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Smallidge, P.J., B. Chedzoy, et al. 2021. Evaluating the construction and effectiveness of slash walls at the perimeter of regeneration harvests to exclude deer. Forest Ecol. Manage. https://doi.org/10.1016/j.foreco.2021.119529















USDA Forest Service - GRANT 19-DG-11420000-177
Increasing Resiliency in Southern New England Oak Forests







# Pre-harvest regen density (n/ac)

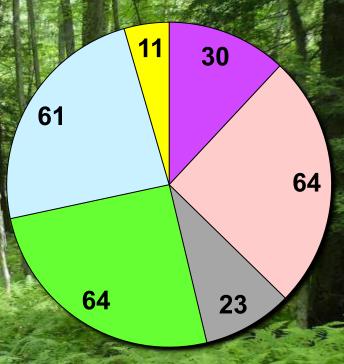


28 47



265





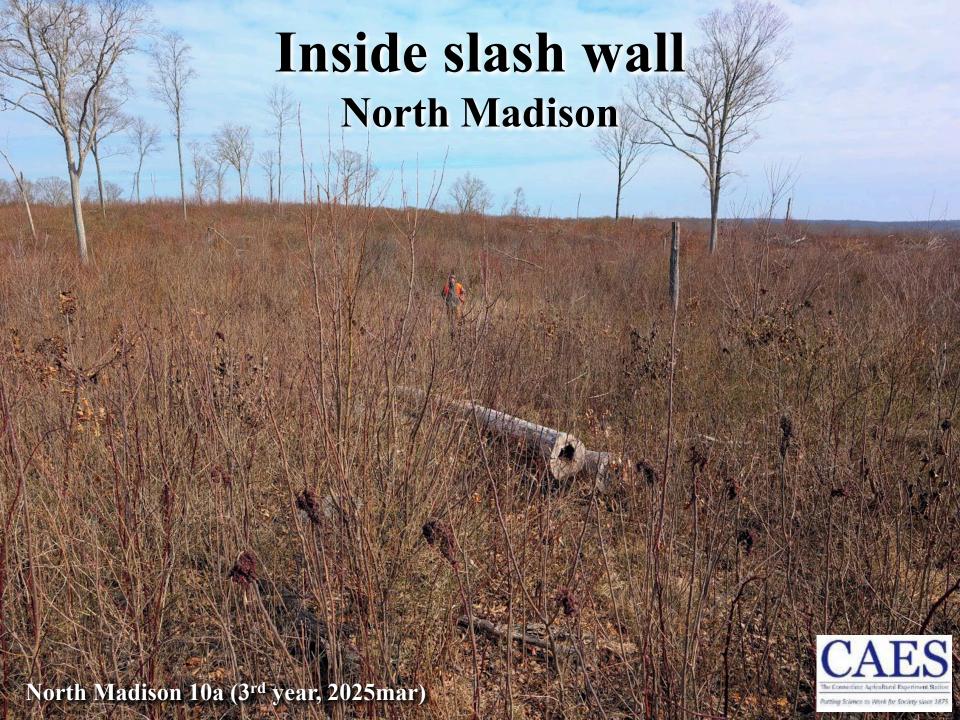
- Oak / Hickory Red maple
- Other tree
   Minor

- Black birch
- Non-native

Nepaug pre-harvest (2020)

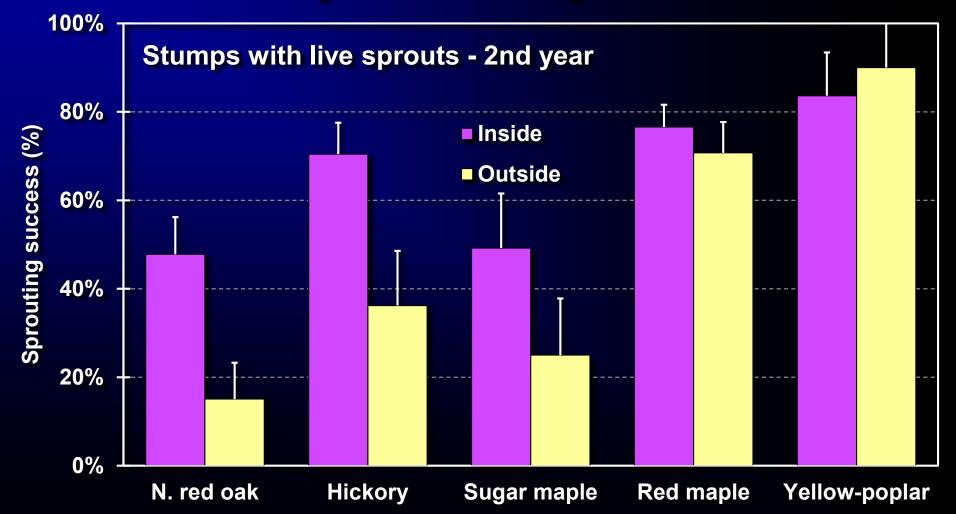








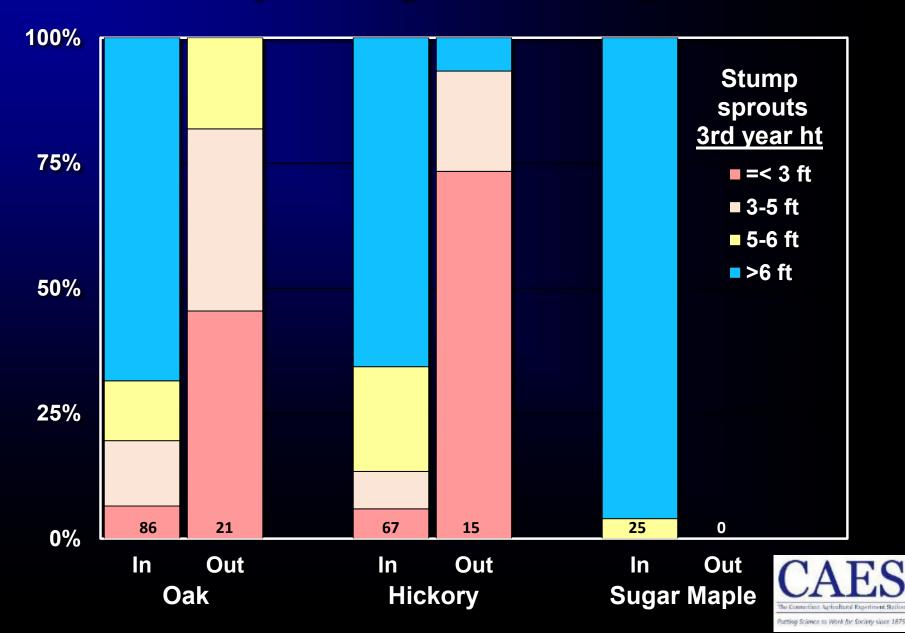
# 2<sup>nd</sup> year live sprouts

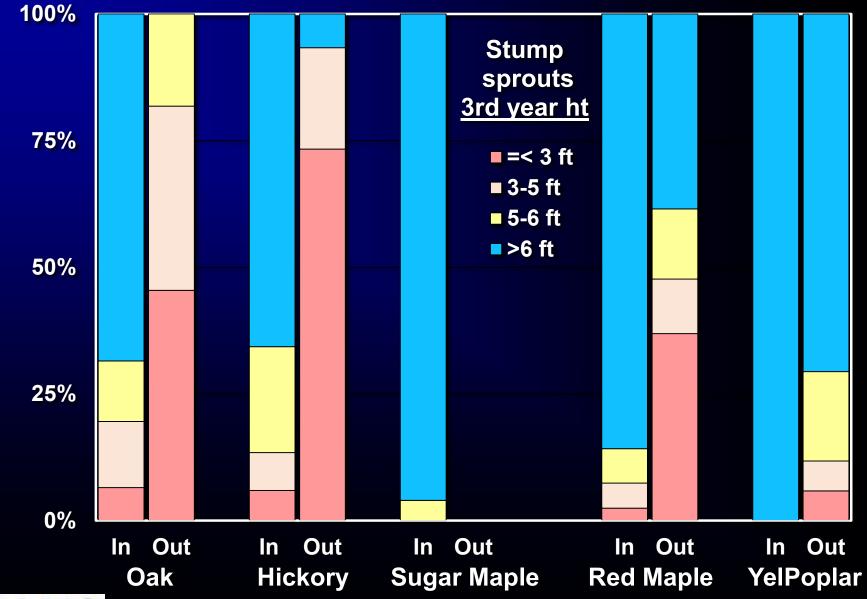




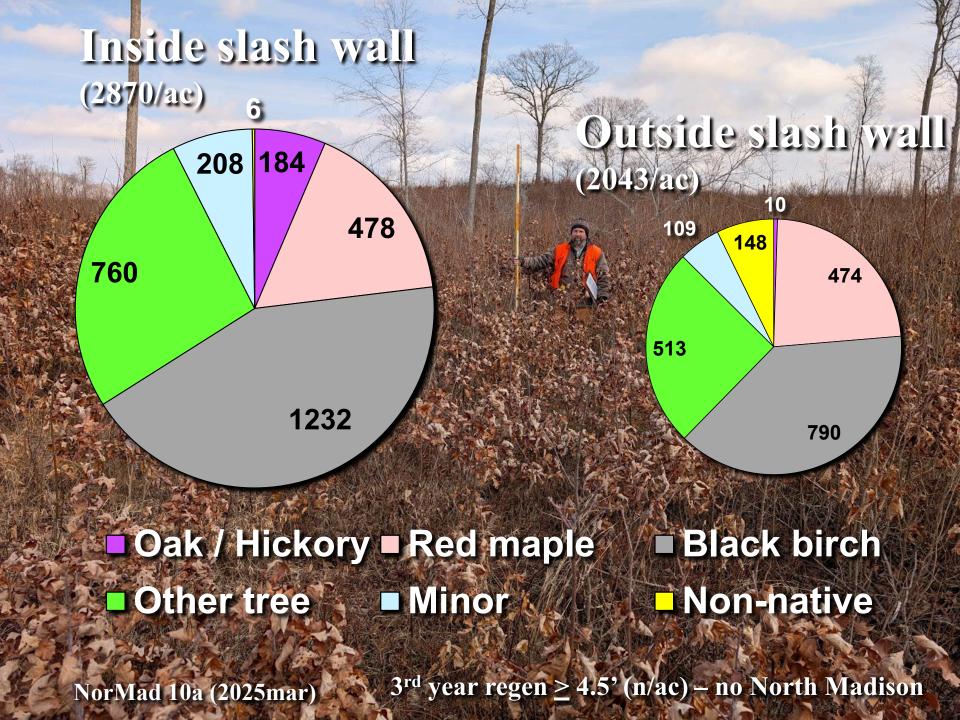


# 3<sup>rd</sup> year sprout height

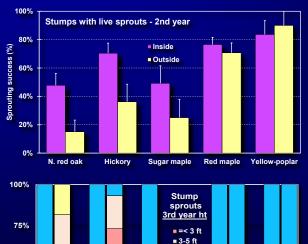




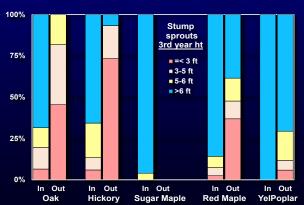




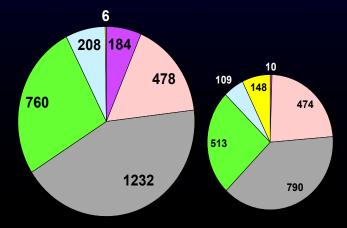
#### Benefits of a slash wall



(1) More stumps of desired species developed sprouts.



(2) Sprouts of desired species are taller with heights similar to red maple sprouts.



(3) More competitive seedlings of desired species, especially oak.

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# Aspen root suckers





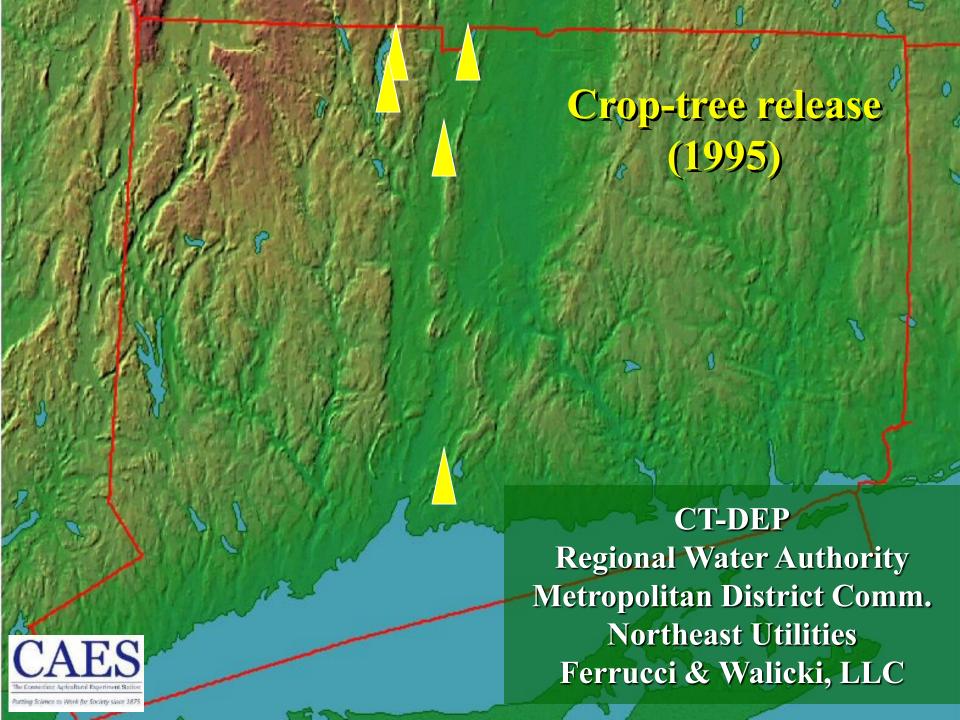
#### Basal Area (ft2/acre) Greater than 25 Less than 5 Projection: Albers Equal Area Conic, NAD83. Data source: USDA Forest Service, Forest Inventory and Analysis Program data. Geographic data base was provide by the National Atlas of the United States of America. FIA data and mapping tools are available on-line at http://www.fia.fs.fed.us/tools-data/default.asp. Disclaimer: Information displayed on this map was derived from multiple sources. FIA maps are only for graphic display to meet general reporting purposes. Inquires concerning information displayed on FIA maps, their sources and intended uses should **USDA Forest Service** Northern Research Station 992 Folwell Ave. St. Paul. MN

#### Black birch

On 31 million acres (12.5 M ha) forested acres in 123 counties of 11 states:

- 3<sup>rd</sup> most numerous species in the sapling (0.5-4.9" dbh)\*,
- 2<sup>nd</sup> most in the poletimber (5.0-10.9" dbh),
- 6<sup>th</sup> most in small sawtimber (11.0-16.9" dbh) size classes.
- \* Beech currently #2





# Crop tree release

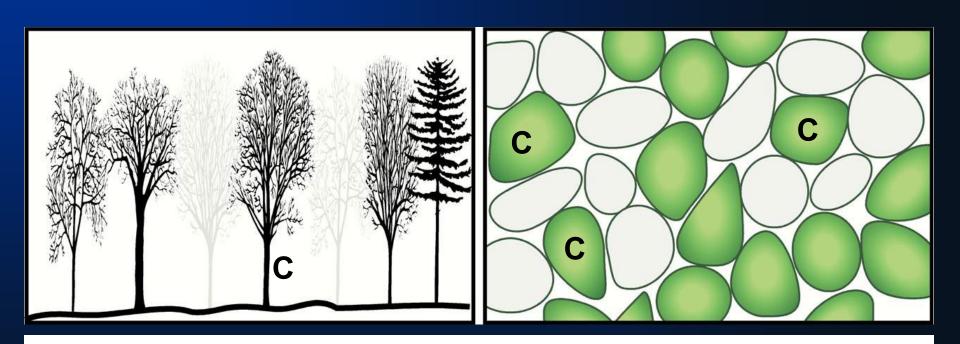


Figure 2. Side (left) and top (right) views of tree crowns following crop-tree release. Crop-trees are indicated by "C", cut trees are shown in light grey.



#### Uncut control

## **Crop tree**







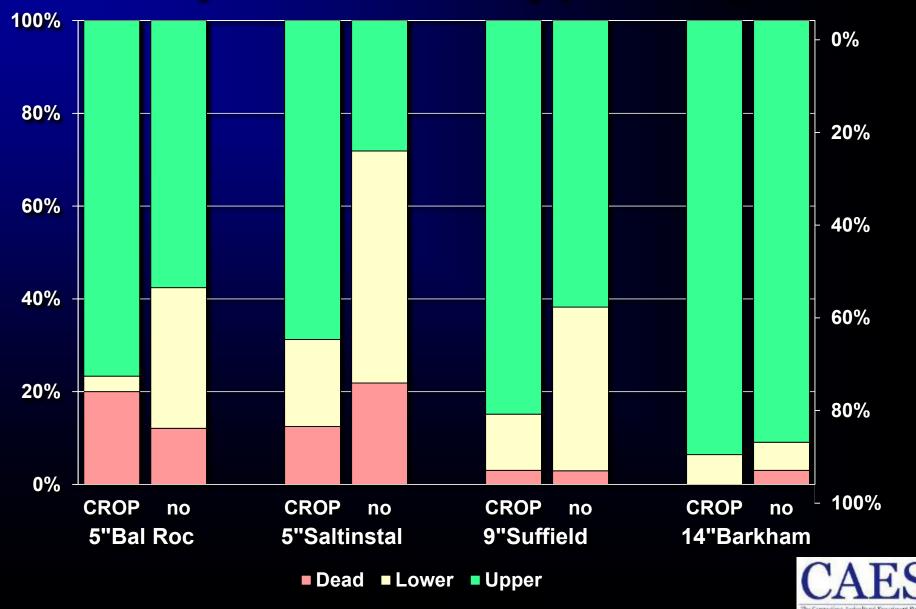


 Tropical storm Floyd in 1999 and 2009 ice storm damaged some trees on Balance Rock and Barkhamsted, but not elsewhere.

 Tariffville plot lost following expansion of distribution lines in 2012



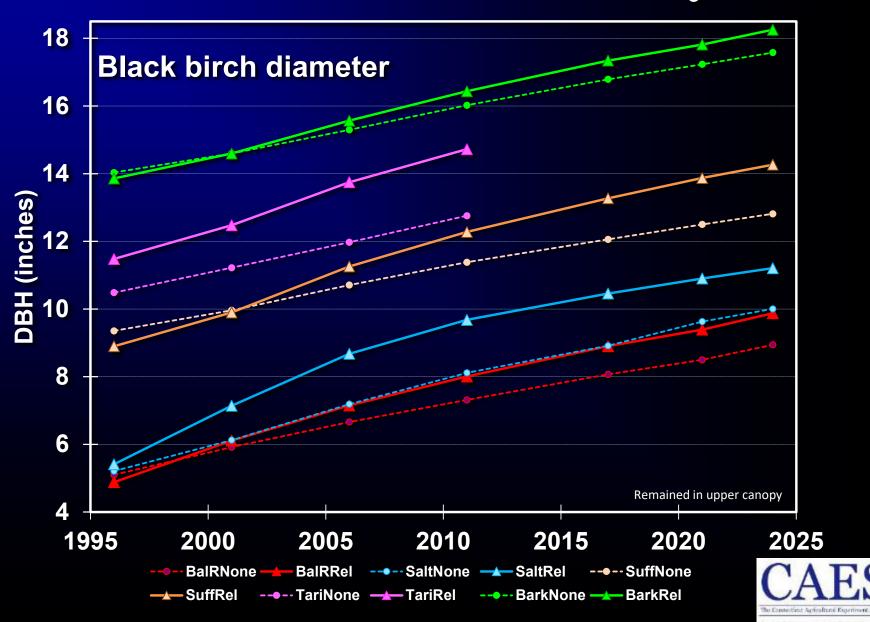
# 28 years of canopy changes



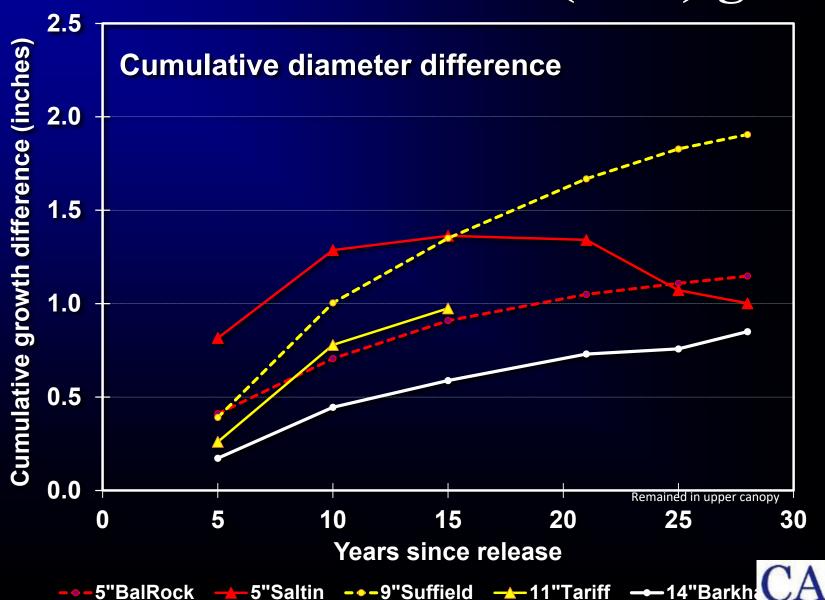
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# Diameter increase over 28 years

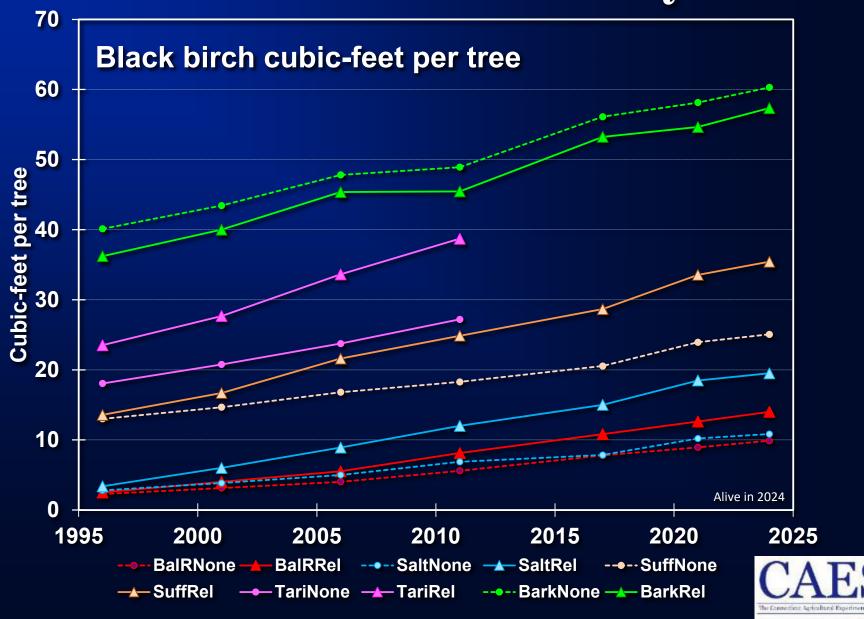


# Cumulative diameter (inch) gain

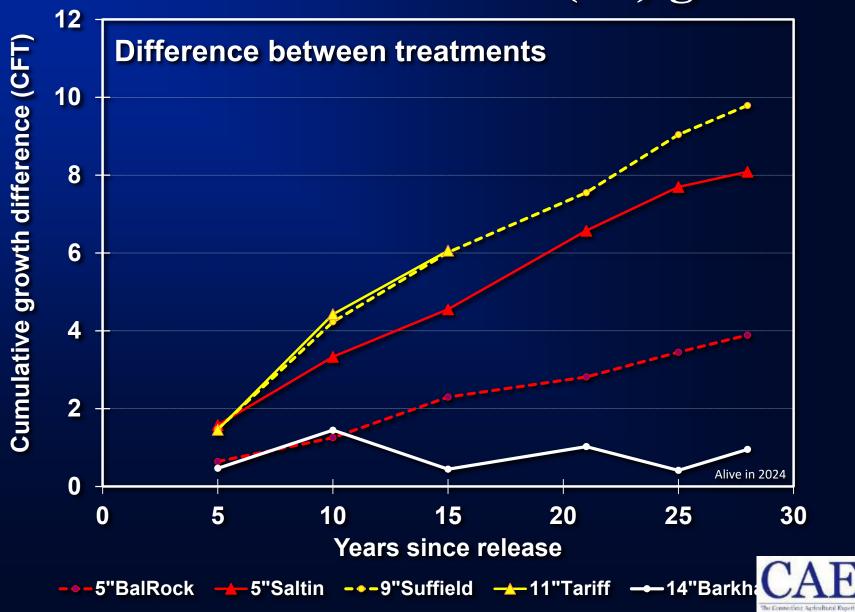




# Volume increase over 28 years



### Cumulative volume (cft) gain

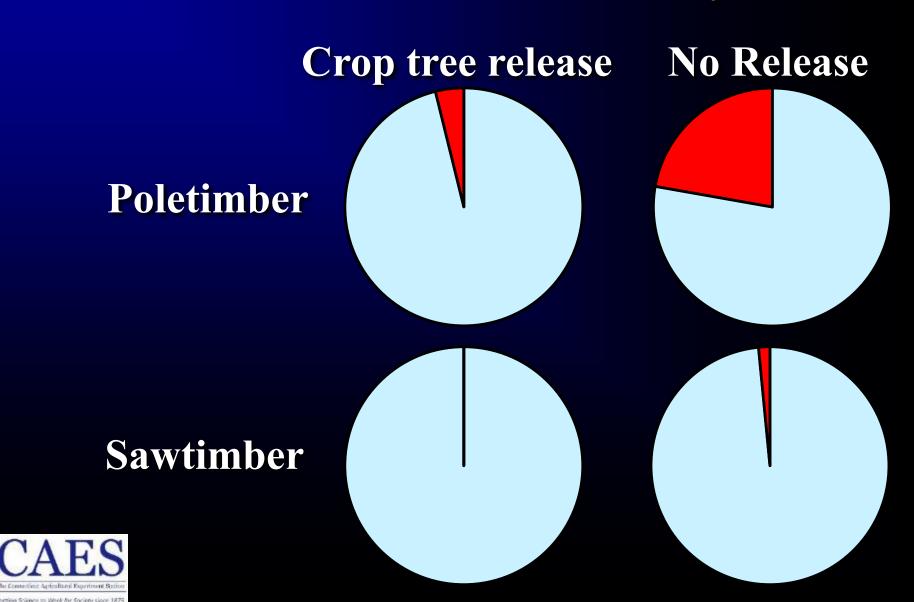


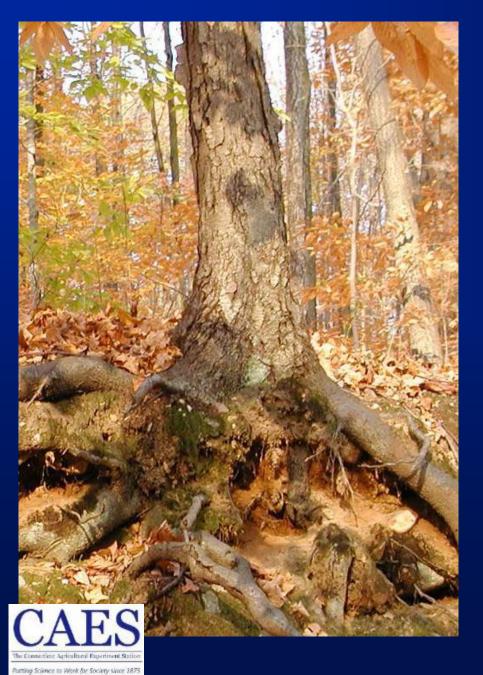


**Once stem** diameter reaches ~ 4 inches, it is unlikely to become infected with Neonectria (formerly Nectria)



# Nectria cankers after 28 years





#### Black birch

- Release increases % in upper canopy for trees < 14" dbh over 28-year period</li>
- Increased diameter and cubic-foot growth maintained for at least 28 years after release
- Increase in cankers without release
- There is hope

