

Winnebago County PHA Training

Diseases of Evergreens

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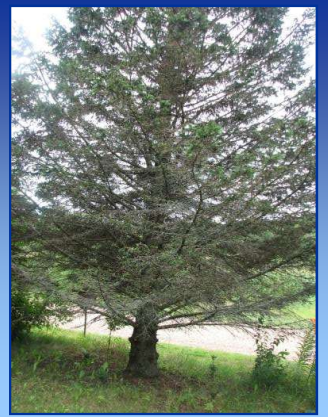


Diseases of Evergreens *Rhizosphaera* Needle Cast

- Pathogen: *Rhizosphaera kalkhoffii* (*Rhizosphaera* spp.)
- Hosts (major)
 - Colorado blue spruce
 - Other spruces: Engelmann, black, Serbian, Sitka, white (Black Hills)

Diseases of Evergreens *Rhizosphaera* Needle Cast

- Hosts (minor)
 - Pines: Austrian, mugo, eastern white pine
 - Douglas fir
 - Hemlock
 - Balsam fir and other firs
- Favorable environment
 - Wet weather
 - High humidity



Diseases of Evergreens *Rhizosphaera* Needle Cast

- Control
 - DO NOT plant Colorado blue spruce
 - DO NOT crowd trees when planting
 - Thin healthy branches to increase airflow
 - Prevent tree stress
 - Prune diseased branches

Diseases of Evergreens *Rhizosphaera* Needle Cast

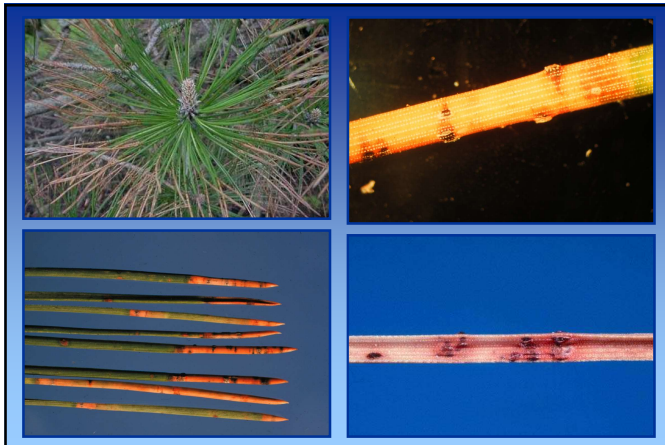
- Control
 - Decontaminate pruning tools
 - 70% alcohol (spray disinfectants)
 - Commercial disinfectants
 - 10% bleach
 - Destroy infected materials
 - Burn (where allowed)
 - Deep bury
 - Hot compost (needles)

Diseases of Evergreens *Rhizosphaera* Needle Cast

- **Control**
 - Use fungicides to prevent infections
 - Copper-containing fungicides, chlorothalonil
 - Alternate active ingredients (FRAC codes)
 - Apply starting at bud break and at 3-4 week intervals thereafter under favorable conditions

Diseases of Evergreens *Dothistroma* Needle Blight

- **Pathogen:** *Dothistroma pini*
- **Hosts**
 - Austrian pine
 - Mugo pine
 - Ponderosa pine
- **Favorable environment:** Wet weather



Diseases of Evergreens *Dothistroma* Needle Blight

- **Control**
 - Plant disease-free trees
 - Plant resistant/immune tree species
 - Destroy infected materials
 - Burn (where allowed)
 - Deep bury
 - Hot compost

Diseases of Evergreens *Dothistroma* Needle Blight

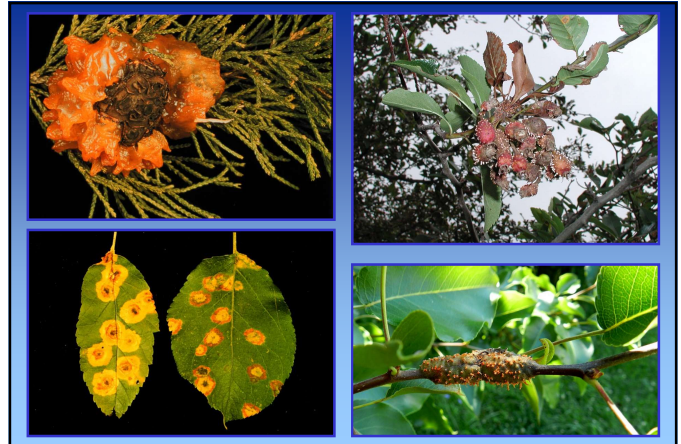
- **Control**
 - Use fungicides to prevent infections
 - Copper
 - Early June
 - Apply 1 treatment, or 2 treatments spaced 3-4 weeks apart

Diseases of Evergreens *Gymnosporangium* Rusts

- **Causes**
 - *Gymnosporangium juniperi-virginianae*
(Cedar-apple rust)
 - *Gymnosporangium globosum*
(Cedar-hawthorn rust)
 - *Gymnosporangium clavipes*
(Cedar-quince rust)

Diseases of Evergreens Gymnosporangium Rusts

- **Hosts**
 - Junipers
 - Woody rosaceous plants (apple, crabapple, hawthorn, quince, pear, serviceberry)
- **Favorable environment**
 - Cool to moderate temperatures
 - Wet



Diseases of Evergreens Gymnosporangium Rusts

- **Control**
 - Grow only the juniper or rosaceous host
 - Use resistant cultivars/varieties
 - “Juniper Diseases” (<https://store.extension.iastate.edu/Product/Juniper-Diseases>)
 - Remove galls

Diseases of Evergreens Gymnosporangium Rusts

- **Control**
 - Decontaminate pruning tools
 - 70% alcohol (spray disinfectants)
 - Commercial disinfectants
 - 10% bleach
 - Destroy infected materials
 - Burn (where allowed)
 - Deep bury

Diseases of Evergreens Gymnosporangium Rusts

- **Control**
 - Use fungicides to prevent infections
 - Ferbam, triadimefon
 - Alternate active ingredients (FRAC codes)
 - Apply at 7-21 day intervals [mid-May through mid-June (rosaceous hosts), early July through August (juniper hosts)]

Diseases of Evergreens White Pine Blister Rust

- **Pathogen:** Cronartium ribicola
- **Hosts**
 - White pine
 - Gooseberry/Currants (Ribes spp.)
- **Favorable environment:** Wet weather



Diseases of Evergreens *White Pine Blister Rust*

- **Control**
 - Remove and destroy gooseberries/currants
 - Plant pines other than white pine
 - DO NOT overcrowd white pines
 - Keep weeds under control
 - DO NOT overhead irrigate
 - Scout routinely for disease

Diseases of Evergreens *White Pine Blister Rust*

- **Control**
 - Prune diseased branches
 - Prune healthy branches from the ground up
 - Disinfect pruning tools
 - 70% alcohol
 - Commercial disinfectants
 - 10% bleach

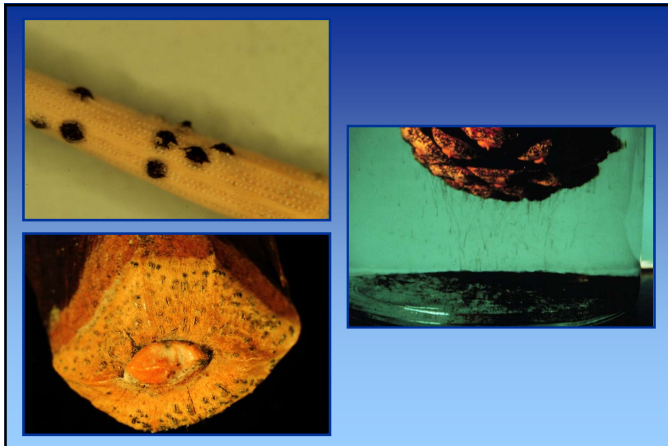
Diseases of Evergreens *Diplodia (Sphaeropsis) Shoot Blight*

- **Pathogen:** *Diplodia pinea*
(*Sphaeropsis sapinea*)
- **Hosts (major)**
 - Austrian pine
 - Other pines: red, jack, Scots, mugo
- **Hosts (minor)**
 - Other conifers: cedars, cypresses, firs, spruces, junipers, yews

Diseases of Evergreens *Diplodia (Sphaeropsis) Shoot Blight*

- **Favorable environment**
 - Wet weather (for infection)
 - Drought (for extensive colonization)





Diseases of Evergreens *Diplodia (Sphaeropsis) Shoot Blight*

- **Control**
 - DO NOT plant Austrian pines
 - Prevent tree stress, particularly water stress
 - Thin branches to increase airflow
 - Prune diseased branches

Diseases of Evergreens *Diplodia (Sphaeropsis) Shoot Blight*

- **Control**
 - Decontaminate pruning tools
 - 70% alcohol (spray disinfectants)
 - Commercial disinfectants
 - 10% bleach
 - Remove infected cones (?)
 - Destroy infected materials
 - Burn (where allowed)
 - Deep bury

Diseases of Evergreens *Diplodia (Sphaeropsis) Shoot Blight*

- **Control**
 - Use fungicides to prevent infections
 - Thiophanate-methyl, chlorothalonil
 - Alternate active ingredients (FRAC Codes)
 - Apply from bud break through shoot elongation
 - Apply every 14 days

Diseases of Evergreens *Phomopsis Tip Blight*

- **Pathogen**
 - *Phomopsis juniperovora*
 - *Phomopsis* spp.
- **Host: Junipers**
- **Favorable environment**
 - Cool temperatures
 - Wet weather
 - Factors stimulating excessive host growth



Diseases of Evergreens Phomopsis Tip Blight

- **Control**
 - Use resistant varieties
(<https://store.extension.iastate.edu/Product/Juniper-Diseases>)
 - DO NOT crowd trees/shrubs when planting
 - Prevent tree/shrub stress
 - Avoid over-fertilization with nitrogen
 - Prune diseased branches
 - Avoid excessive pruning

Diseases of Evergreens Phomopsis Tip Blight

- **Control**
 - Decontaminate pruning tools
 - 70% alcohol (spray disinfectants)
 - Commercial disinfectants
 - 10% bleach
 - Destroy infected materials
 - Burn (where allowed)
 - Deep bury

Diseases of Evergreens Phomopsis Tip Blight

- **Control**
 - Use fungicides to prevent infections
 - Mancozeb, copper, thiophanate-methyl
 - Alternate active ingredients (FRAC Codes)
 - Bud break through period of rapid growth
 - 7-21 day application interval

Diseases of Evergreens Armillaria Root Disease

- **Pathogens:** Armillaria spp.
- **Hosts**
 - Many conifers
 - Many deciduous trees and shrubs
- **Favorable environment**
 - Drought stress
 - Stress due to defoliation
 - Other stresses



Diseases of Evergreens *Armillaria Root Disease*

- **Control**
 - Reduce tree/shrub stress where possible
 - Water adequately
 - Fertilize properly
 - Control foliar pathogens
 - Control foliar insect pests
 - DO NOT wound trees
 - Remove Armillaria-infested materials
 - DO NOT use fungicides

Diseases of Evergreens *Winter Injury/Winter Burn*

- **Causes**
 - Water stress
 - Extreme winter temperatures
 - Cycling winter temperatures
 - Insufficient snow cover
 - Excessive snow

Diseases of Evergreens *Winter Injury/Winter Burn*

- **Affected plants**
 - Yew
 - Spruce (Alberta)
 - Boxwood
 - Arborvitae



Diseases of Evergreens *Winter Injury/Winter Burn*

- **Management**
 - Water trees and shrubs adequately
 - Plant trees and shrubs
 - Properly
 - In protected locations (sensitive plants)
 - Insulate sensitive plants where possible
 - Pray for
 - Lots of snow
 - A slow, gradual spring warm up

Diseases of Evergreens *Other Abiotic Disorders*



Diseases of Evergreens Non-Diseases



Seasonal Needle Drop



Sooty Mold



Sooty Mold



Seasonal Needle Drop

Diseases of Evergreens Non-Diseases: Fungi/Fungal Allies



Giant Puffballs



Lichens



Stink Horns



Bird's Nest Fungi



Slime Molds

Diseases of Evergreens Where to Go for Help

*Plant Disease Diagnostics Clinic
Department of Plant Pathology
University of Wisconsin-Madison
1630 Linden Drive
Madison, WI 53706-1598
(608) 262-2863
pddc@wisc.edu
<http://pddc.wisc.edu>*

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