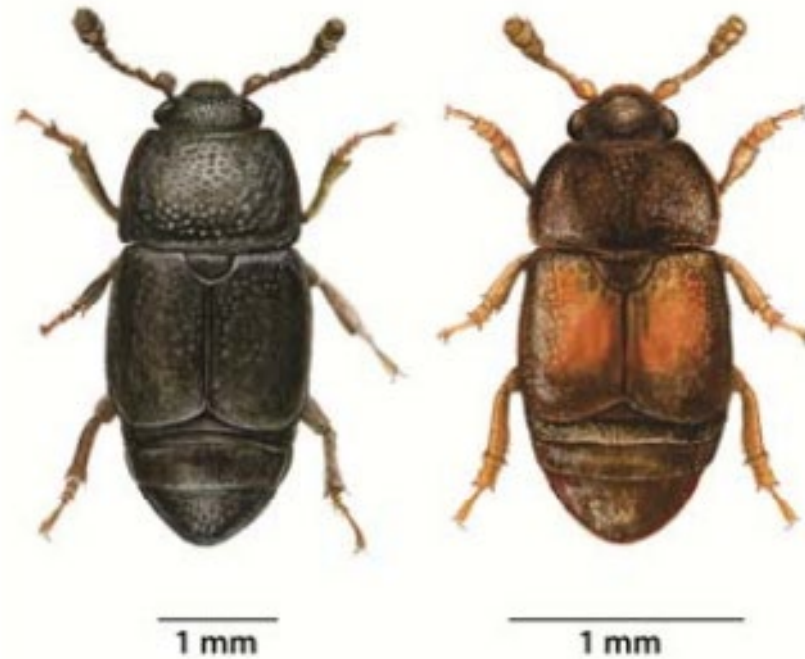


above ground spread

below ground spread

Above-ground

- Long distance
- Nitidulid beetles attracted to sweet smelling spore mats
- Need fresh wounds



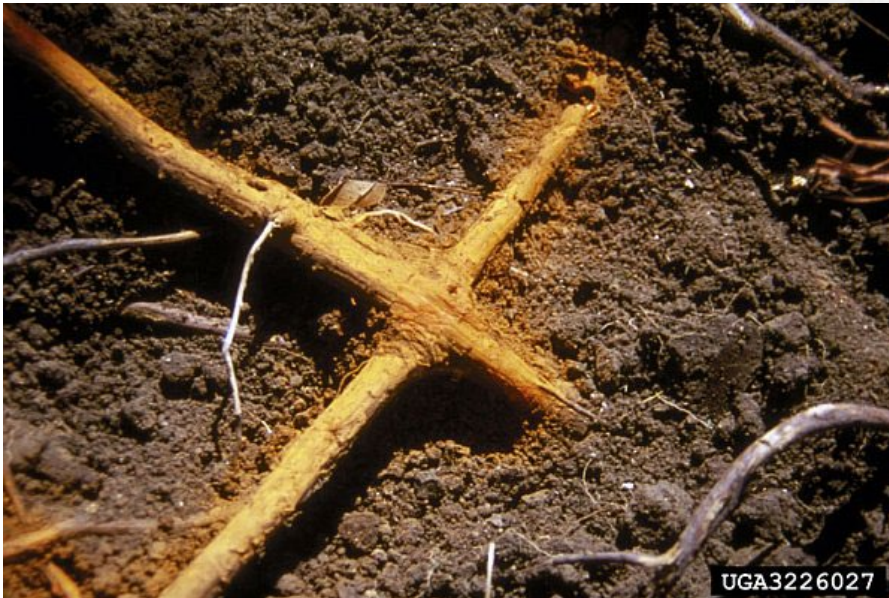
Juliette Watts from Juzwik et al 2010



K. Chahal

Below-ground

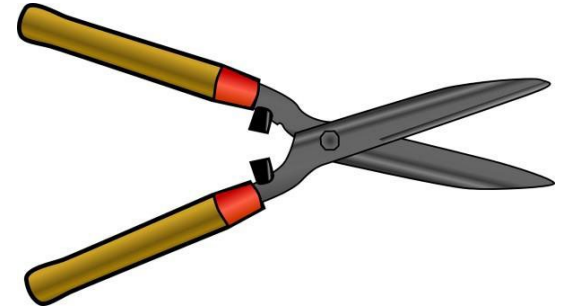
- Local spread via root grafts
 - Tree diversity
 - Soil depth
 - Soil type
 - Inter-tree distance
 - Basal area



Firewood



Oak wilt is not spread via



Disease cycle

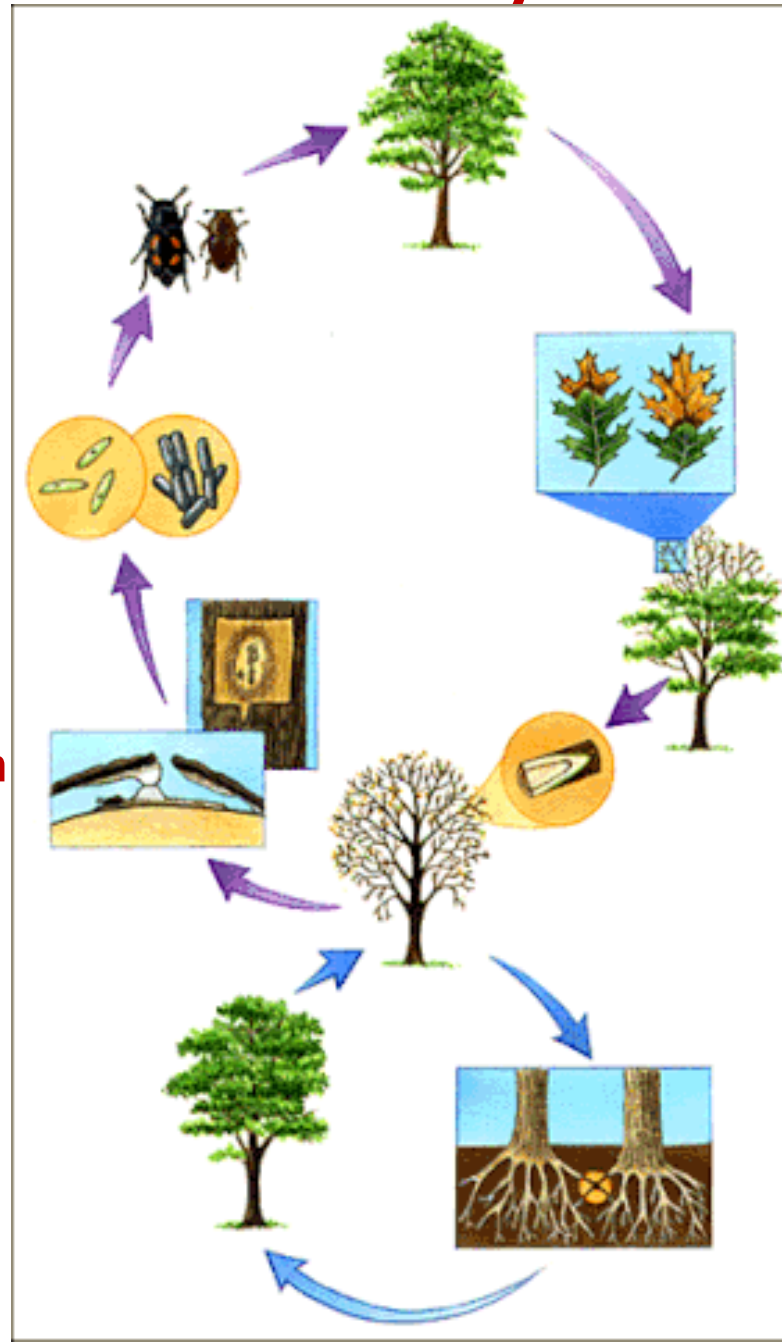
**Spring-Mid
summer**

Early-Mid summer

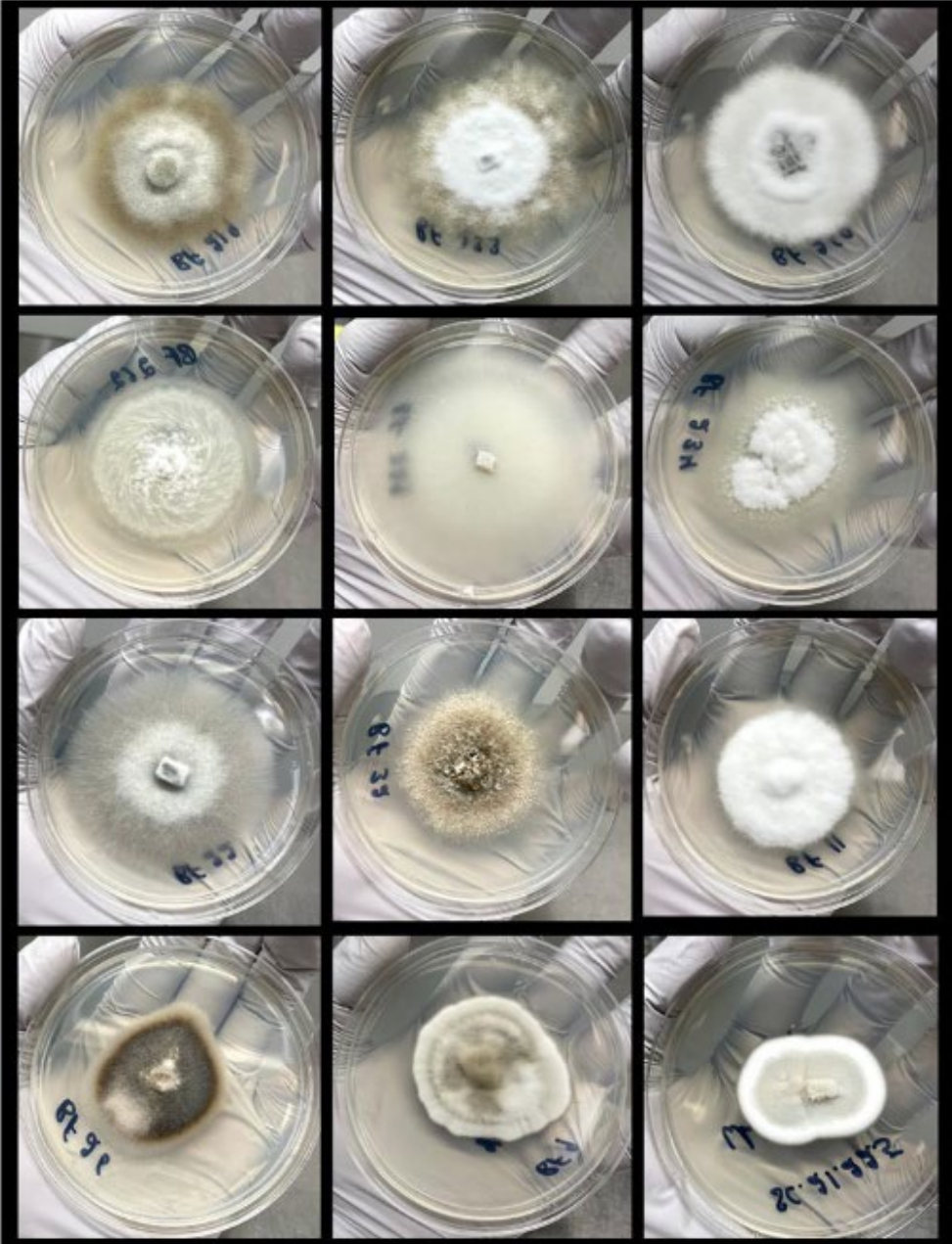
Early detection
and treatment
critical

**Late Autumn
/Spring**

Autumn



Oak wilt isn't the same everywhere...







PhytoFrontiers™ | XXXX • XX:X-X

<https://doi.org/10.1094/PHYTOFR-07-24-0080-A>



Resource Announcement

A High-Quality Genome Resource for the Oak Wilt Pathogen *Bretziella fagacearum*

Karandeep Chahal¹  | Mohit Mahey¹ | Carmen Medina-Mora¹ | Steven Ahrendt² | Robert Riley² | Anna Lipzen² | Juying Yan² | Emily Savage² | Maxim Koriabine² | Vivian Ng² | Igor V. Grigoriev^{2,3} | Thomas C. Harrington⁴  | Eric L. Patterson¹ | Timothy D. Miles^{1,†}  | Monique L. Sakalidis^{1,5,†} 

- Distinct geographic clusters:
TX, west of MI, MI, and east of MI

Questions after Nate's talk

