Susceptibility of Different Families of *Pinus taeda* Seedlings to *Lecanosticta acicola*

Emmanuel D. Nyarko[1], Annakay Newell[1] and Lori G. Eckhardt[1]
[1]Forest Health Dynamics Laboratory, College of Forestry, Wildlife and Environment, Auburn University, Auburn, Alabama, USA.

INTRODUCTION

- Loblolly pine (*Pinus taeda* L.) is a primary commercial timber in the southeastern USA
- Brown spot needle blight caused by the fungus, *Lecanosticta acicola* poses significant economic concerns

Figure 1: (A) Healthy loblolly pine stands; (B) Loblolly pine stands affected by Brown spot needle blight; (C) Severely infected pine needles showing symptoms of brown spot needle blight

OBJECTIVES

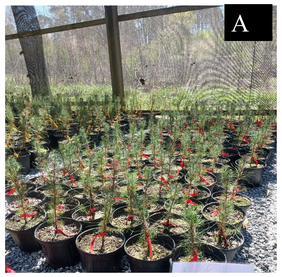
- Assess the susceptibility of different loblolly pine seedlings to *Lecanosticta acicola*
- Determine *L. acicola* spore load in infected stands and open-top chambers

METHODOLOGY

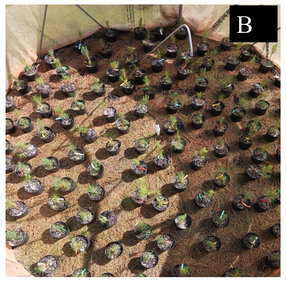
- Sample size:
  952 seedlings from 17 families (8 OTCs)
  340 seedlings (Osko Forest, 5 plots)

- Study sites:
  The natural environment (BSNB infected plots)
  Open-top chambers (AtDep Site, AU)
- Growth parameters measured:

Seedling height
Root collar diameter
Disease rating



(A) Seedlings kept under shade before deployed to the field and into OTC



Seedlings in OTC inoculated with infected needles

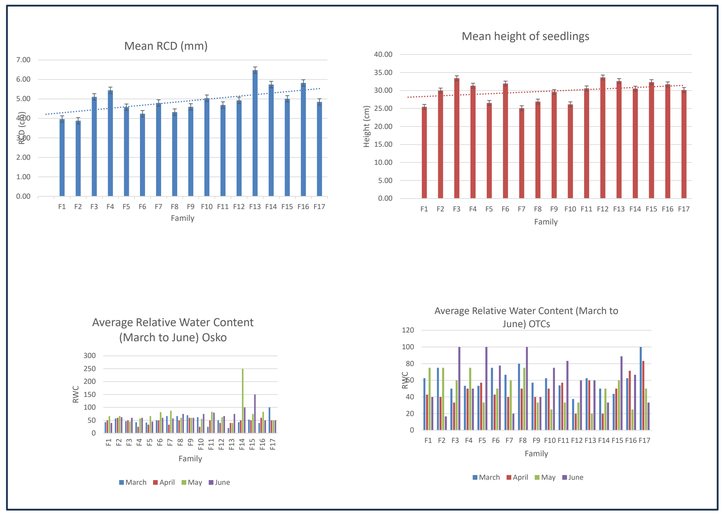
Seedling in a BSNB-infected plot in Osko Forest

An open-top chamber

Spore trap in the field

Seedling height and RCD measurement

RESULTS



KEY FINDINGS

- Seedlings in the field show a faster rate of disease progression than those in the open-top chambers
- Spore load in the natural setting is higher than in the controlled environment

EXPECTED OUTCOMES

- Susceptibility variations between families
- Rate of disease progression among families
- Variation in infection levels with treatments used

ACKNOWLEDGMENT

Forest Health Cooperative
Stallworth Property & Long Leaf Property
Dr. Glenn Glover & Family (Osko Forest)
The Williams Family
Forest Health Dynamics Laboratory
U. S. Forest Service, Department of Agriculture

References

•Baker, James B.; Langdon, O. Gordon. 1990. *Pinus taeda* L. loblolly pine. In: Burns, Russell M.; Honkala, Barbara H., technical coordinators. Silvics of North America. Volume 1. Conifers. Agric. Handb. 654. Washington, DC: U.S. Department of Agriculture, Forest Service: 497-512.
•Eckhardt, L.G. and Menard, R.D. 2009. Declining loblolly pine stands: symptoms, causes and management options. AL Treasured Forest Magazine Volume XXV111, No. 2, p. 10-12.
•Hansen, E. M., and Goheen, D. J. (2000). White Pine Blister Rust and Brown Spot Needle Blight: A Model for Disease Interventions. Phytopathology, 90(6), 624-627.