Health Issues associated with Nursery Stock in Wisconsin

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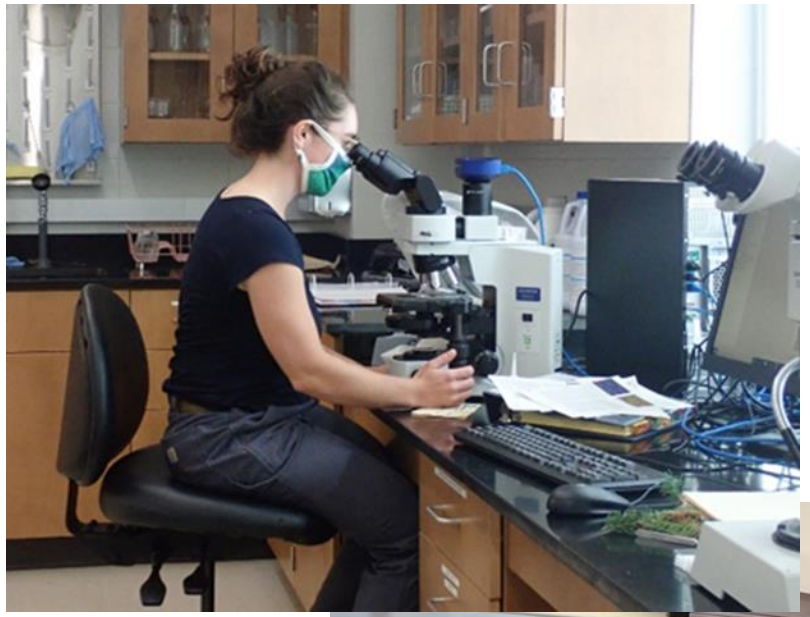
Wisconsin Department of Natural Resources, Forest Health Team

July 22, 2025

Monthly stock health check visits at the Wilson Nursery



Diplodia shoot blight, canker, and collar rot

Causal agent: Fungus - *Diplodia pinea, D. scrobiculata*

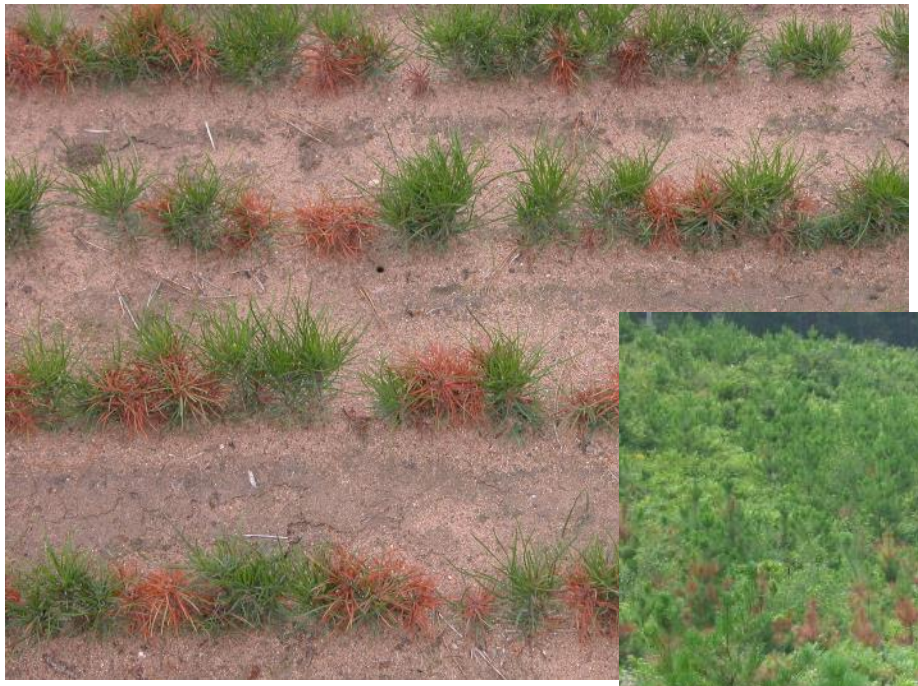
Hosts: Red, Scotch, Austrian pine (jack & white pine, spruce, firs)

Diplodia Canker

Diplodia shoot blight

Diplodia collar rot

Diplodia shoot blight, canker, and collar rot



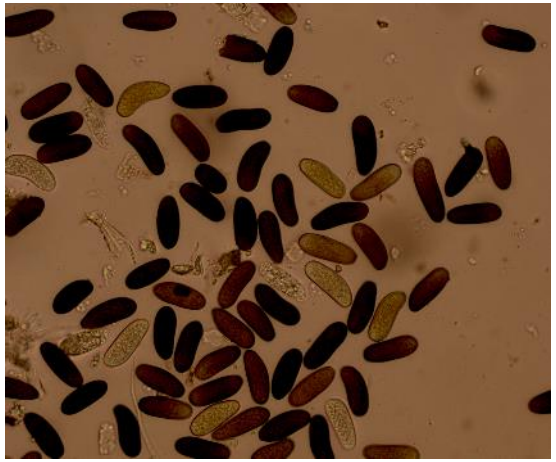
The pathogen can be latent

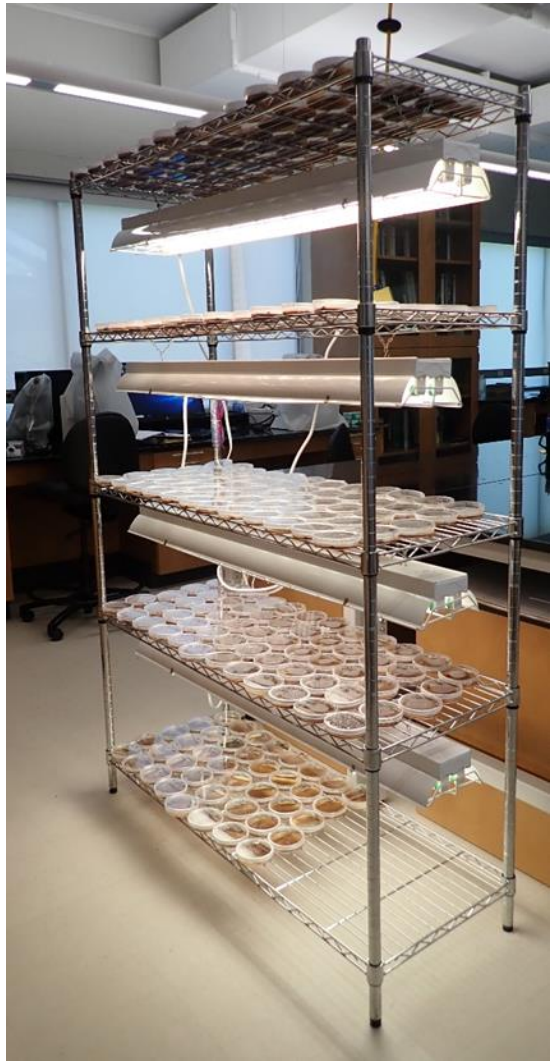
Distribution of *Diplodia pinea* (1981)
Source: FIDL 161, USDA Forest Service

Diplodia action plan for the Wisconsin state nurseries

- Windbreak sanitation
- Fungicide application
- Monitoring
- Outplanted stock survey
- Asymptomatic seedling test

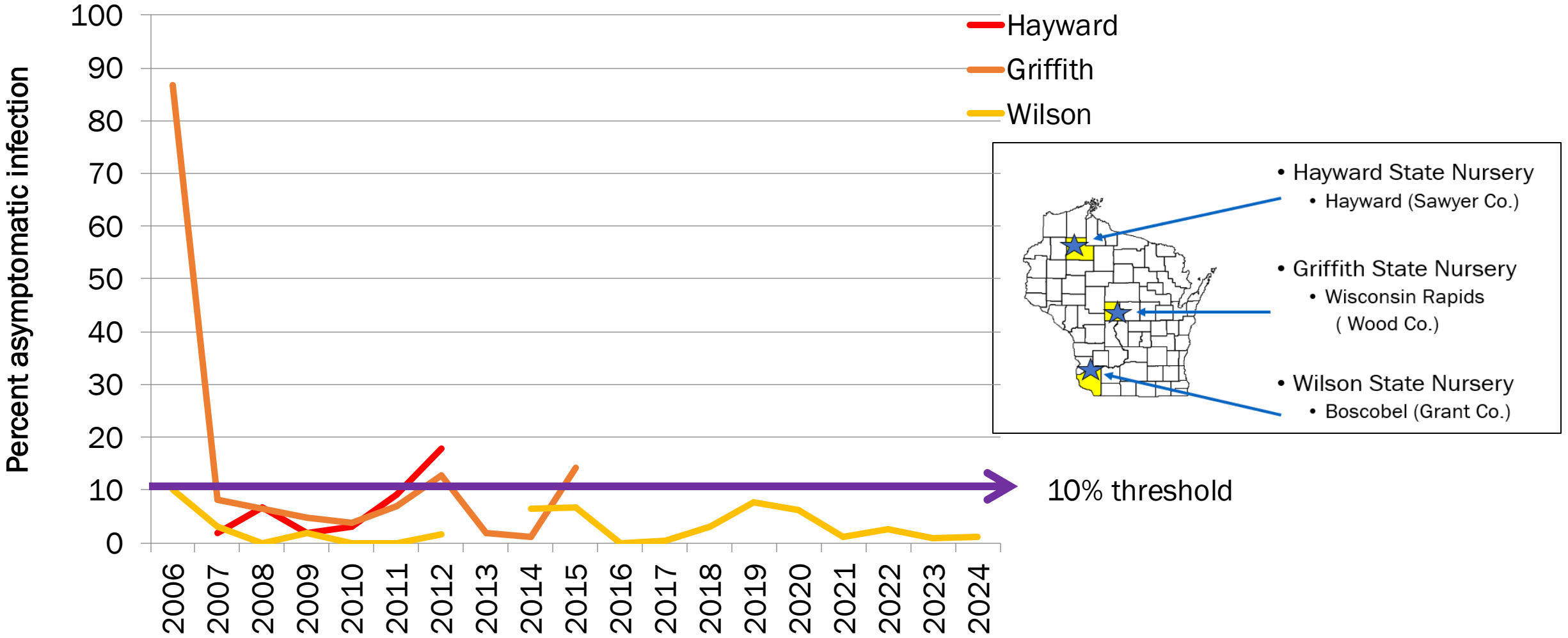
Windbreak removal at Griffith nursery in September 2005





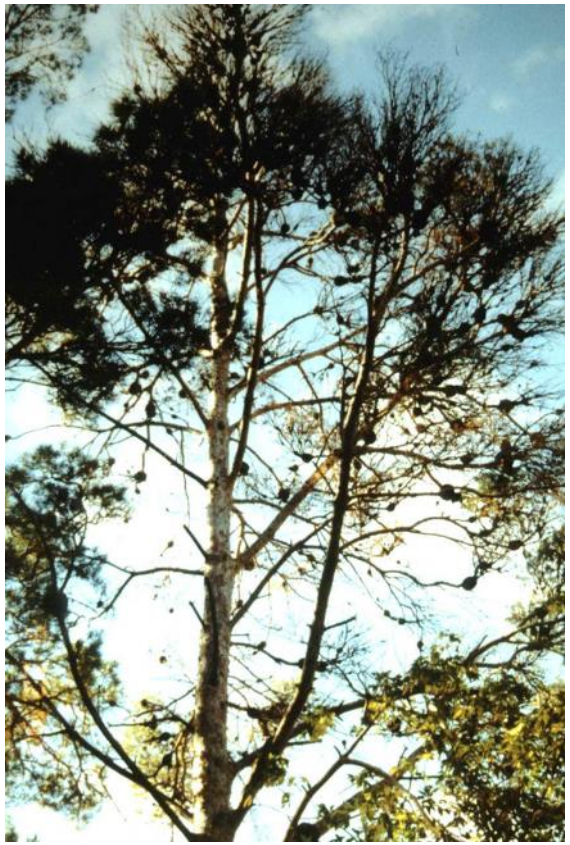
Dr. Stanosz demonstrating the protocol

State nursery red pine seedling asymptomatic infection test



Pine Gall Rust

Hosts: Jack pine and other pine



<u>Pine-pine (western) gall rust</u>

Causal agent: Fungus

(*Endocronartium harknessii)*

No alternate host

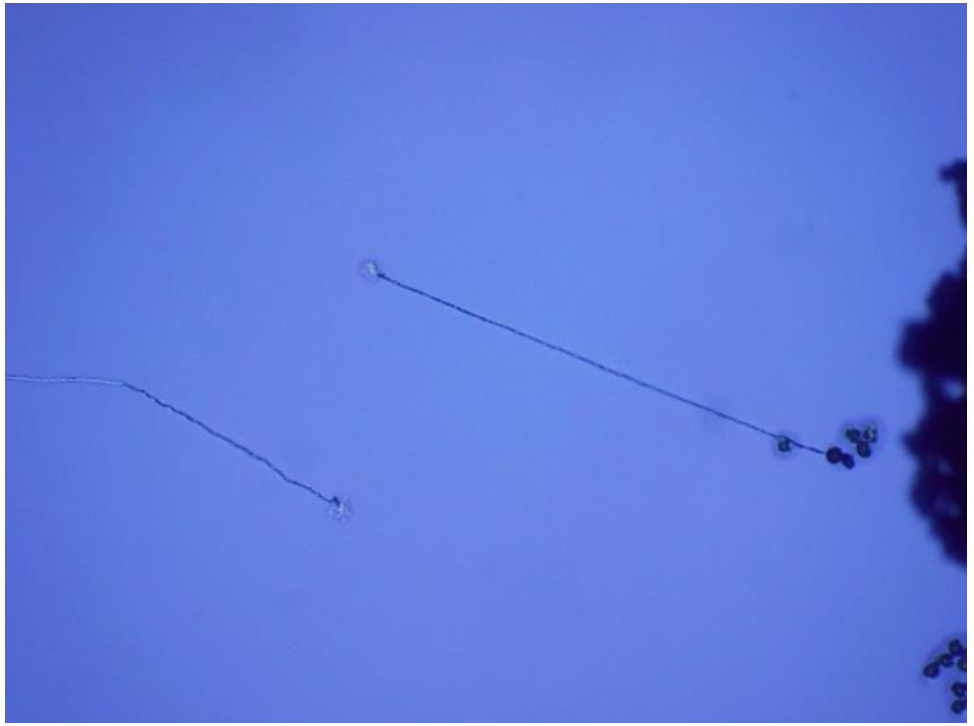
<u>Pine-oak (eastern) gall rust</u>

Causal agent: Fungus

(C*ronartium quercuum)*

Alternate host : Oak

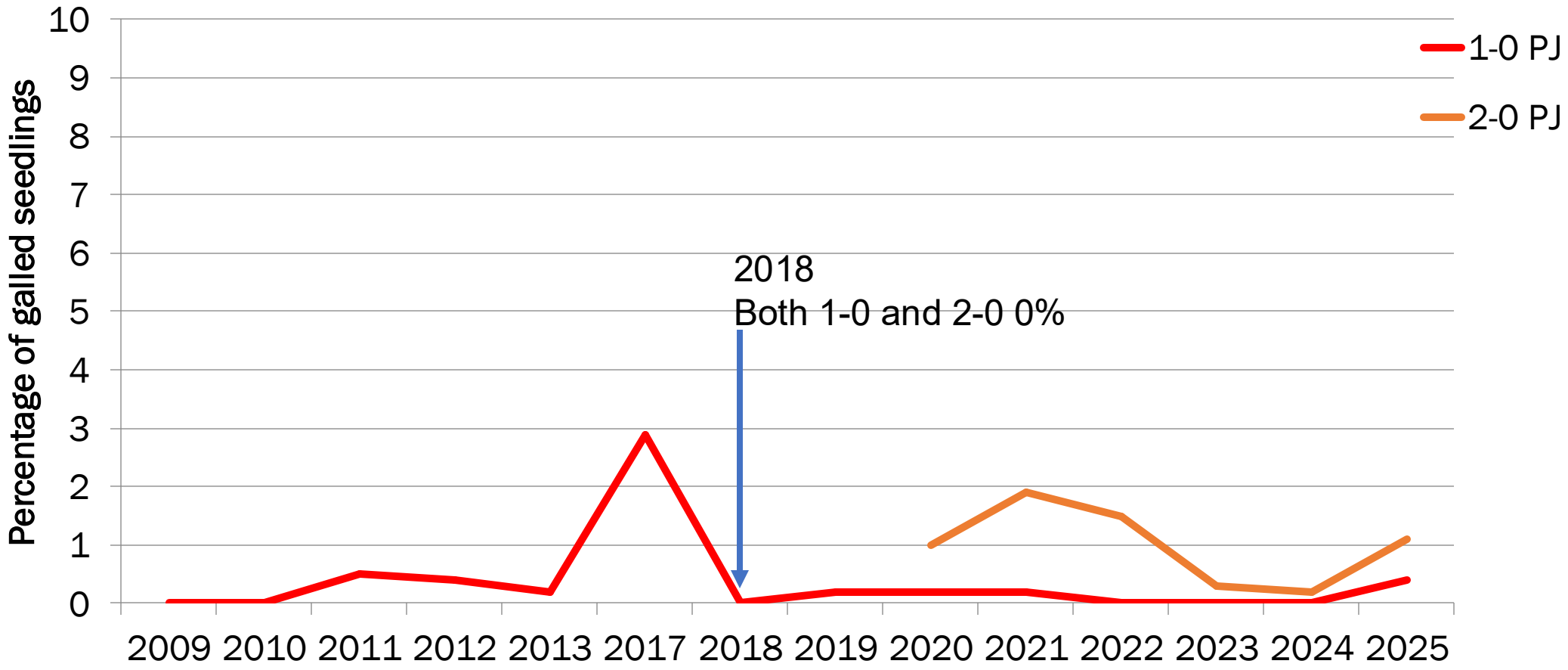
Gall rust fungal species identification (2011-2013)



All of the galls tested from all of the 3 state nurseries were identified as pine-oak gall rust

Jack pine gall rust annual visual survey

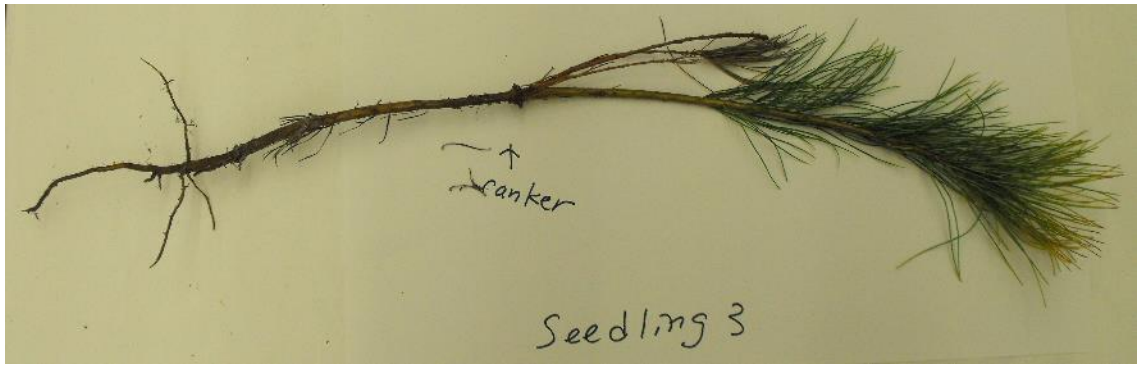
Jack pine gall rust visual survey at the Wilson Nursery

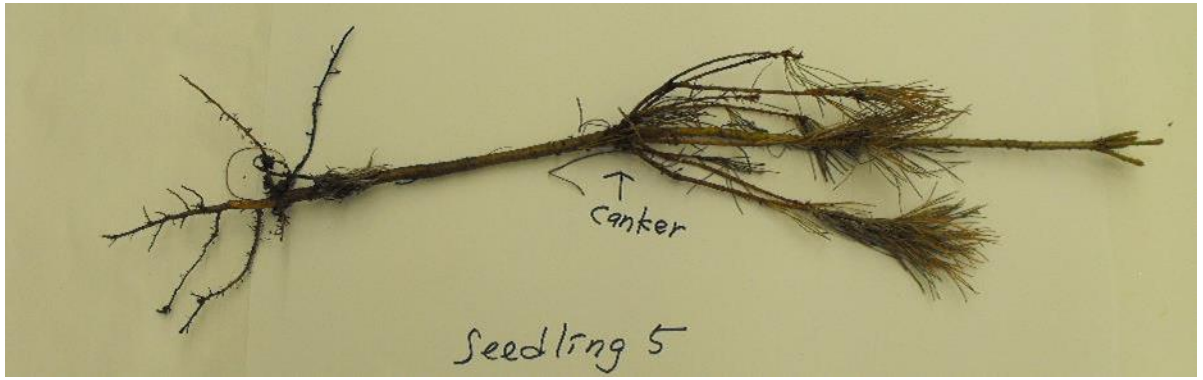


White pine needle chlorosis/necrosis and mortality

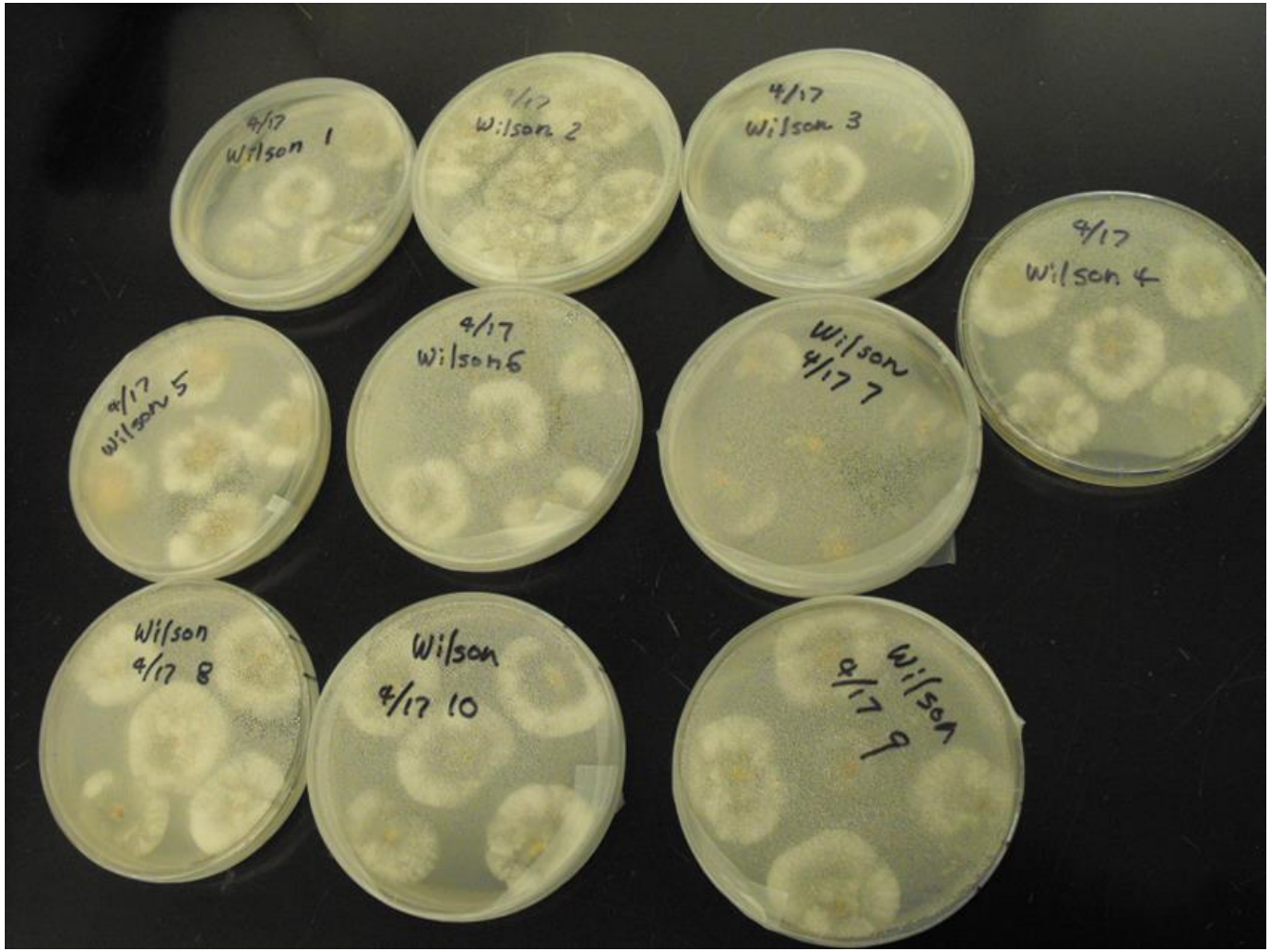
Photos taken 9/22/2021

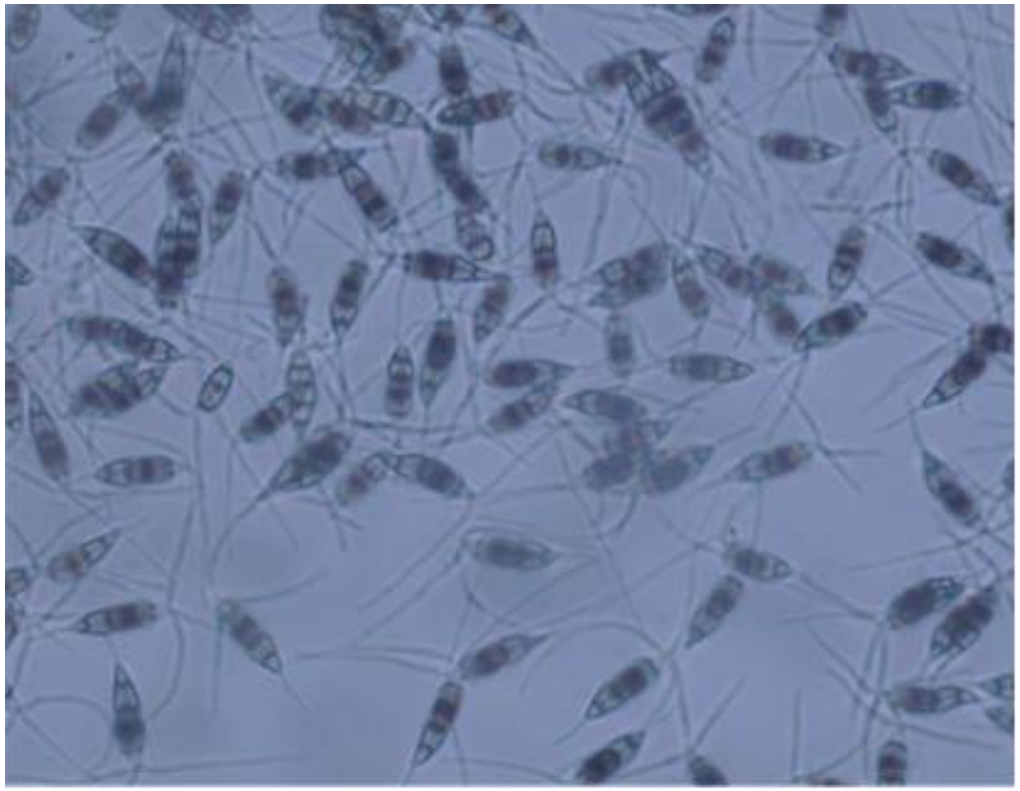
White pine stem canker (3-0 white pine, 2021)





Pestalotiopsis spp.





Pestalotiopsis foliage blight

(Forest Nursery Pests, No. 680)

- Cause damping-off, root and collar rot, tip dieback, and/or stem cankers
- Occurs in forest tree nurseries throughout the United States
- Eastern white pine is particularly susceptible
- Infection is correlated with extended periods of above-average rainfall during the growing season.
- The first symptoms appear from late August to October.

2022 3-0 white pine

Photo taken 9/22/2021

Photo taken 9/16/2022

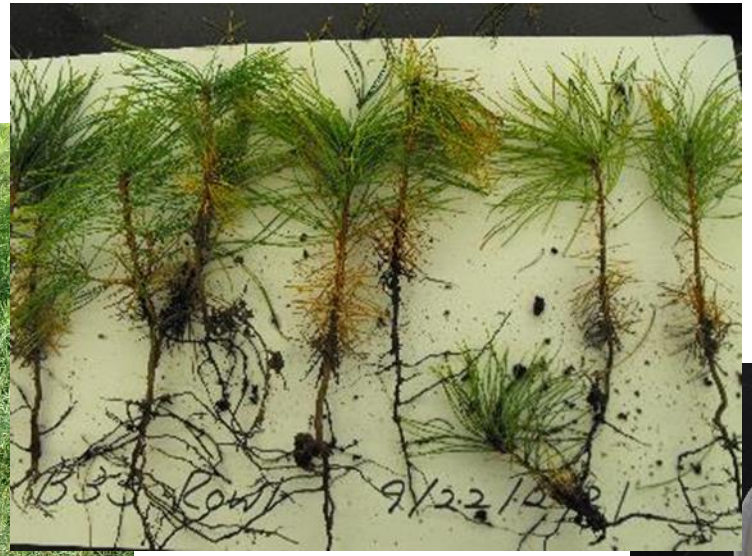
2025?

Photo taken on July 7, 2025

Fusarium Root and Stem Disease

Causal agent: Fungus – *Fusarium spp.*

Hosts: Conifer and hardwood sp.



Mortality of conifer seedlings

- Molecular species identification through DNA sequences:
  - 2019 tamarack – *F. oxysporum/F. commune*
  - 2021 hemlock – *F. proliferatum*
  - 2021 red pine – *F. commune*
  - 2021 white pine – *F. commune*
  - 2022 white pine – *F. proliferatum*

F. commune and *F. proliferatum* are proven to be highly virulent species.

Cherry leaf spot

Photos taken on August 17, 2020

- Fungicides used
  - mancozeb (Dithane)
  - thiophanate-methyl (3336)
  - miclobutinil (Eagle)
  - benomyl (Benlate)
  - triadimefon (Bayleton)

Cherry Leaf Spot

Causal agent: Fungus – *Brumeriella jaapii*

Hosts: Cherry

- Major disease of cherry in the Great Lakes region.
- A recently published article described site-specific resistance to sterol demethylation inhibitor fungicides in populations of *B. jaapii*.
- Out of 2020 fungicide list applied on choke cherry, Eagle (myclobutanil) and Bayleton (triadimefon) seem to be sterol demethylation inhibitor fungicides.
- Nursery removed sterol demethylation inhibitor fungicides.
- The disease appears to be under control

1-0 black cherry damage

- August 2022
  - Tip over
  - Swelling at the base
- No pathogen detected
- Herbicide (Pendulum) damage suspected

Figure 9 A, B and C. Symptoms of stem swelling at the soil line (A) (Surflan) and stunting. A callous-like growth may develop at soil line (B) (Pendulum), become brittle and causing stem breakage (C), or the plant to fall over (a lodging type injury) (A). (Photos by: H. Mathers A; Luke Case B and C).

Pendulum damage

From the University of Florida site "Diagnosing Herbicide Injury in Cotton".

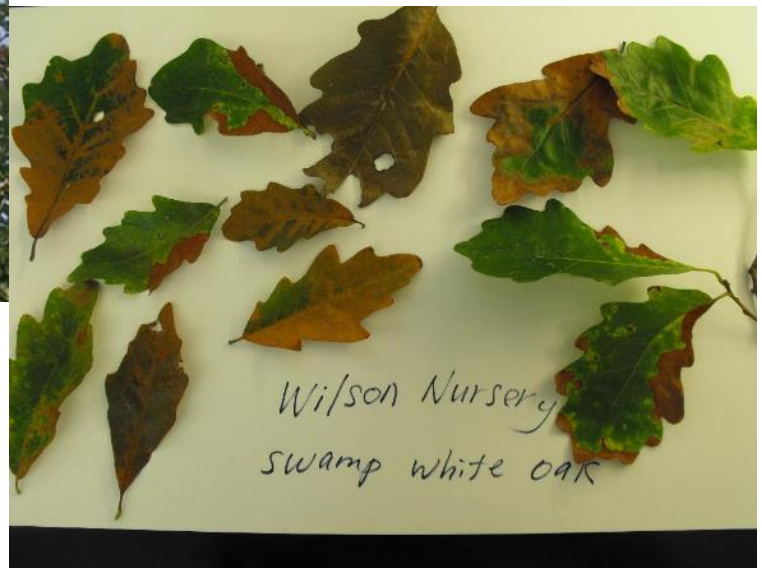
- Stunted growth
- A callus-like growth at soil line
- stem breakage at soil line

2-0 black cherry 2023

Photo taken on June 7, 2023

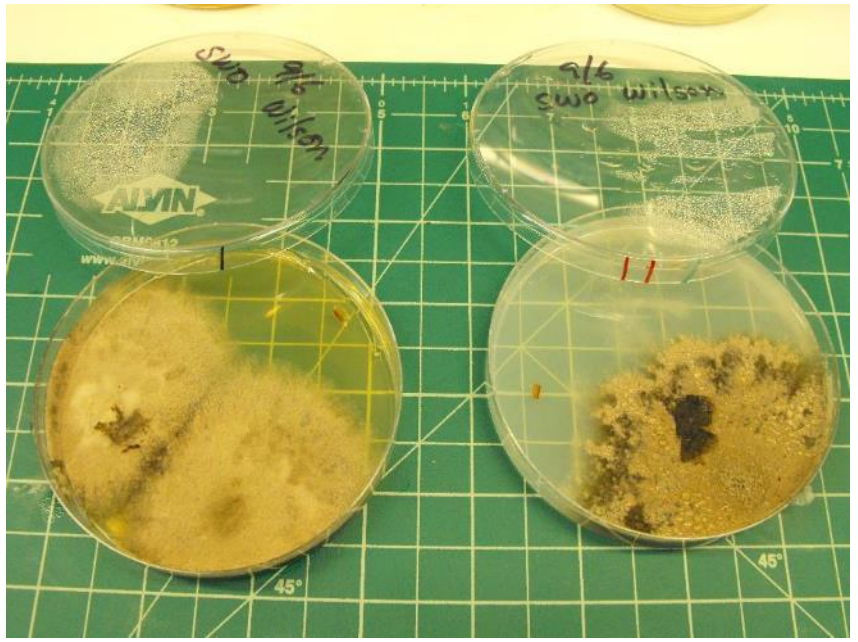
Swamp white oak dieback

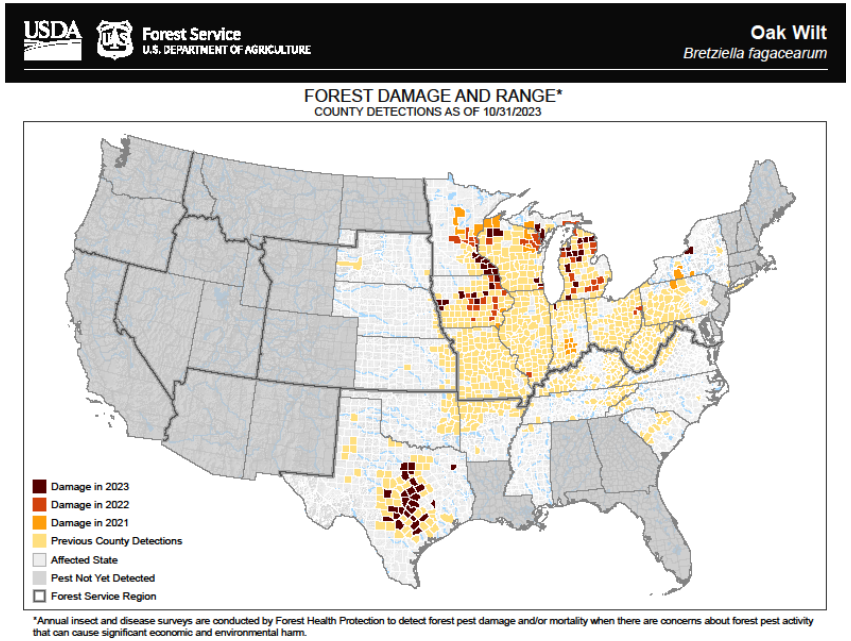
7/15/2024

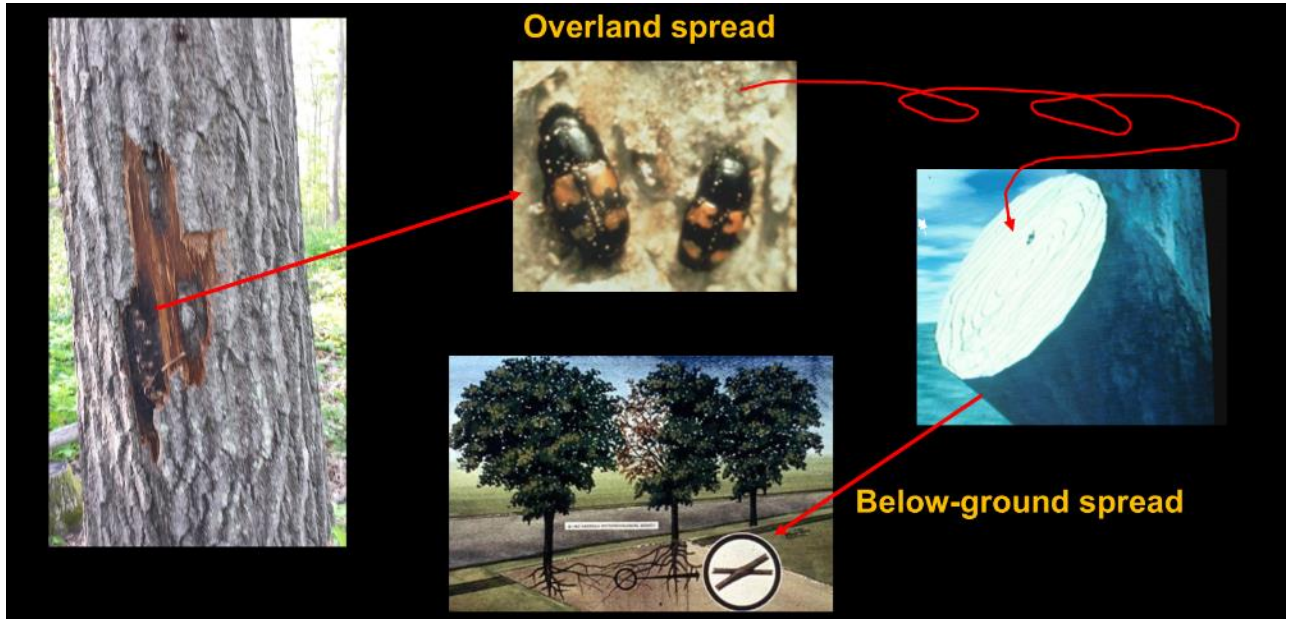


Oak Wilt

Causal agent: Fungus – *Bretziella fagacearum*
Hosts: Oaks







Red oak group = very susceptible
White oak group = moderate to resistant

Swamp white oak dieback

7/15/2024

9/24/2024

2-0 red oak

Would top cut be a concern for oak wilt?

CONNECT WITH US

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OFF THE RECORD"