

OHIO STATE UNIVERSITY EXTENSION

Conifer Calamities

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Van Wert County, Van Wert, Ohio
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1

Objectives

- Review some of the more commonly encountered problems on conifers
- Review aspects of their biology
- Review possible management practices

2

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What is a conifer?





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What is a conifer?

- Pines
- Spruces
- Firs
- Junipers
- Arborvitaes
- Yews (*Taxus*)
- Hemlocks
- Douglas-fir
- Bald cypress
- Dawn redwood


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What is the native habitat for our conifers?




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5

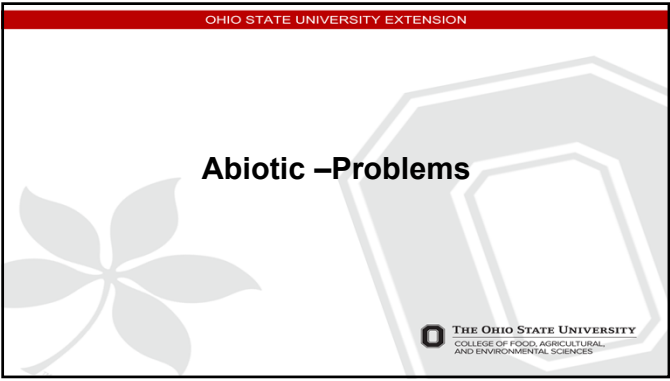
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Water Damage

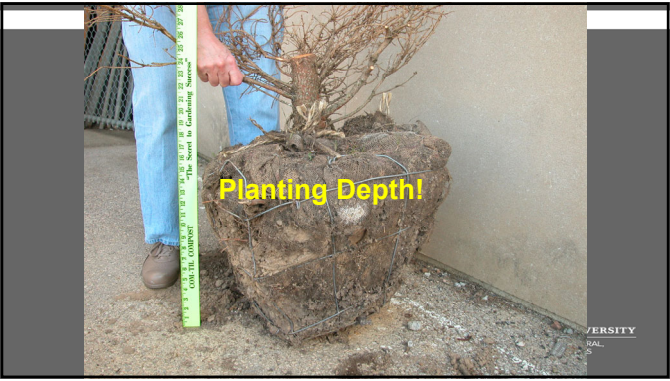



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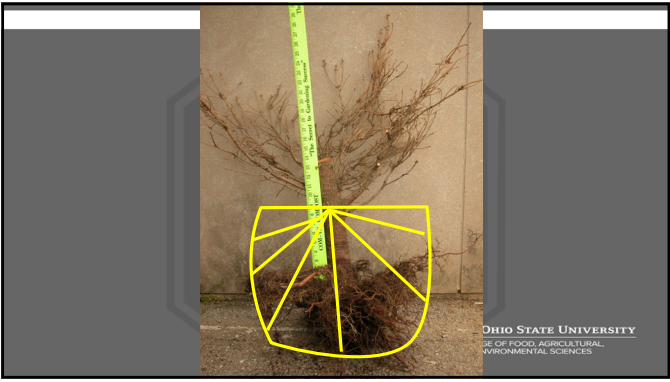
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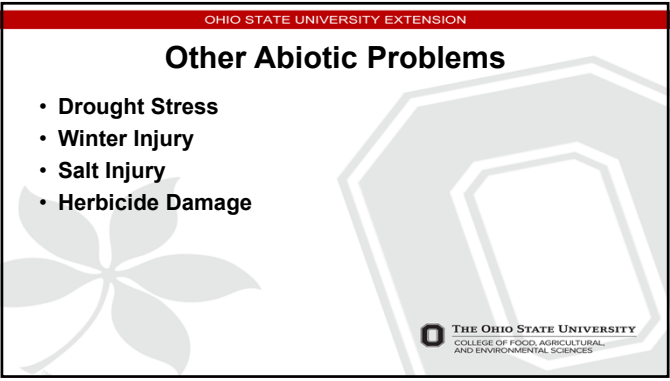
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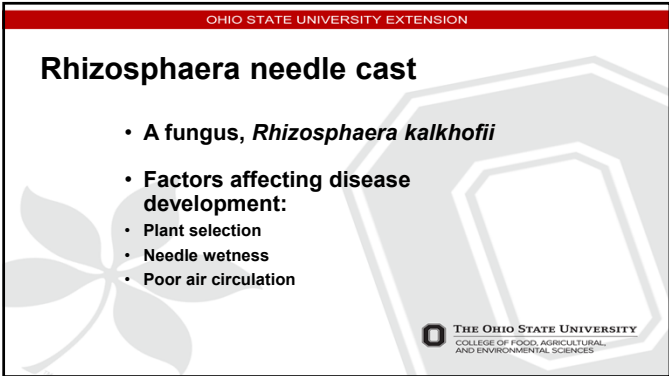
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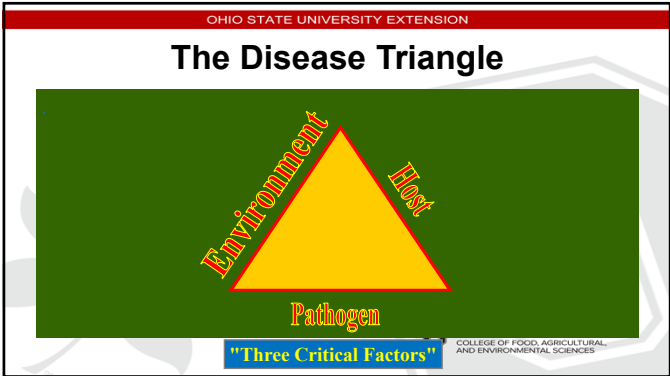
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16




17




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- Plant selection
- Highly susceptible
 - ✓ Blue or Engleman
- Moderately susceptible
 - ✓ White
- Relatively resistant
 - ✓ Norway


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- Poor air circulation
- Crowding

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Rhizosphaera kalkhoffii



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USDA Forest Service Archive, USDA Forest Service, Bugwood.org


21

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Management

- Sanitation
 - Removal of dead branches
- Reduce Needle Wetness
- Fungicides....maybe!

- Site Choice
- Plant Choice

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Maybe NOT *Rhizosphaera*?

- Michigan State University did a survey
- *Diaporthe* sp.
- Almost identical field symptoms
- Fungus
- Needs more research

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Cytospora Canker & Needle Cast

- Leucocytophora Canker
- Fungal disease
 - *Leucocytophora kunzei*
- Numerous hosts
 - Colorado spruce (*Picea pungens*)
- Symptoms
 - Limb dieback
 - Large quantities of white resin




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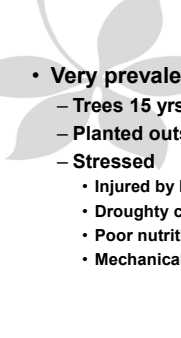
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Cytospora Canker

- **Very prevalent in urban trees**
 - Trees 15 yrs. old and older
 - Planted outside of their native range
- **Stressed**
 - Injured by low or high temperatures
 - Droughty conditions
 - Poor nutrition
 - Mechanically injured






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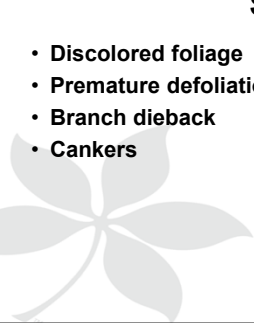
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Symptoms

- Discolored foliage
- Premature defoliation
- Branch dieback
- Cankers





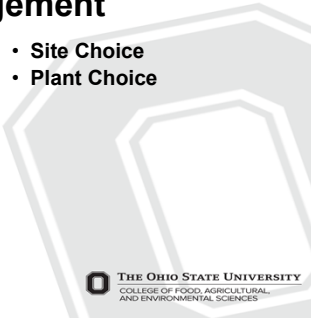
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Management

- **Sanitation**
 - Removal of dead branches
- **Reduce stress**
 - Water during droughts
 - Avoid mechanical injury
 - Don't prune during high infection periods
 - Mainly in the spring
- **Site Choice**
- **Plant Choice**



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Diplodia Tip Blight & Canker

- Diplodia = Sphaeropsis = Diplodia
 - *Diplodia pinea* = *Sphaeropsis sapinea*
- Fungus (Fungicide)
- Increasing amounts in landscapes & windbreaks
- Hosts: Austrian, Scots, Red, Ponderosa, Mugo and White Pines
 - **Austrian and Scots Pines**



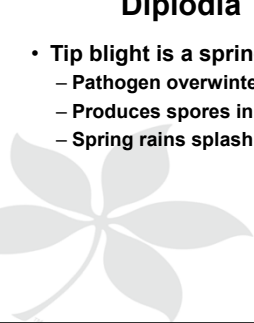
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Diplodia Tip Blight & Canker

- **Tip blight is a spring disease**
 - Pathogen overwinters on infected tissue
 - Produces spores in spring
 - Spring rains splash spores




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Symptoms & Signs

- Tip Blight
 - Tip die back
 - Resin flows
 - Dead brown needles
 - Short, sharp dead needles in new candles
- Canker
 - Weeping cankers on stems
 - Limb die back
- Signs
 - Pycnidia on needles and cones





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Management

- Plant non-susceptible hosts
- Avoid areas of prolonged wetness
- Remove nearby infected trees
- Avoid mechanical injury
- Sanitation
- Fungicide treatments
 - Early season when new shoots appear



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Dothistroma Needle Blight

- Fungal disease
 - *Dothistroma pini*
- Primarily a pine disease
 - Unusual case of spruce (Norway and Colorado Blue)
- Symptoms
 - Dark green, water-soaked spots on needles
 - Reddish-brown bands
 - Partial needle browning




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Management

- Two Fungicide Applications
 - 1st Mid May and 2nd mid to late June
 - Thorough coverage
- Fungicides
 - Copper-containing products
 - Chlorothalonil
 - Mancozeb
- Sanitation




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Pine Wilt Nematode

- Pine (*Pinus* spp.)
- Pinewood nematode (*Bursaphelenchus xylophilus*)







Figure 1. Pinewood nematode adult male with spicule (see arrow) at posterior end.




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Pine Wilt Nematode

- Transmitted (vectored) to conifers by pine sawyer beetles (*Monochamus* spp.)
- Primary transmission
 - beetles feed on the bark and phloem of twigs of susceptible live trees
- Secondary transmission
 - female beetles lay eggs (oviposition) in freshly cut timber or dying trees



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Pine Wilt Nematode

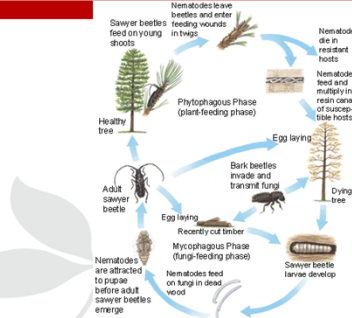


Figure 3. Interactions of the pinewood nematode with sawyer beetles and bark beetles to cause pine wilt disease. Redrawn with permission of T. Nicholls from Wingfield et al. 1994.

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Pine Wilt Nematode

- Nematodes introduced during primary transmission can reproduce rapidly in the sapwood and a susceptible host can wilt and die within weeks of being infested if conditions are favorable to disease development.



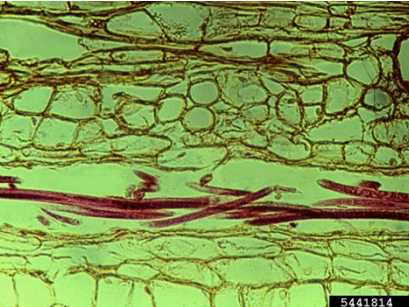
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- pine wilt nematode in vascular tissue of a pine



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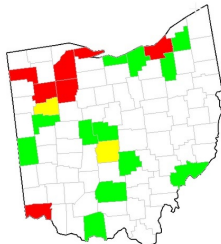
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NPDN National Repository

CERIS

Search Criteria
Pest: *Bursaphelenchus xylophilus*
Sample Dates: 2004-07-01 to 2015-12-31
State: Ohio



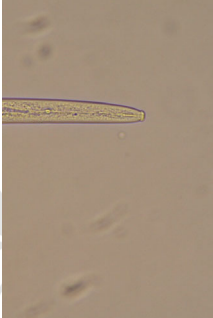
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41

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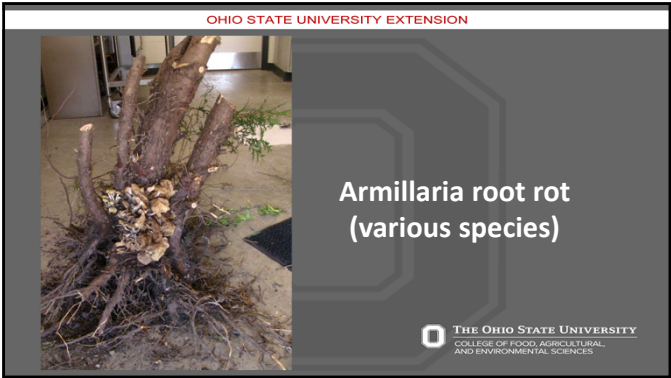
- Pine Wilt Nematode Management:
 - Remove and destroy dead/dying trees
 - Do not stack for firewood
 - No effective nematicide or insecticides



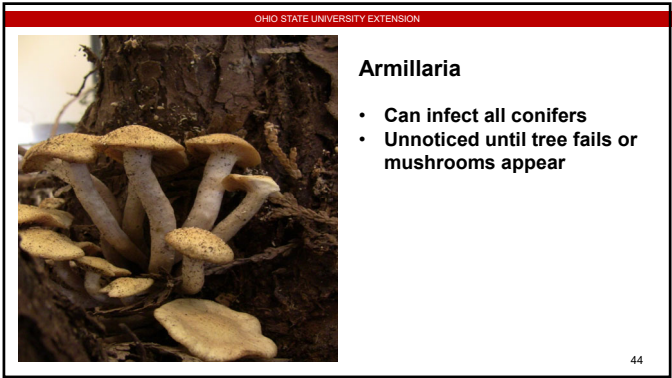
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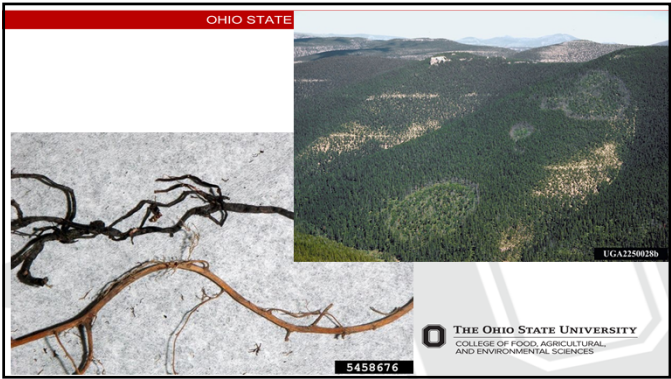
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43



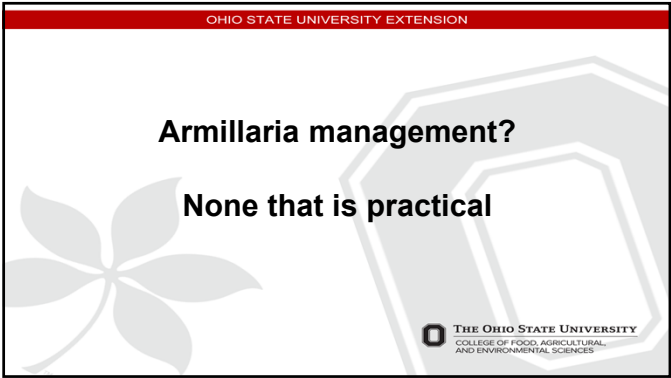
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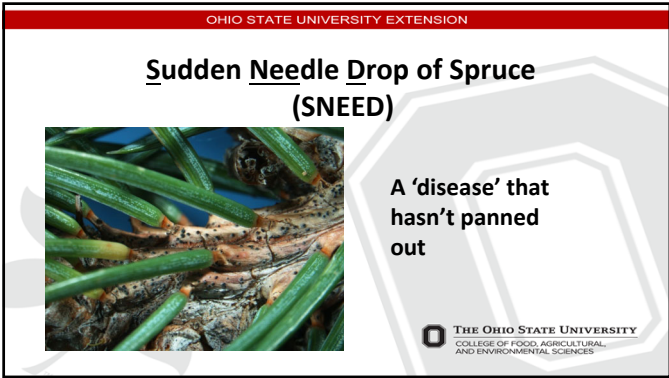
46



47



48



49



50



51