

2018 Landscape Professionals Workshop

Common Diseases of Trees (and their Management)

Brian D. Hudelson

Department of Plant Pathology
University of Wisconsin-Madison/Extension

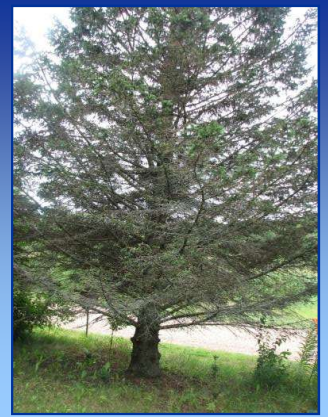


Common Tree Diseases *Rhizosphaera* Needle Cast

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

Common Tree Diseases *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



Common Tree Diseases *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

Common Tree Diseases *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)

Common Tree Diseases *Rhizosphaera* Needle Cast

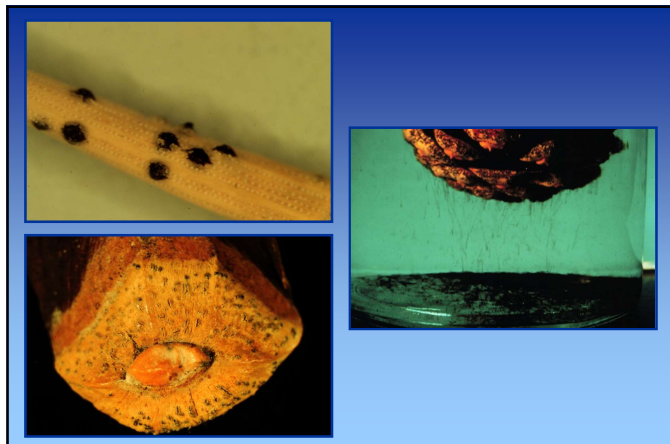
- **Control**
 - Use fungicides to prevent infections
 - Copper-containing fungicides, chlorothalonil
 - Alternate active ingredients (FRAC codes)
 - Apply starting at bud break and at 3-4 week intervals thereafter under favorable conditions

Common Tree Diseases *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

Common Tree Diseases *Diplodia* (*Sphaeropsis*) Shoot Blight

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



Common Tree Diseases *Diplodia* (*Sphaeropsis*) Shoot Blight

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

Common Tree Diseases *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

Common Tree Diseases *Diplodia (Sphaeropsis) Shoot Blight*

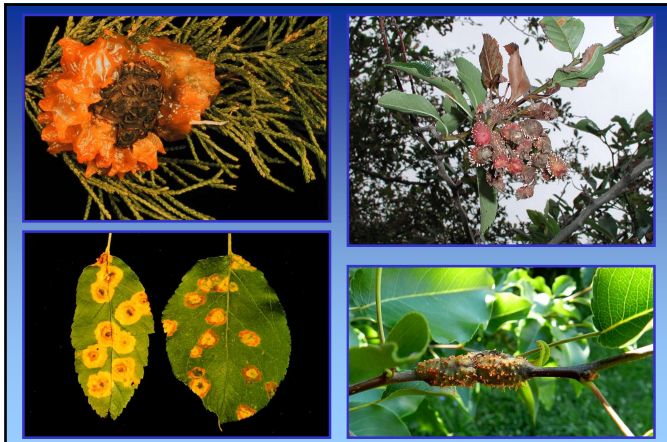
- **Control**
 - Use fungicides to prevent infections
 - Thiophanate-methyl, chlorothalonil
 - Alternate active ingredients (FRAC Codes)
 - Apply from bud break through shoot elongation
 - Apply every 14 days

Common Tree Diseases *Gymnosporangium Rusts*

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

Common Tree Diseases *Gymnosporangium Rusts*

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



Common Tree Diseases *Gymnosporangium Rusts*

- **Control**
 - Grow only the juniper or rosaceous host
 - Use resistant cultivars/varieties
 - “Juniper Diseases”
(<https://store.extension.iastate.edu/Product/5247>)
 - Remove galls

Common Tree Diseases Gymnosporangium Rusts

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

Common Tree Diseases 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)]

Common Tree Diseases Scab (Apple and Pear)

- **Causes**
 - *Venturia inaequalis*
 - *Venturia pirina*
- **Hosts**
 - Apple/crabapple
 - Pear
 - Mountain ash
- **Favorable environment:** Cool, wet weather



Common Tree Diseases Scab (Apple and Pear)

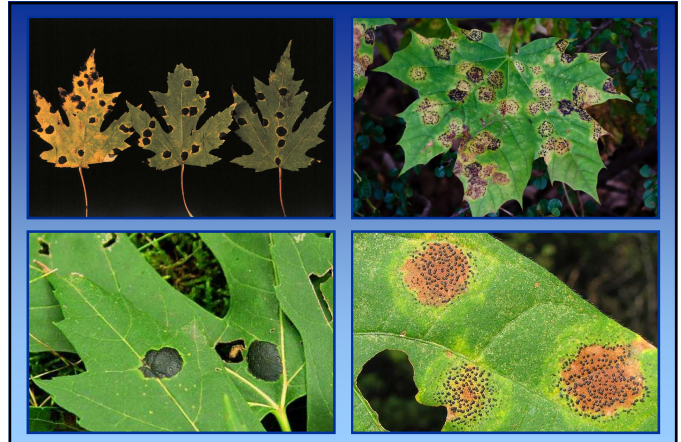
- **Control**
 - Plant resistant varieties
 - “Growing Apples (Pears) in Wisconsin” (<https://learningstore.uwex.edu/>)
 - Remove/destroy diseased leaves
 - Burn (where allowed)
 - Deep bury
 - Hot compost
 - Thin trees to promote air flow

Common Tree Diseases Scab (Apple and Pear)

- **Control**
 - Use fungicides to prevent infections
 - Chlorothalonil, copper, mancozeb, myclobutanil, propiconazole, thiophanate-methyl, sulfur
 - Alternate active ingredients (FRAC codes)
 - Apply from bud break through the end of favorable weather
 - Apply at 7-14 day intervals

Common Tree Diseases Tar Spot

- **Causes:** *Rhytisma americanum*
Rhytisma acerinum
- **Hosts:** Maples
- **Favorable environment:** Cool, wet weather



Common Tree Diseases Tar Spot

- **Control**
 - DO NOT panic
 - Remove/destroy diseased leaves
 - Burn (where allowed)
 - Deep bury
 - Hot compost
 - Use fungicides to prevent infections
 - Copper
 - Apply 3 applications: at bud break, 1/2 expansion of leaves, full leaf expansion

Common Tree Diseases Black Knot

- **Cause:** *Apiosporina morbosa*
- **Hosts**
 - *Prunus* species
 - Plums
 - Cherries
- **Favorable environment:** Wet weather



Common Tree Diseases Black Knot

- **Control**
 - DO NOT plant infected *Prunus* stock
 - Buy black knot-resistant varieties if available
 - Accolade flowering cherry (*Prunus* 'Accolade')
 - Sargent's cherry (*Prunus sargentii*)
 - Amur chokecherry (*Prunus maackii*)
 - Remove volunteer plums/cherries
 - Prune diseased branches

Common Tree Diseases **Black Knot**

- **Control**
 - Decontaminate pruning tools
 - 70% alcohol (spray disinfectants)
 - Commercial disinfectants
 - 10% bleach
 - Destroy infected materials
 - Burn (where allowed)
 - Deep bury
 - **DO NOT** use fungicides

Common Tree Diseases **Fire Blight**

- **Cause:** Erwinia amylovora
- **Hosts**
 - Many woody rosaceous plants
 - Apple, crabapple, pear, mountain ash, cotoneaster
- **Favorable environment**
 - Wet weather
 - Hail (or other wounding)



Common Tree Diseases **Fire Blight**

- **Control**
 - Plant resistant varieties where available
 - “Top Ornamental Crabapples for Wisconsin” (<https://pddc.wisc.edu/fact-sheet-listing-all/>)
 - Prune diseased branches
 - Decontaminate pruning tools
 - 70% alcohol (spray disinfectants)
 - Commercial disinfectants
 - 10% bleach

Common Tree Diseases **Fire Blight**

- **Control**
 - Destroy infected materials
 - Burn (where allowed)
 - Deep bury
 - **DO NOT** over-fertilize with nitrogen
 - Use bactericides to prevent infections (?)
 - Copper-containing fungicides, streptomycin
 - Apply during flowering
 - Apply every 7-14 days (3-4 days)

Common Tree Diseases **Verticillium Wilt**

- **Causes**
 - Verticillium dahlia
 - Verticillium albo-atrum
 - Other Verticillium spp.
 - New Verticillium spp.

Common Tree Diseases *Verticillium Wilt*

- **Hosts**
 - Many woody ornamentals
 - Common: Maple, ash, redbud, smokebush
 - “New”: Seven son flower, wafer-ash, buttonbush
 - Many herbaceous plants
 - Many vegetables (tomato, potato, EGGPLANT)
- **Favorable environment**
 - Cool, wet weather (for infection)
 - Hot, dry weather (for symptom development)



Common Tree Diseases *Verticillium Wilt*

- **Control**
 - Avoid Verticillium-infested areas
 - Pretest soils/mulches/composts for the presence of Verticillium
 - Fumigate heavily infested soils
 - Keep broad-leaf weeds under control
 - Avoid municipal mulches

Common Tree Diseases *Verticillium Wilt*

- **Control**
 - Use immune/resistant plants
 - CONIFERS: Pines, spruces, firs, junipers
 - DECIDUOUS TREES/SHRUBS: Beech, birch, ginkgo, hackberry, hawthorn, hickory, honey locust, mountain ash, white oak, bur oak, poplar, serviceberry, sycamore, willow
 - Prevent stress
 - Prune diseased (wilted) areas
 - Decontaminate pruning tools

Common Tree Diseases *Verticillium Wilt*

- **Control**
 - Decontaminate pruning tools
 - 70% alcohol (spray disinfectants)
 - Commercial disinfectants
 - 10% bleach
 - Make plants comfortable until they die
 - Remove and destroy diseased plants
 - Burn (where allowed)
 - DO NOT use fungicides

Common Tree Diseases *Chlorosis*

- **Cause: Micronutrient (Fe or Mn) deficiency**
- **Affected plants**
 - Oaks (especially pin oak)
 - Red Maples
 - Rhododendrons
 - Other woody (and herbaceous) plants



Common Tree Diseases *Chlorosis*

- *Management*

- *Plant the right plant in the right location*
- *Monitor soil pH and soil nutrients*
- *Decrease pH using sulfur or aluminum sulfate*
- *Add chelated Fe and/or Mn as needed*
- *Make sure trees are adequately watered*
- *Minimize damage to tree root systems*

Common Tree Diseases *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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