



2019 iLandscape

Diseases of Trees and Shrubs

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Diseases of Trees and Shrubs Boxwood Blight

- **Cause**
 - *Calonectria pseudonaviculata*
 - *Cylindrocladium pseudonaviculatum*
 (*Cylindrocladium buxicola*)
- **Hosts**
 - Boxwood
 - Pachysandra
- **Favorable environment:** Cool, wet weather



Diseases of Trees and Shrubs Boxwood Blight

- **Control**
 - Be cautious about holiday wreaths
 - Use shrubs other than boxwood
 - Buy locally produced boxwood
 - Grow resistant varieties
 - Korean littleleaf boxwood 'Exeles' Wedding Ring®
 - Korean littleleaf 'Winter Gem'
 - Buy from a reputable supplier
 - Avoid symptomatic plants

Diseases of Trees and Shrubs Boxwood Blight

- **Control**
 - DO NOT replant in an area where boxwood blight has been a problem
 - Keep new plants isolated
 - Physically separate boxwood plantings
 - Space plants far apart
 - DO NOT overhead water
 - Prune out diseased branches

Diseases of Trees and Shrubs **Boxwood Blight**

- **Control**
 - Decontaminate pruning tools
(70% alcohol, 10% bleach, disinfectants)
 - Remove and destroy infected plants
 - Burn (where allowed)
 - Deep bury (two feet)/Double bag and landfill
 - DO NOT compost

Diseases of Trees and Shrubs **Boxwood Blight**

- **Control**
 - Use fungicides to prevent infections
 - Chlorothalonil (alone or with propiconazole or thiophanate-methyl), fludioxonil, metconazole, tebuconazole
 - Alternate active ingredients (FRAC codes)
 - Apply at 7 day intervals
 - Contact your land-grant university plant disease clinic

Diseases of Trees and Shrubs **Rhizosphaera Needle Cast**

- **Pathogens:** *Rhizosphaera kalkhoffii*
Rhizosphaera spp.
- **Look-Alike:** *Stigmata* Needle Cast
(*Stigmata* spp.)
- **Hosts (major)**
 - Colorado blue spruce
 - Other spruces: Black, Engelmann, Serbian, Sitka, white (Black Hills)

Diseases of Trees and Shrubs **Rhizosphaera Needle Cast**

- **Hosts (minor)**
 - Pines: Austrian, mugo, eastern white pine
 - Douglas fir
 - Hemlock
 - Balsam fir and other firs
- **Favorable environment**
 - Long periods of needle wetness
 - High humidity



Diseases of Trees and Shrubs **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
 - Decontaminate pruning tools
(70% alcohol, 10% bleach, disinfectants)

Diseases of Trees and Shrubs *Rhizosphaera* Needle Cast

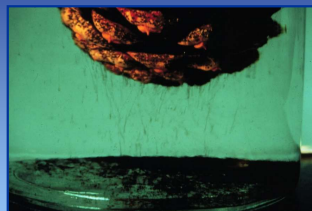
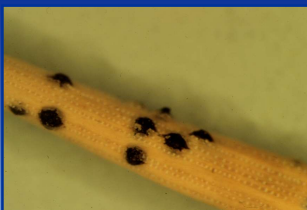
- **Control**
 - Use fungicides to prevent infections
 - Copper, chlorothalonil
 - Alternate active ingredients (FRAC Codes)
 - Start applications at bud break
 - Apply at 3-4 week intervals under favorable conditions

Diseases of Trees and Shrubs *Diplodia* (*Sphaeropsis*) Tip 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 Trees and Shrubs *Diplodia* (*Sphaeropsis*) Tip Blight

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



Diseases of Trees and Shrubs *Diplodia* (*Sphaeropsis*) Tip Blight

- **Control**
 - DO NOT plant Austrian pines
 - Prevent tree stress, particularly water stress
 - Thin branches to increase airflow
 - Prune diseased branches
 - Decontaminate pruning tools (70% alcohol, 10% bleach, disinfectants)
 - Remove infected cones (?)

Diseases of Trees and Shrubs *Diplodia (Sphaeropsis) Tip Blight*

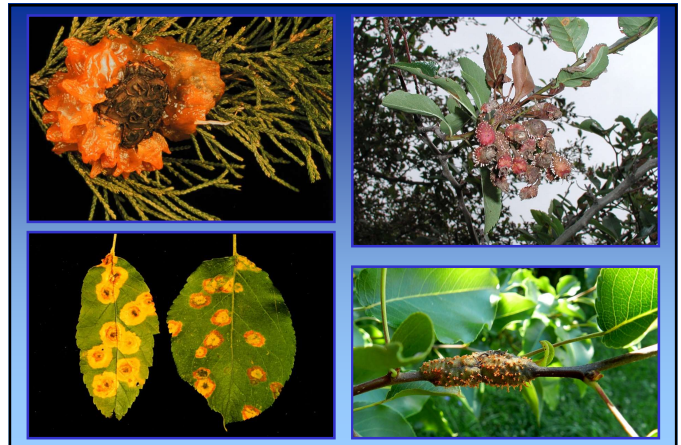
- **Control**
 - Use fungicides to prevent infections
 - Thiophanate-methyl, chlorothalonil
 - Alternate active ingredients (FRAC Codes)
 - Apply from bud break through shoot elongation
 - Apply at 14 day intervals

Diseases of Trees and Shrubs *Gymnosporangium Rusts*

- **Pathogens:** *Gymnosporangium* spp.
 - *Gymnosporangium juniperi-virginianae* (Cedar-apple rust)
 - *Gymnosporangium globosum* (Cedar-hawthorn rust)
 - *Gymnosporangium clavipes* (Cedar-quince rust)

Diseases of Trees and Shrubs *Gymnosporangium Rusts*

- **Hosts**
 - Junipers
 - Rosaceous plants
 - Apple, crabapple
 - Hawthorn
 - Quince
 - Pear
 - Serviceberry
- **Favorable environment:** Wet weather



Diseases of Trees and Shrubs *Gymnosporangium Rusts*

- **Control**
 - Use resistant cultivars/varieties
 - “Juniper Diseases”
(<https://store.extension.iastate.edu/Product/Juniper-Diseases>)
 - Remove galls
 - Decontaminate pruning tools
(70% alcohol, 10% bleach, disinfectants)

Diseases of Trees and Shrubs *Gymnosporangium Rusts*

- **Control**
 - Use fungicides to prevent infections (?)
 - Treat rosaceous hosts
 - Chlorothalonil, copper, ferbam, mancozeb, propiconazole, sulfur, and triadimefon
 - Alternate active ingredients (FRAC Codes)
 - Use five treatments
 - Flower first show color, half of flowers open, petal fall, 7 to 10 days after petal fall, 10 to 14 days later

Diseases of Trees and Shrubs **Black Knot**

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



Diseases of Trees and Shrubs **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

Diseases of Trees and Shrubs **Black Knot**

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

Diseases of Trees and Shrubs **Fire Blight**

- Cause: Erwinia amylovora
- Hosts
 - Many woody rosaceous plants
 - Apple, crabapple, pear, mountain ash, cotoneaster
- Favorable environment
 - Wet (but not too wet) weather
 - Hail (or other wounding)



Diseases of Trees and Shrubs **Fire Blight**

- **Control**
 - Plant resistant varieties where available
 - Prune diseased branches
 - Decontaminate pruning tools
(70% alcohol, 10% bleach, disinfectants)
 - Destroy infected materials
 - Burn (where allowed)
 - Deep bury

Diseases of Trees and Shrubs **Fire Blight**

- **Control**
 - DO NOT over-fertilize with nitrogen
 - Use bactericides to prevent infections (?)
 - Copper-containing fungicides, streptomycin
 - Apply during flowering
 - Apply at 7-14 days (3-4 days) intervals

Diseases of Trees and Shrubs **Golden Canker**

- **Cause:** *Cryptodiaporthe corni*
- **Host:** Pagoda dogwood
- **Favorable environment**
 - Water stress
 - Heat stress



Diseases of Trees and Shrubs **Golden Canker**

- **Control**
 - Prune diseased branches
 - Decontaminate pruning tools
(70% alcohol, 10% bleach, disinfectants)
 - Destroy infected materials
 - Burn (where allowed)
 - Deep bury

Diseases of Trees and Shrubs **Golden Canker**

- **Control**
 - Reduce plant stress
 - Consider tree placement
 - Water adequately
 - Mulch properly
 - Fertilize properly
 - DO NOT use fungicides for control

Diseases of Trees and Shrubs **Verticillium Wilt**

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

Diseases of Trees and Shrubs **Verticillium Wilt**

- **Hosts**
 - **Many woody ornamentals**
 - Common: Maple, ash, redbud, smokebush
 - Newer: Seven son flower, wafer-ash, buttonbush
 - **Many vegetables**
 - Tomato, potato, pepper, EGGPLANT, cucurbits
 - **Many herbaceous plants**
 - Common: Purple coneflower, blazing star
 - New: Vervain ('Quartz White')

Diseases of Trees and Shrubs **Verticillium Wilt**

- **Favorable environment**
 - Cool, wet weather (for infection)
 - Hot, dry weather (for symptom development)



Diseases of Trees and Shrubs **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
 - Clean up leaf litter
 - Avoid municipal mulches

Diseases of Trees and Shrubs **Verticillium Wilt**

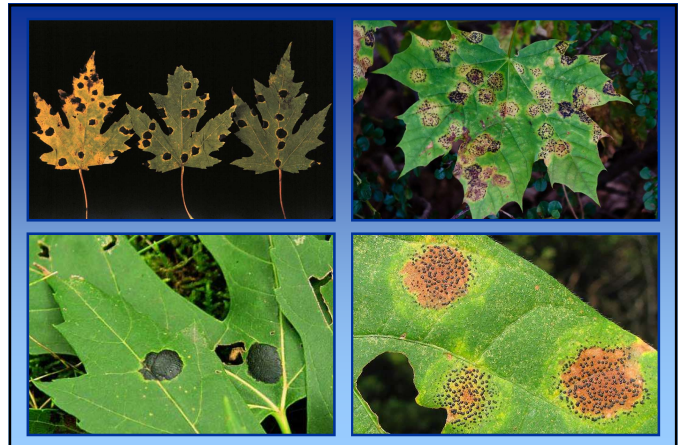
- **Control**
 - Use immune/resistant plants
 - CONIFERS: Pines, spruces, firs, junipers
 - DECIDUOUS TREES/SHRUBS: Beech, birch, ginkgo, hackberry, hawthorn, hickory, honey locust, mountain ash, white oak, bur oak, poplar, serviceberry, sycamore, willow
 - Prevent stress
 - Prune diseased (wilted) areas

Diseases of Trees and Shrubs **Verticillium Wilt**

- **Control**
 - Decontaminate pruning tools
(70% alcohol, 10% bleach, disinfectants)
 - Make plants comfortable until they die
 - Remove and destroy diseased plants/leaves
 - Burn (where allowed)
 - Hot compost (?)
 - DO NOT use fungicides

Diseases of Trees and Shrubs **Tar Spot**

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



Diseases of Trees and Shrubs **Tar Spot**

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

Diseases of Trees and Shrubs **Powdery Mildews**

- **Causes**
 - *Erysiphe* spp.
 - *Uncinula* spp.
 - *Phyllactinia* spp.
 - *Blumeria* spp.
 - *Oidium* spp.
 - *Microsphaera* spp.
 - *Sphaerotheca* spp.
 - *Podosphaera* spp.
 - *Brasiliomyces* spp.
 - *Ovulariopsis* spp.

Diseases of Trees and Shrubs Powdery Mildews

- **Hosts**
 - Virtually everything
 - Not conifers
- **Favorable environment: High humidity**



Diseases of Trees and Shrubs Powdery Mildews

- **Control**
 - Remove/destroy diseased leaves
 - Burn (where allowed)
 - Deep bury
 - Hot compost
 - Reduce humidity
 - Plant less densely
 - Thin canopies
 - Use resistant cultivars/varieties

Diseases of Trees and Shrubs Powdery Mildews

- **Control**
 - Use fungicides to prevent infections
 - Dinocap, dithiocarbamates, myclobutanil, triadimefon, triforine, sulfur or thiophanate-methyl
 - Baking soda (1.5 Tbsp/gal) and light weight horticultural oil (3 Tbsp/gal)
 - Alternate active ingredients (FRAC codes)
 - Apply when humidity >60-70%
 - Apply at 7-14 day intervals

Diseases of Trees and Shrubs 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
<https://pddc.wisc.edu>
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