

# Managing BLD



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***(with help from Dan Herms***  
***and Don Grosman)***

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*Disclaimer: Products are named in this presentation for convenience only. It does not constitute an endorsement or approval of a particular brand and is not meant to imply that other, unmentioned products are not also suitable.*



Darkened bands may be called “galls” because of the way they are formed.

## Life cycle of BLD nematode

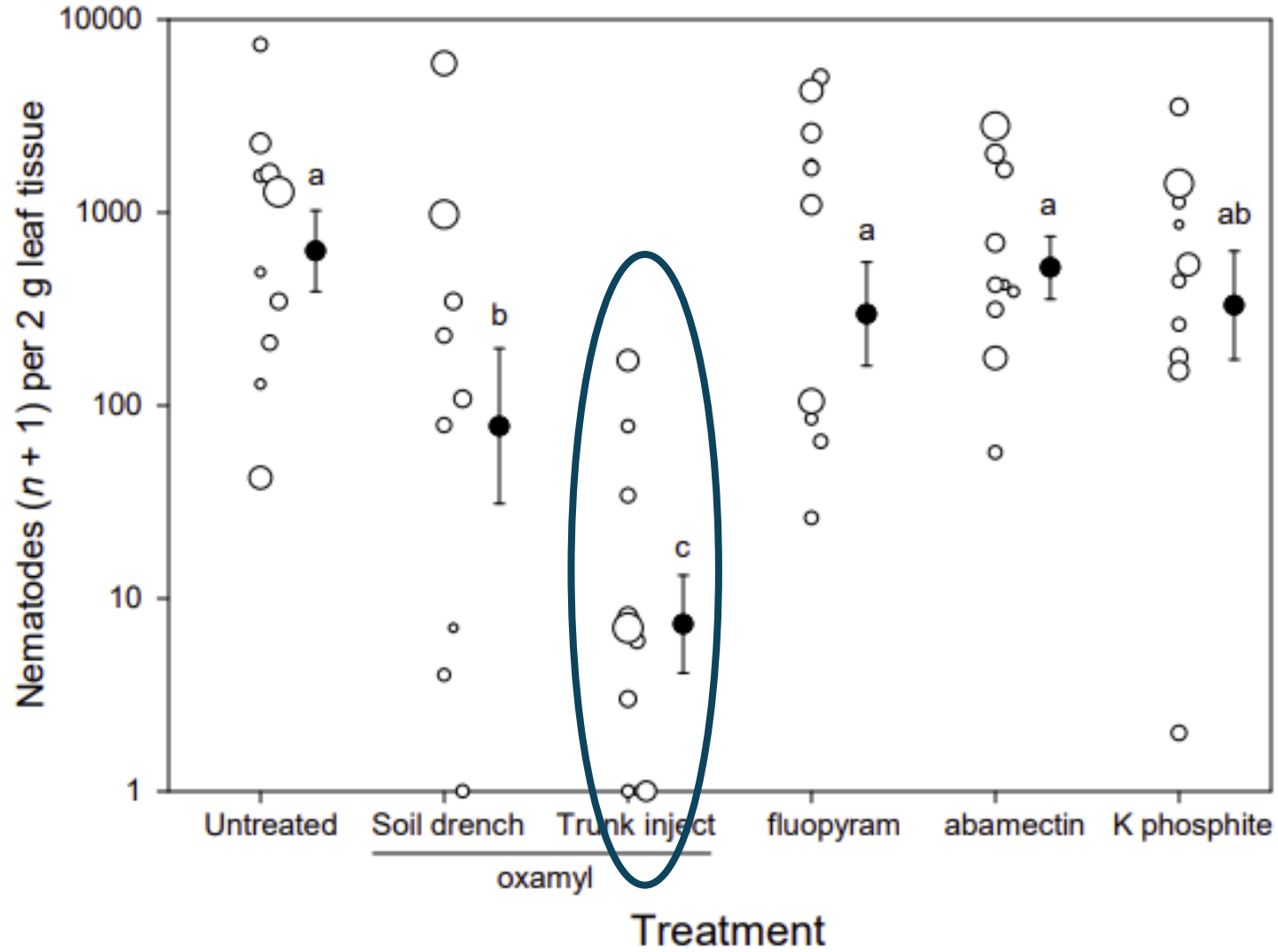
Two phases: within buds and within leaf blades

Fall/Winter/early spring: Nematodes within the buds feed external to leaf tissue and induce gall formation via their secretions (Paolo Vieira, USDA). Colonization of expanding leaves as they emerge from buds probably requires the presence of these hyperplastic cells.

Results from experiments that targeted nematodes developing in expanded leaves demonstrated that this is not an effective strategy ...

# Forest study, southern Connecticut, 2022

## Response of *Litylenchus crenatae*



Oxamyl trunk injection  
99% population  
reduction

## Nematodes extracted from buds, March 2023

Treatment	Nematodes per gram of buds
Untreated check	11,000
Oxamyl trunk injection	11,800

The bottom line: Treatments killing nematodes in leaves are **ONLY** worth considering where trees are isolated and buds are not likely to become infected from nematodes migrating from neighboring trees.

Preserving tree health must protect leaves developing within buds:

Activation of SAR response with potassium phosphite prevents nematodes from modifying plant growth



# Phosphite indirectly affects nematodes

Disrupts development of specialized structures of plant tissues that enhance nematode feeding.

Oka, et al. 2007. Phosphite inhibits development of the nematodes *Heterodera avenae* and *Meloidogyne marylandi* in cereals. *Phytopathology* 97: 396 – 404.

2 soil injection applications per season  
early June and mid-August

2 oz product + 14 oz water / inch DBH

Slightly higher rate than for managing bleeding  
canker of beech

Protocol from Dr. Daniel Herms, Davey Tree, with Cleveland Metroparks



# PP30 Soil Injection Study at Cleveland Metroparks

- Conducted: 2017-2022
- 40 trees: N = 20 treated / 20 untreated controls
- Trenching to sever root grafts
- 2-4 inch DBH saplings initially with mild symptoms
- Rate: 2 oz PP30 + 14 oz water / inch DBH
- 2 soil injections / inch at base of trunk
- Two applications / yr: May-June and August
- Trees evaluated by each year August-September
- Nematodes sampled in October 2021-2022





Treated



Untreated

# Foliar Nematode Density Lower on Treated Trees

## Nematodes/cm<sup>2</sup> Leaf Area

	Treated	Untreated
2021 Standard	2.9 a	39.7 b
2022 Standard	2.6 a	46.3 b
2022 Random	7.2 a	42.2 b

# Key Conclusions

Soil phosphite applications:

- Maintain canopy health of saplings with BLD
- Substantially decrease foliar nematode populations

Observation by multiple arborists:

Beech trees receiving bleeding canker treatments  
**over several years** remain healthy

Surrounding beech trees have disease

## Properties of phosphites

Systemically absorbed through roots, bark, and leaves

Turns on systemic acquired resistance in plants, defends against disease

Cannot be metabolized

Moves upwards and downwards in plants

Moves in the same direction as carbohydrate flow

Some will be lost when leaves drop, dilution with new growth

Likely scenario: Multiple years of application builds up concentration of phosphite in tissues until it exceeds a threshold that provides complete protection from nematodes in buds.

Paul Quick,  
arborist in  
Darien, CT

88-inch dbh  
European beech  
had bleeding  
canker about  
2014.

Has had annual  
treatments of  
potassium  
phosphite every  
year since.



**NOT a leprechaun!**

There are a few leaves on this tree that have dark bands. These are exclusively in shaded leaves on lower branches.

Note areas of possible hypersensitive response (thinning between leaf veins).





Asplenifolia



Dawyk's Purple



Tricolor

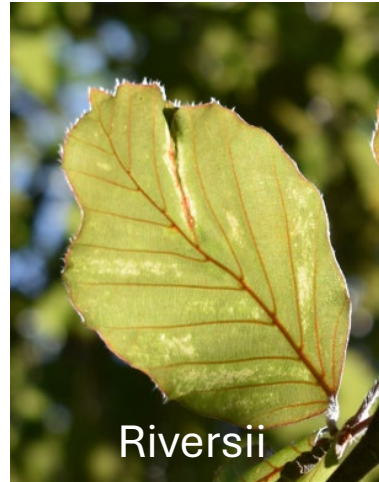
Spaethiana

Rohanii



Fastigiata

American beech



Riversii

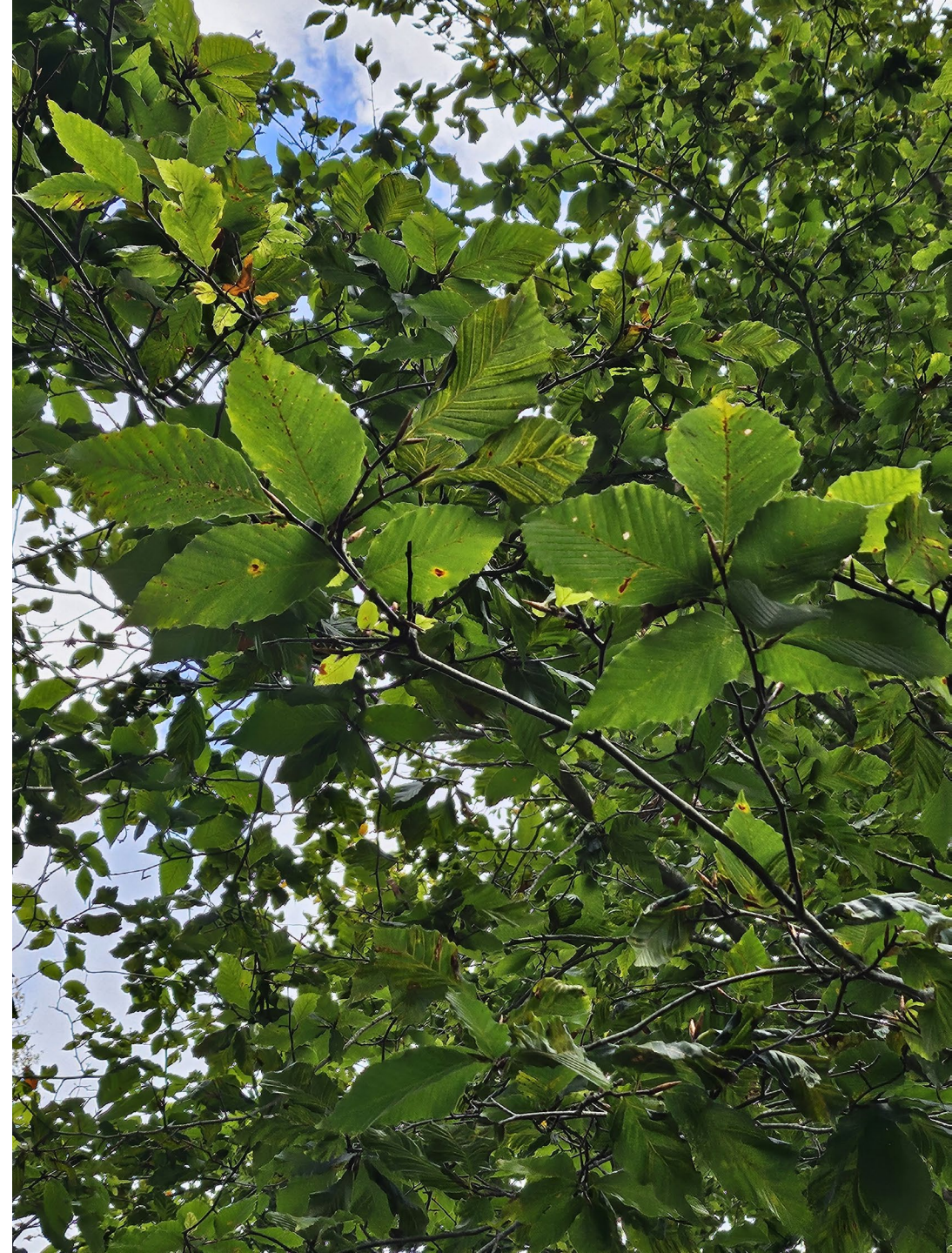
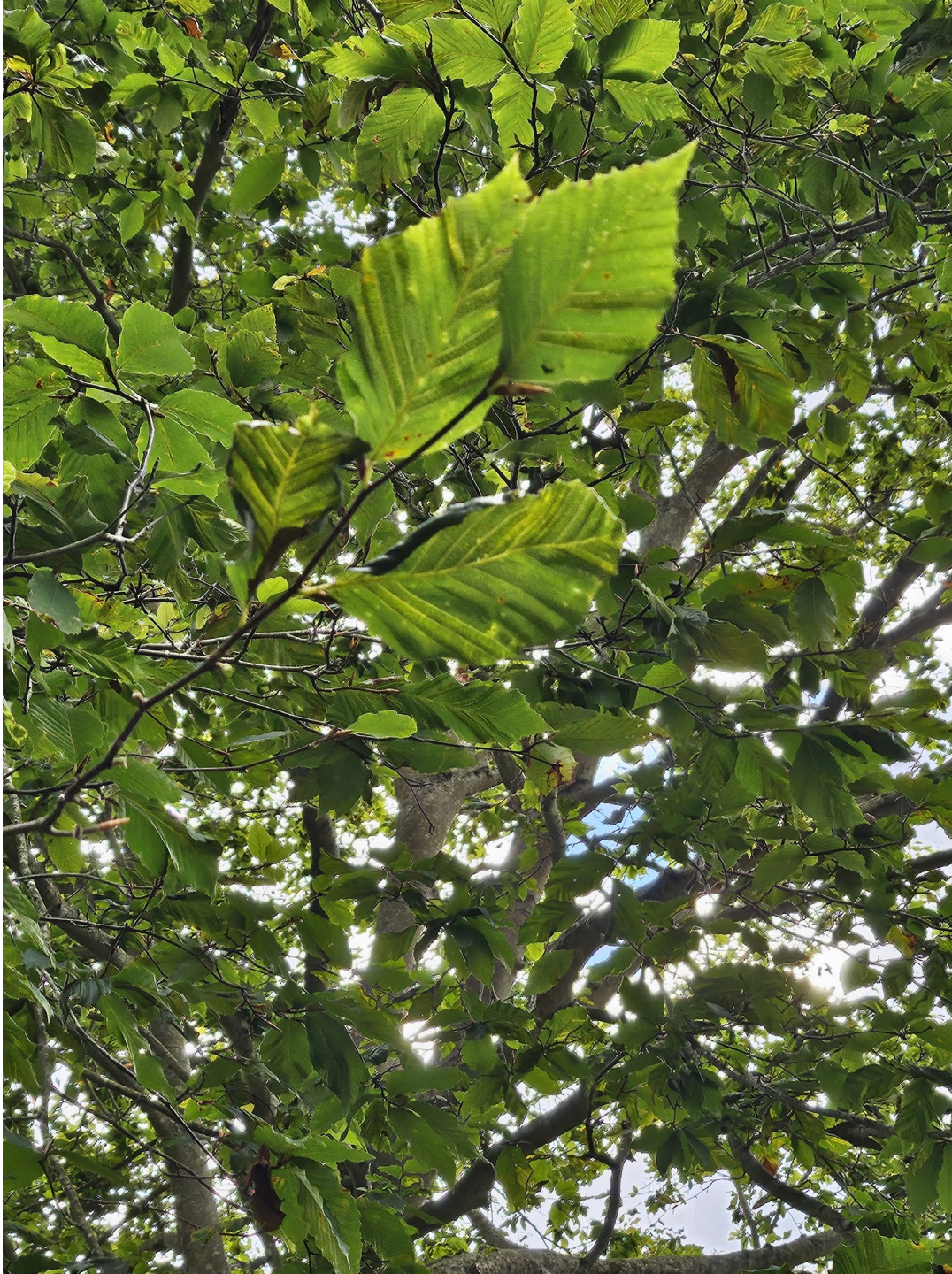
Pendula

# Spectrum of susceptibility

Note that untreated beech trees in that neighborhood are at death's door.



American  
beech  
treated for  
two years  
with  
potassium  
phosphite  
bark sprays



Suggestion from me, 2024:

Dilute potassium phosphite product 1:1 for bark spray

Do NOT include organosilicone surfactant (PentraBark)

Spray as high as you can comfortably reach to wet the bark,  
without spraying foliage!

Results ...

Outlier:

Complete protection from BLD with one year's application of potassium phosphite.





6-inch DBH  
tree protected  
with two trunk  
sprays of  
Reliant, one in  
May and one  
in June 2024.

Photos:  
Barry Dolby



Erineum mites – probably *Acalitus fagerinea*

Of no great significance to plant health

Presence can be an indication of overactivated SAR system

Similar phenomenon observed with Tetranychid mites and overapplication of imidacloprid

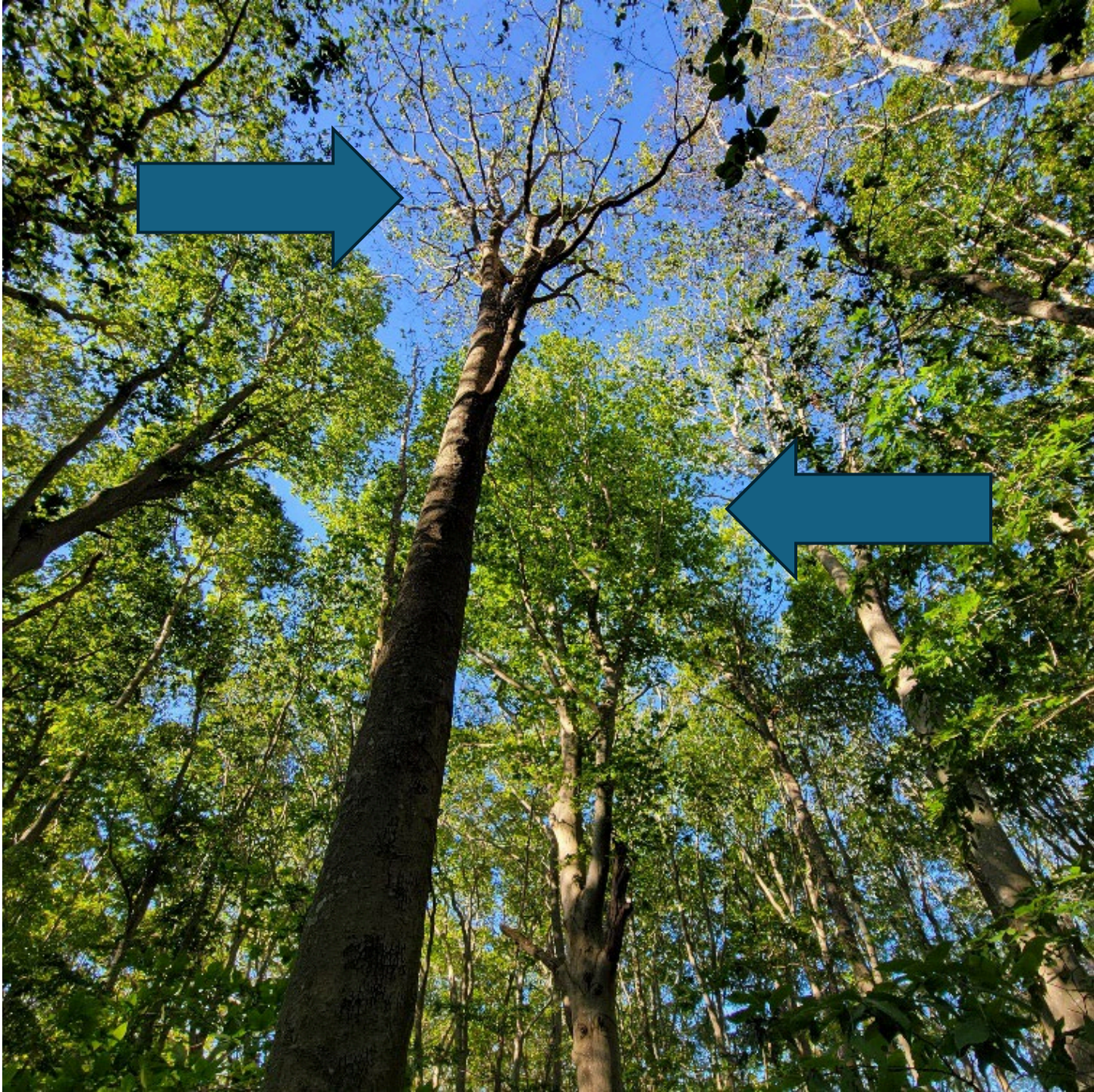
untreated



treated

untreated

treated



Untreated check

PHOSPHO-jet  
Dosage

< 12 inch dbh  
3.5 mL/inch dbh

12 – 24 inch dbh  
5 mL/inch dbh

>24 inch dbh  
7 mL/inch dbh

Tree injected  
once in 2024 with  
PHOSPHO-jet

Photo taken  
2025,  
Don Grosman,  
ArborJet

## Newest guidelines

Possibly use trunk injection large trees, one year

Basal bark spray

Dilute Reliant or similar product 1:1

Wet bark from base of trunk

Height in feet equal to dbh in inches (up to 12 feet)

Two applications, May to early July, at latest

Consider foliar spray for shaded foliage (low concentration)

Effectiveness likely to be influenced by initial tree condition

Connecticut State

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