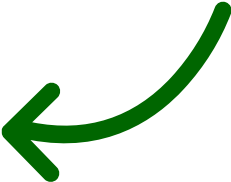




# **Forest Pathology from Nursery to Harvest**

**Anna Leon, PhD**  
**Forest Health in Oregon:  
State of the State 2018**  
**February 28, 2018**

# Stages of an Industry Tree



# What is an Industry Forest Pathologist?



# Orchards



# Orchard Problems

Douglas-fir Cone Moth – *Barbara colfaxiana*



Photo: D. Manastyrski



Photo: J. Brooks

Douglas-fir Cone Worm – *Dioryctria* spp.



Photo: W. Strong

Seed imaging helps prevent seed abortion

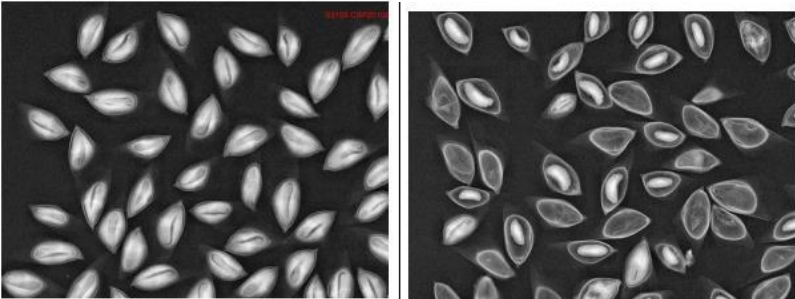


Photo: J. Powell



Photo: D. Manastyrski

Stress related cankers

# Nurseries



# Nursery Diseases and Research

- **Common Problems**

- Root rots
- Nutritional issues
- Insects

- **Collaborative Research Projects**

- Fumigation
- Solarization
- Other small projects



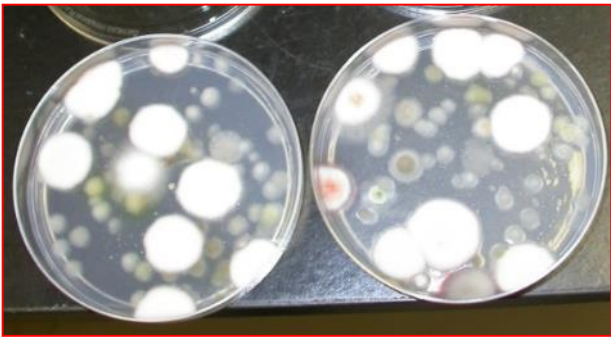
# Nursery Technical Service



Fallow field pre-fumigation mid-July



Soil core taken from 12" depth separated (0-6" and 6-12")



Soil diluted with 0.1% sterile water agar



# Lab Diagnostics



# Young Plantation



# Young Plantation Problems



# Mid-Late Rotation



# Economically Damaging Pests



# Plantation Management

- Risk Awareness
- Risk Protection
- Risk Management

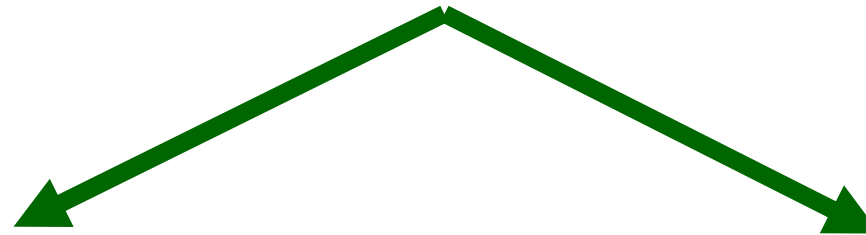
Stand damaged by Southern Pine Beetle



Stand ready for thinning



Recently thinned, well managed stand

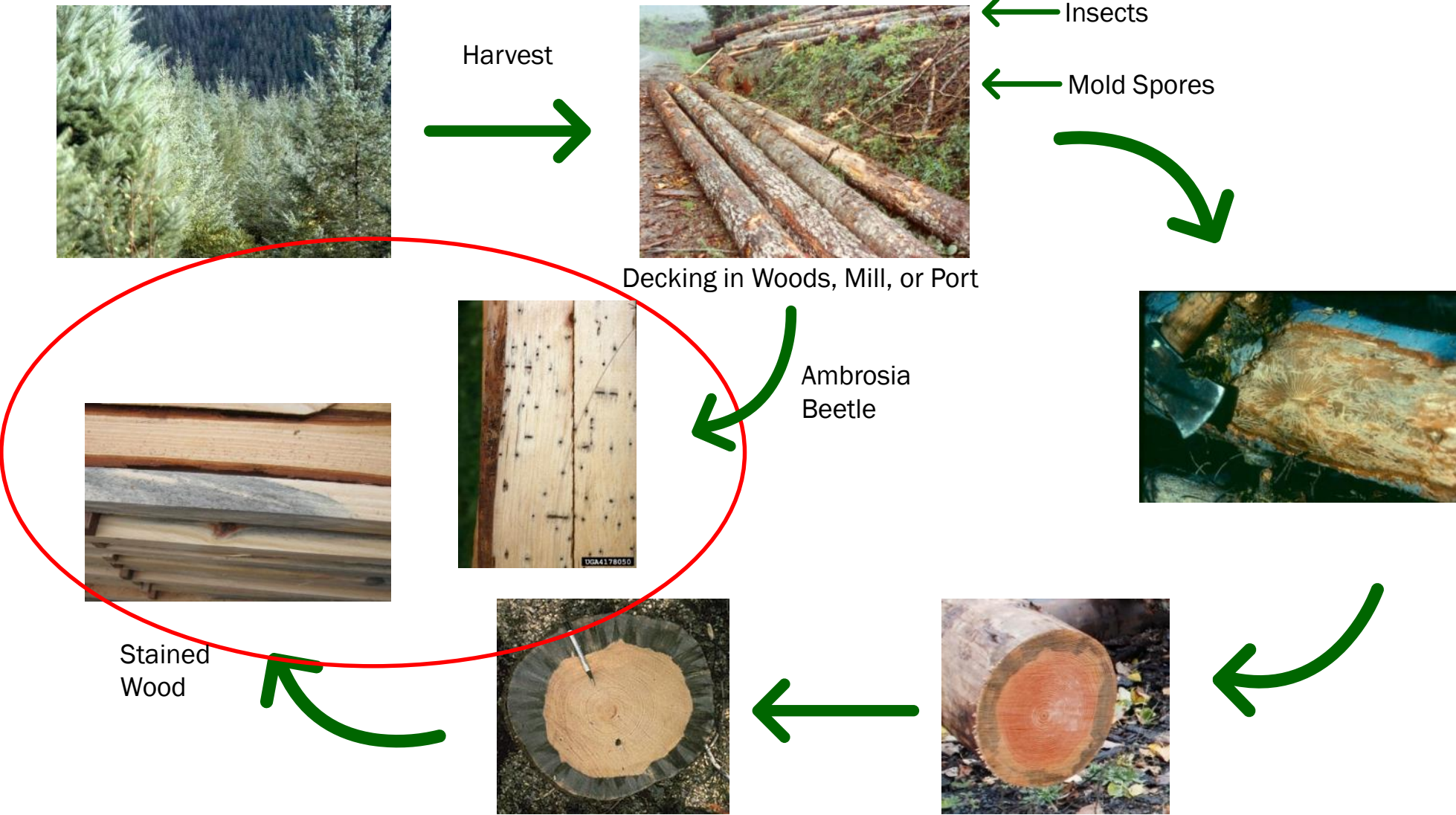


# Log Sanitation



Photos: W. Littke

# Logs/wood products



Ambrosia Bore Hole Photo:  
W.H. Bennett, USDA Forest  
Service, Bugwood.org



# Managing for an Uncertain Future



Douglas-fir with sudden oak death: John Bienapfl, University of California, Davis

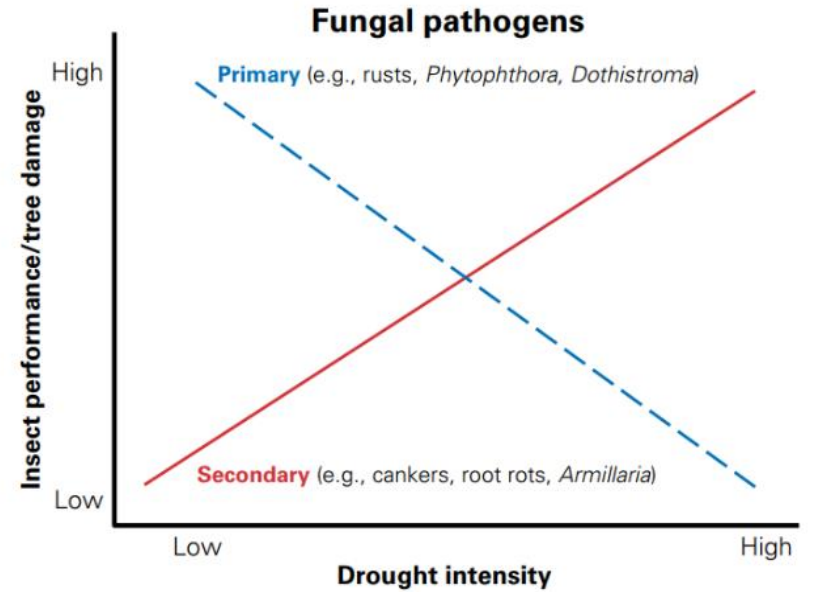


Figure 6.8—Response trends of performance and tree damage by primary (dashed blue line) and secondary (solid red line) fungal pathogens to drought intensity for U.S. forests based on our literature review.

Kolb et al., 2016

# All Stages Are Equally Important



# Thank You



Photos: Weyerhaeuser