

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

## Alternative titles

Where There's a Wilt, There's a Way

Wilt to Survive

Wilt We Ever Learn?

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# Why are we concerned about CT? NY has been fine.

## Top tree species by volume

- 1) We have a lot of red oaks
- 2) Soil Type (Much of CT is very sandy)
- 3) Resources
- 4) Climate change is increasing the suitability of the pathogen

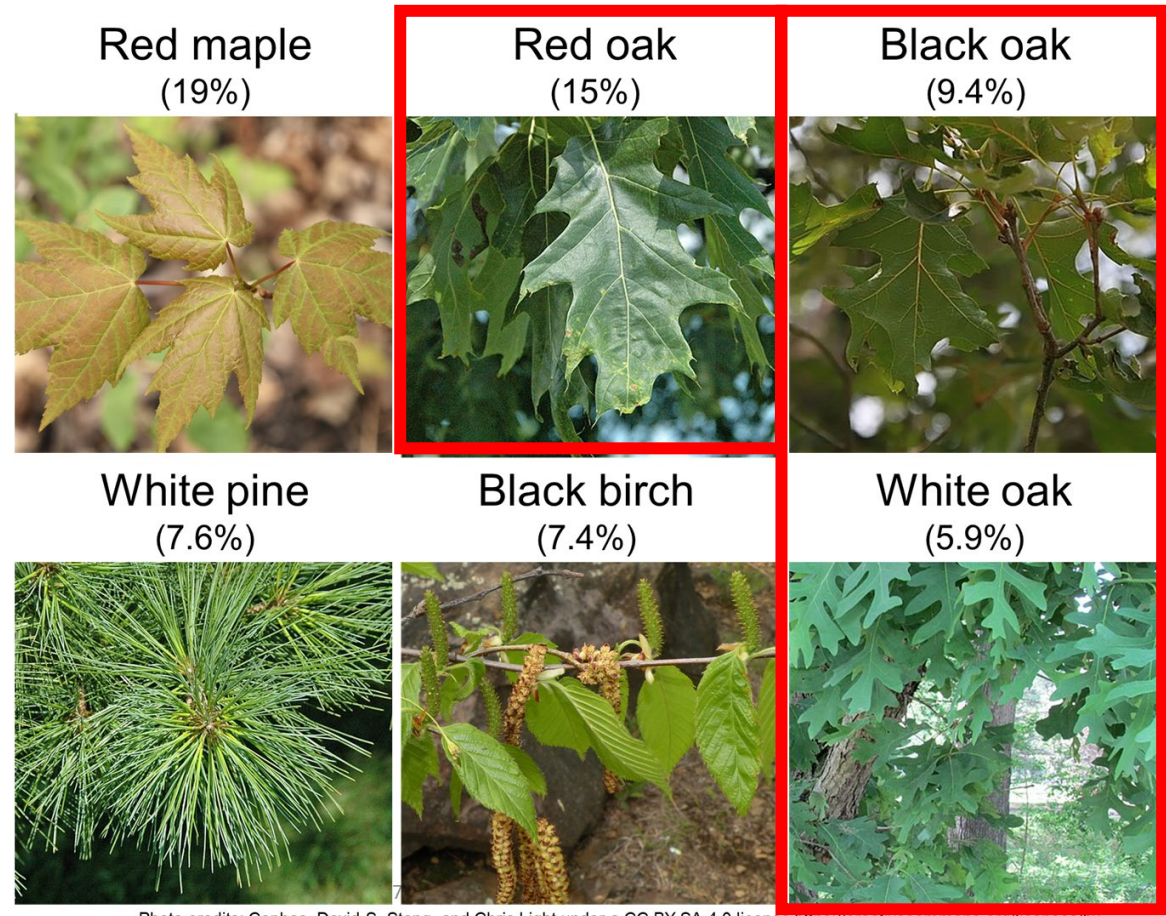
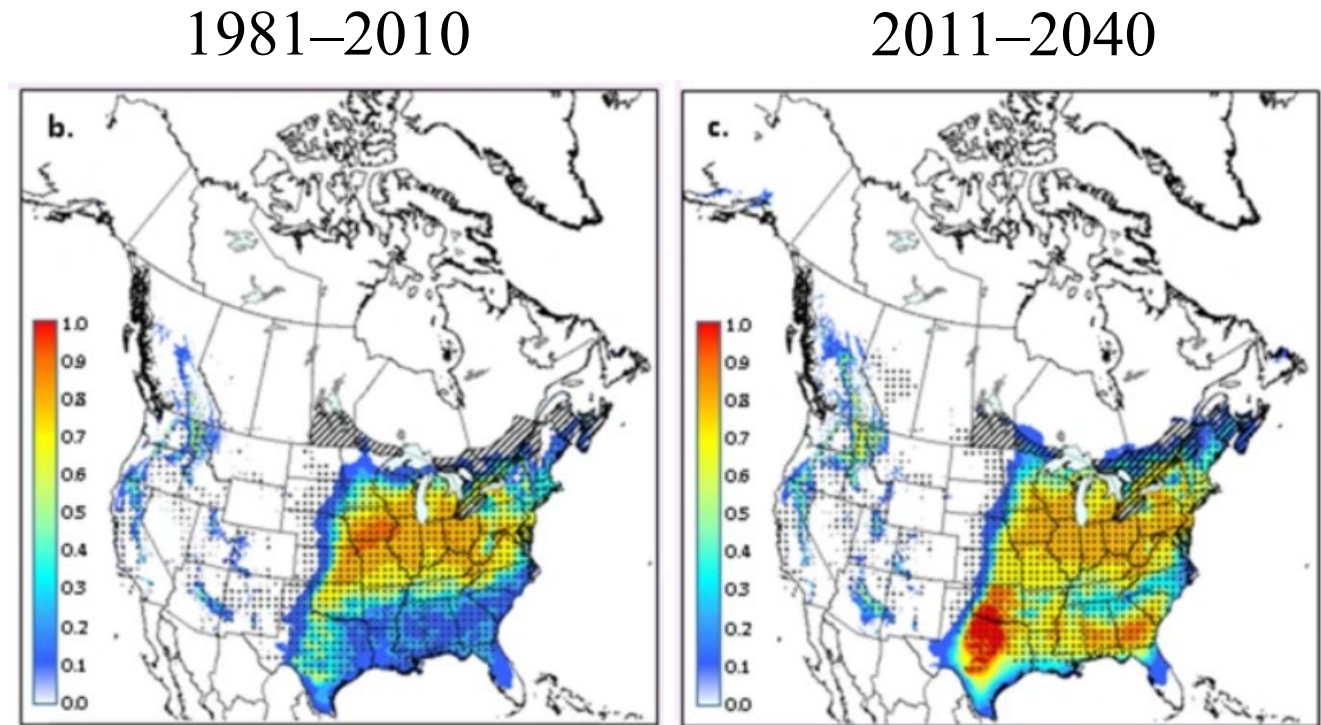


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~68% of forested land in CT is classified as the oak-hickory type

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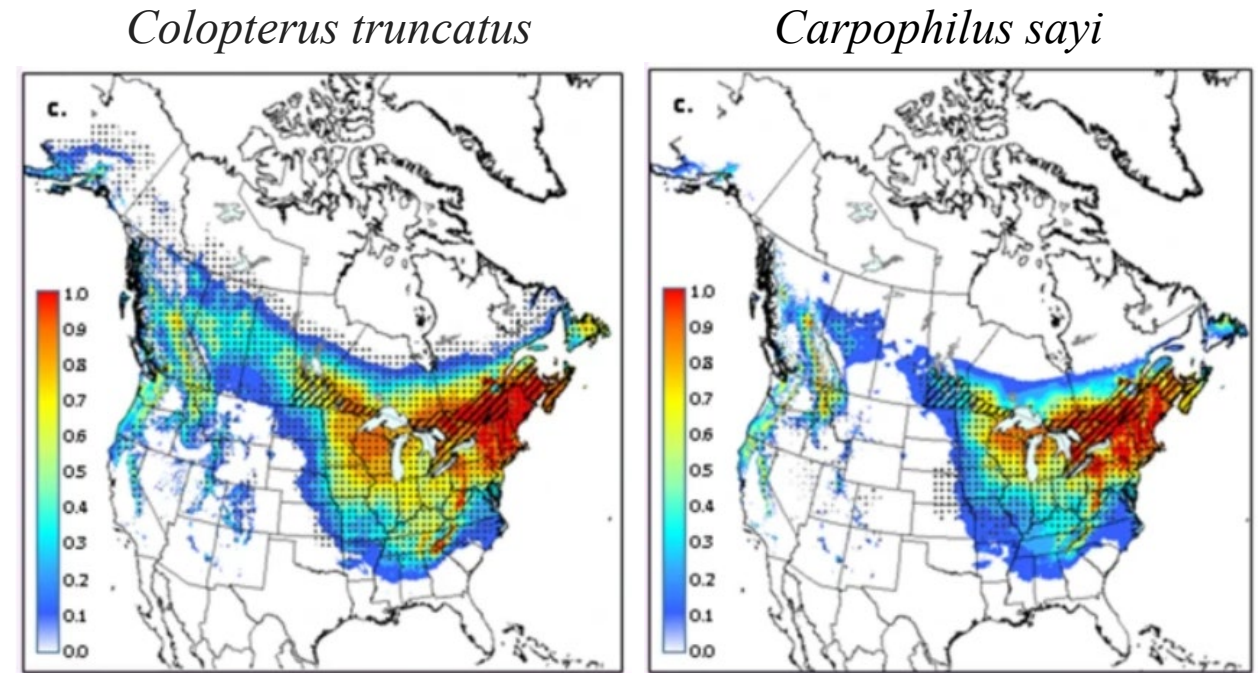


Suitability of *Bretziella fagacearum* in different regions



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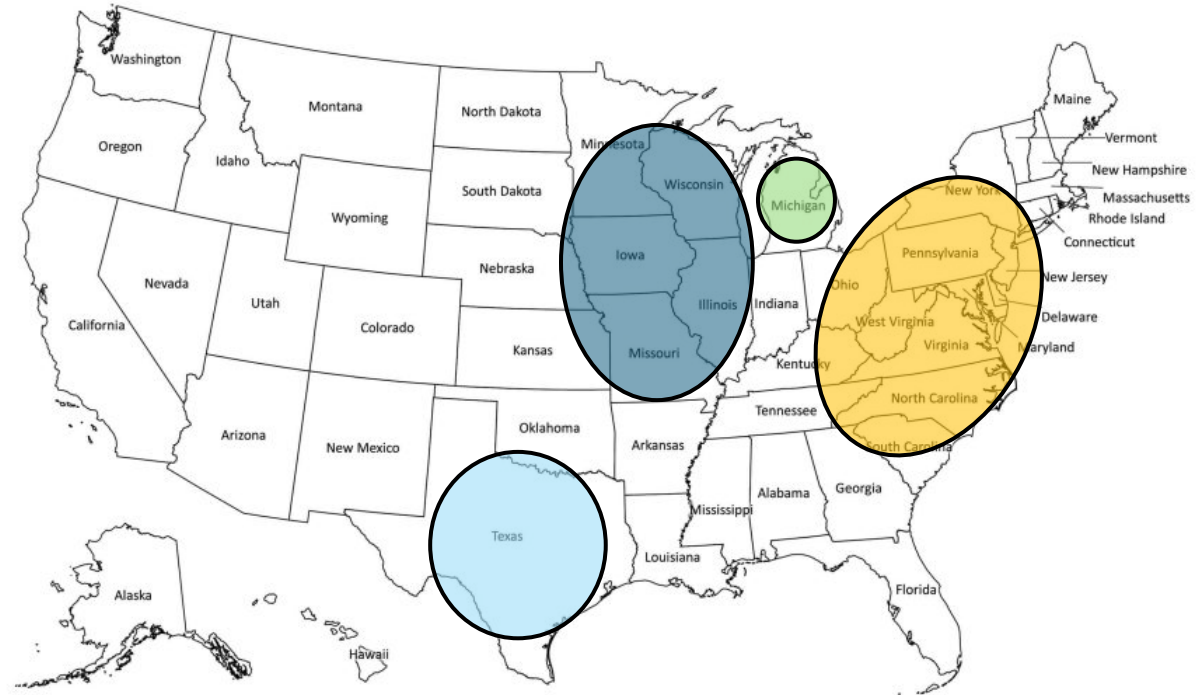
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Suitability of major vectors in different regions (2011-2040)

# How much can we trust management guidelines from other parts of the country?

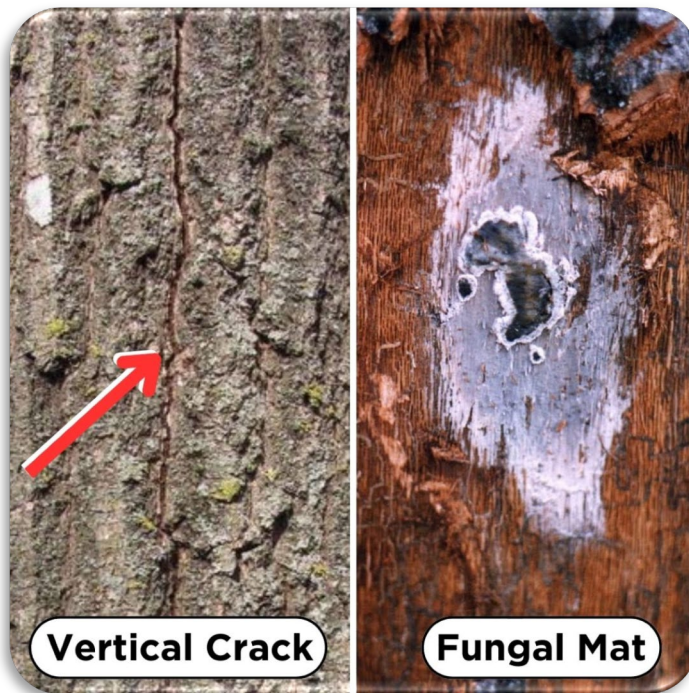
- Always with a grain of salt
- Management and diagnostics in NY have been very different than the Midwest



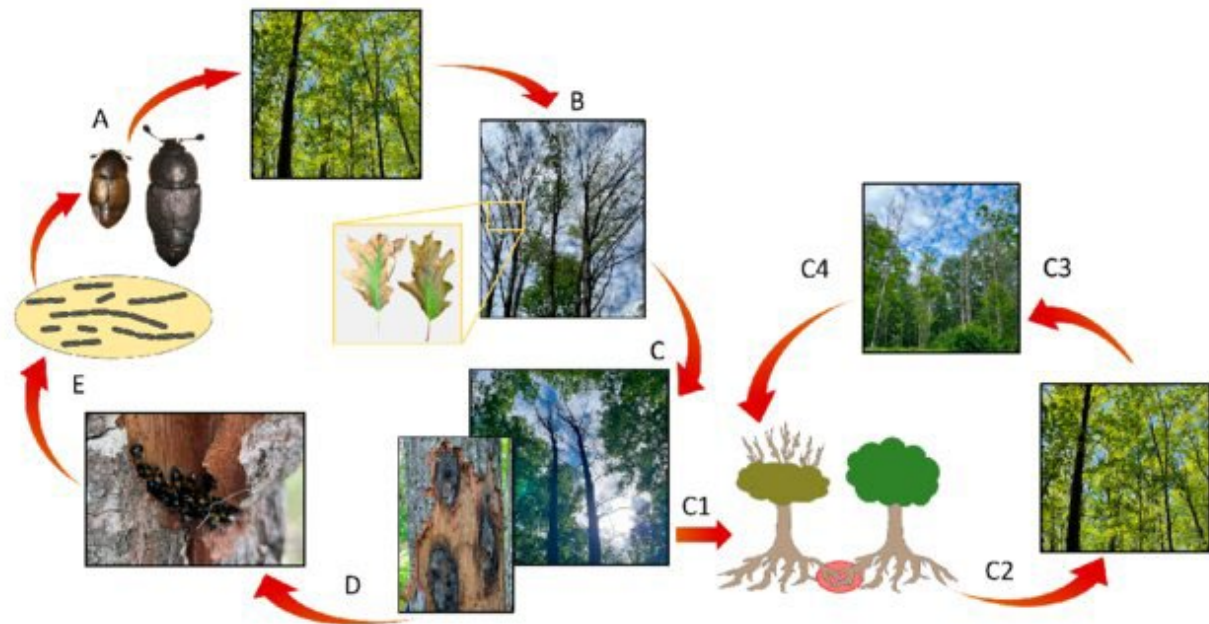
Distinct population structures of *B. fagacearum* have been found in different parts of the country (figure reconstruction Sing Chahal et al. TBD)

# How is the pathogen spreading and where do we expect to see it in CT?

- Flagging sections of trees are much more likely than full fungal mats



Are fungal mats a useful diagnostic tool in CT?



Vectored by *Nitidulidae* sap beetles

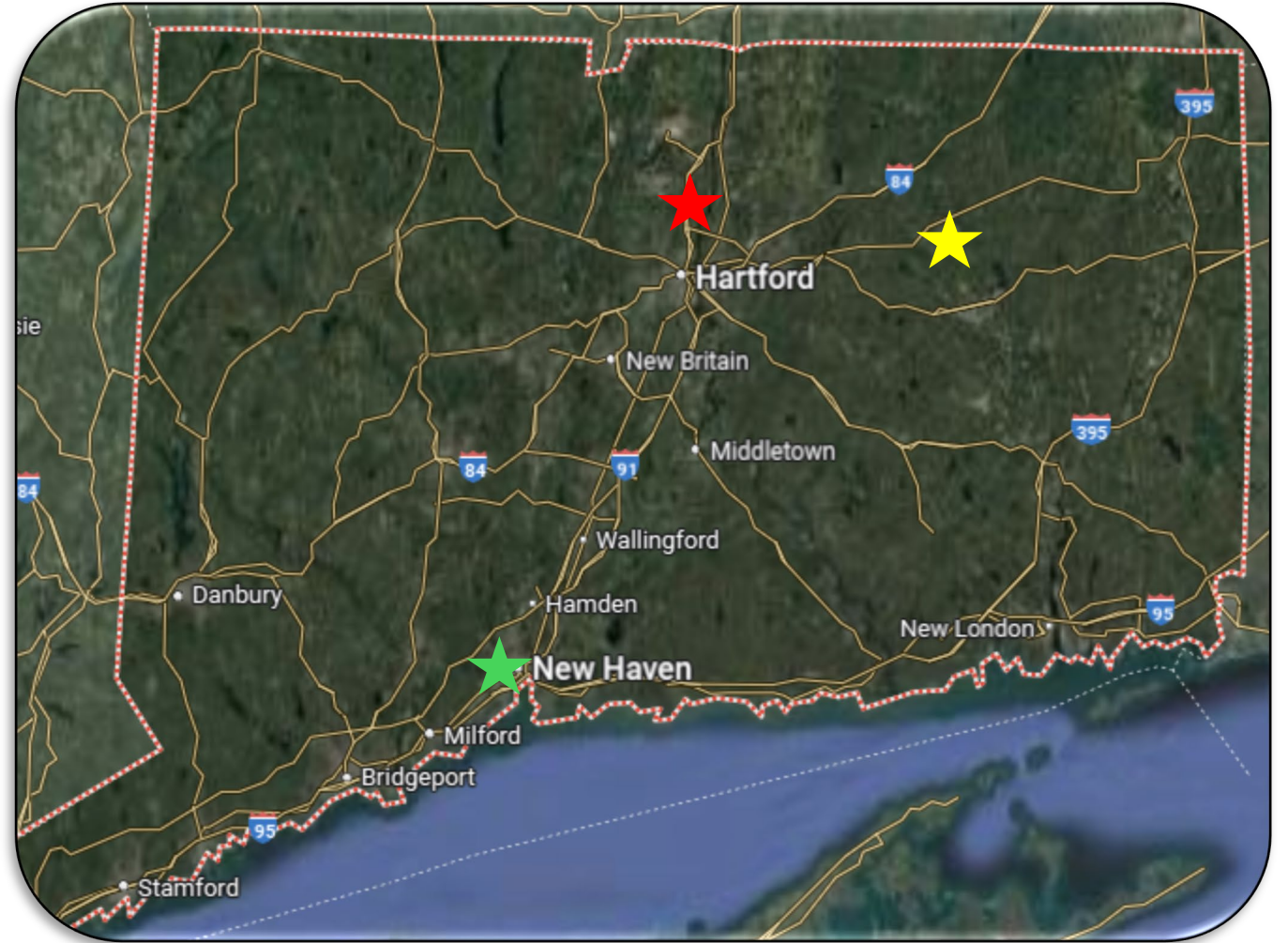
Transmitted by root grafting



# So you think you found oak wilt. What next?

1<sup>st</sup> question: Is it really oak wilt?  
(probably not)

- ★ CAES (Valley Laboratory) – Windsor, CT
- ★ CAES (PDIO)– New Haven, CT
- ★ UConn (Plant Diagnostic Lab)– Storrs, CT



# Oak Wilt – So what are we looking for?

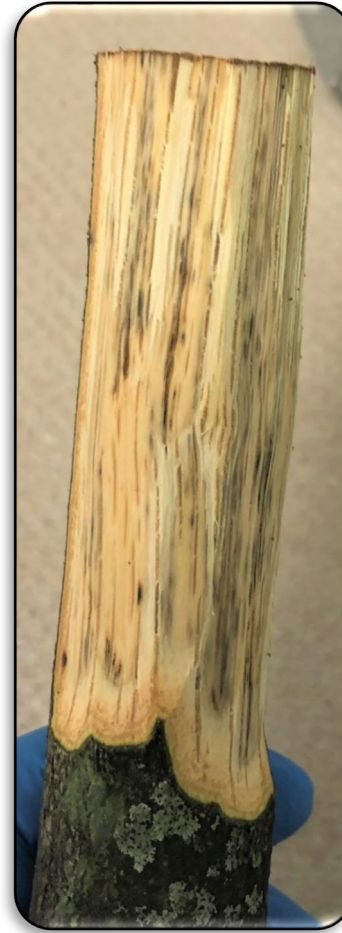
- Rapid defoliation (are your trees dropping leaves in June?)
- Likely to represent as flagging section of the tree (more likely vectored than root grafted)
- Mixture of scorched and green leaves being dropped





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↑  
Characteristic vascular streaking

# Oak Wilt Lookalikes - Bacterial Leaf Scorch

- Caused by *Xylella fastidiosa* and can cause similar leaf symptoms to oak wilt
- Symptoms appear gradually and tend to worsen annually (do not rapidly defoliate the tree, unlike oak wilt)
- Recent surveys suggest it is not endemic in CT





# Oak Wilt Lookalikes - Anthracnose

- Caused by another fungal pathogen (*Apiognomonia quercina*) and can cause leaf lesions and defoliation
- Does not lead to rapid tree decline and primarily affects white oaks
- Easily distinguished by a plant diagnostician



# Oak Wilt Lookalikes – Spongy Moth

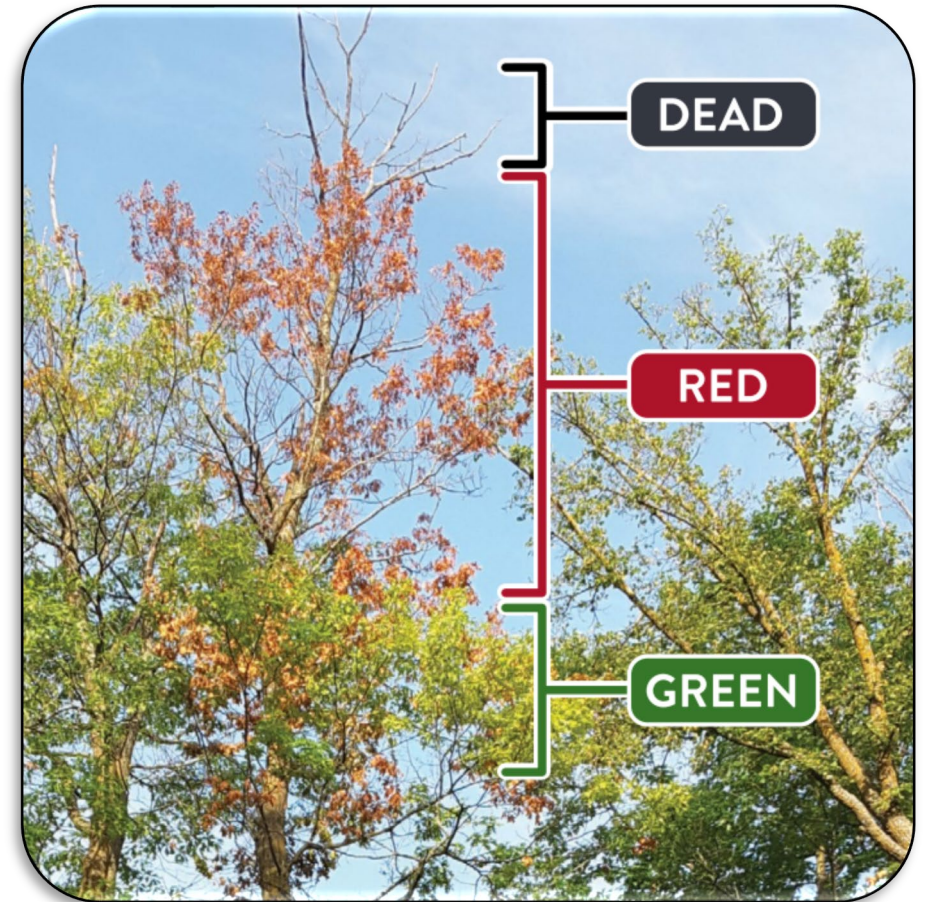
- Can cause rapid defoliation to oak trees but can be distinguished with signs of feeding
- Defoliated trees tend to refoliate in late summer
- Defoliation is often relatively uniform across trees





# Oak Wilt Lookalikes – Two lined chestnut borer

- Caused by boring insect which slowly kills portions of oak trees (look for dead, red, green pattern)
- Native to CT and often a problem in years with greater spongy moth and drought damage





# Oak Wilt Lookalikes – Drought

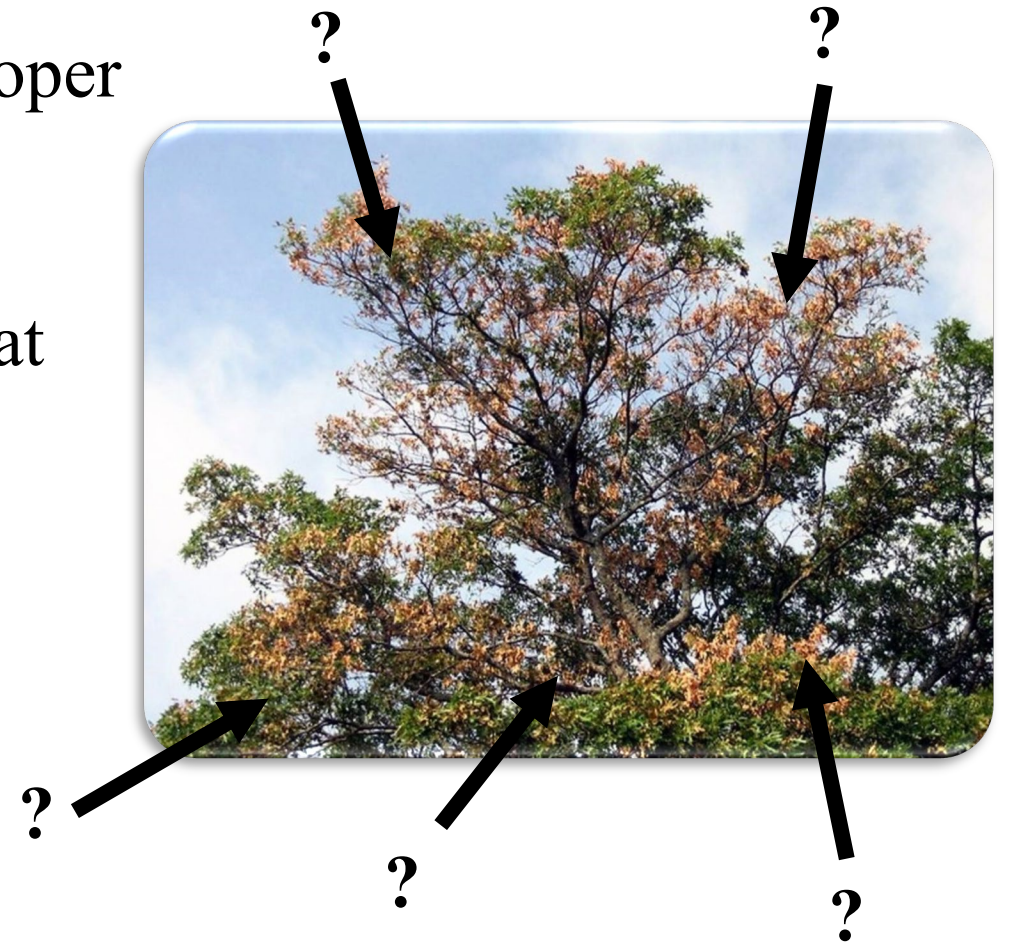
- Leaf scorching is caused by the failure to get water to leaves (disease or drought)
- Look around, is it dry?
- Symptoms will tend to be uniform across the tree





# Sampling for oak wilt is difficult

- If other causes of oak symptoms are not identified, **coordinate with CAES** for proper sampling
- *B. fagacearum* is a poor saprophyte, so diagnostics require symptomatic limbs that are not yet dead/dry
- Samples may be taken from either the trunk or limbs, but it will depend on the symptoms



# Tradeoffs to Management Approaches

- Management and mitigation will be highly dependent on:
  - Site (forest/WUI/Residential)
  - Infection stage
  - Surrounding trees
- Removal may include trenching and/or herbicide application
- CAES and DEEP will likely coordinate tree removal
  - both agencies share a memorandum of understanding (MoU) pertaining to the quarantine of invasive pests/diseases





# Tradeoffs to Management Approaches

- Aggressive Approach (removing a large number of trees)
  - Pro: high likelihood of disease elimination
  - Con: possibly unnecessary damage to surrounding trees
- Restrained Approach (minimizing damage)
  - Pro: less work, less unnecessary tree loss
  - Con: higher likelihood of pathogen escape, need to monitor for longer period of time



# What can foresters be doing?

- Look up and look down
  - tree defoliation and carpet of leaves in mid summer is a possible sign of oak wilt
- If pruning a red oak in spring/summer, carry some spray paint



# Questions?

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Jasper (Assistant to the Farm Manager)



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