

2025 PDDC Plant Disease Talks

Ten Diseases of Native Plants (and Non-Natives, Too)

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Ten Diseases of Native Plants Powdery Mildews

• Pathogens

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

Ten Diseases of Native Plants Powdery Mildews

• Hosts

- Virtually everything
 - Phlox, bed balm, queen-of-the-prairie, ninebark
 - Not conifers
- ### • Favorable environment: High humidity



Ten Diseases of Native Plants Powdery Mildews

• Control

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

Ten Diseases of Native Plants 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 to 14-day intervals

Ten Diseases of Native Plants Septoria Leaf Spot

- **Pathogens**
 - *Septoria rudbeckiae*
 - *Septoria* spp.
- **Hosts**
 - Black-eyed Susan
 - Many other herbaceous plants
 - Tomato
 - Many trees and shrubs

Ten Diseases of Native Plants Septoria Leaf Spot

- **Favorable environment**
 - Long periods of leaf wetness



Ten Diseases of Native Plants Septoria Leaf Spot

- **Control**
 - Remove/destroy diseased leaves
 - Move plants to new location
 - Use non-susceptible varieties/plants
 - Space plants far apart
 - DO NOT overhead water
 - DO NOT overmulch
 - Thin plants as they grow

Ten Diseases of Native Plants Septoria Leaf Spot

- **Control**
 - Use fungicides to prevent infections
 - Copper, chlorothalonil
 - Applications every 7-14 days

Ten Diseases of Native Plants Aster Yellows

- Pathogen: Aster yellows phytoplasma
- Hosts
 - Many plants in the Asteraceae (aster family)
 - Many other plants in many other plant families
- Favorable environment: None
- Vector: Aster leafhopper



Ten Diseases of Native Plants Aster Yellows

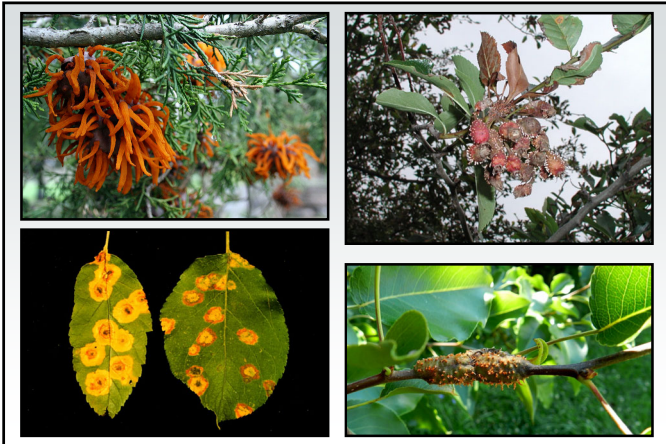
- Control
 - Remove/destroy infected plants
 - Control leafhopper vector (?)

Ten Diseases of Native Plants Gymnosporangium Rusts

- Pathogens
 - *Gymnosporangium juniperi-virginianae* (Cedar-apple rust)
 - *Gymnosporangium globosum* (Cedar-hawthorn rust)
 - *Gymnosporangium clavipes* (Cedar-quince rust)
 - *Gymnosporangium yamadae* (Red star rust)

Ten Diseases of Native Plants Gymnosporangium Rusts

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



Ten Diseases of Native Plants Gymnosporangium Rusts

- Control
 - Grow only the juniper or rosaceous host
 - Use resistant cultivars/varieties
 - “Home Fruit Cultivars for Northern Wisconsin” (<https://learningstore.extension.wisc.edu/>)
 - “Home Fruit Cultivars for Southern Wisconsin” (<https://learningstore.extension.wisc.edu/>)

Ten Diseases of Native Plants Gymnosporangium Rusts

- Control
 - Remove galls
 - Decontaminate pruning tools (70% alcohol, disinfectants, bleach)
 - Destroy infected materials
 - Burn (where allowed)
 - Deep bury

Ten Diseases of Native Plants Gymnosporangium Rusts

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

Ten Diseases of Native Plants Black Knot

- Pathogen: *Apiosporina morbosa*
- Hosts
 - *Prunus* species
 - Black cherry!
- Favorable environment
 - Long periods of leaf wetness



Ten Diseases of Native Plants 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

Ten Diseases of Native Plants Black Knot

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

Ten Diseases of Native Plants Verticillium Wilt

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

Ten Diseases of Native Plants Verticillium Wilt

- **Hosts**
 - Many woody ornamentals
 - Common: Maple, ash, redbud, smokebush
 - New: Red-twigged dogwood
 - Many vegetables
 - Tomato, potato, pepper, EGGPLANT, cucurbits
 - Many herbaceous plants
 - Common: Purple coneflower, blazing star
 - New: Gasplant

Ten Diseases of Native Plants Verticillium Wilt

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



Ten Diseases of Native Plants 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

Ten Diseases of Native Plants 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

Ten Diseases of Native Plants Verticillium Wilt

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

Ten Diseases of Native Plants Oak Wilt

- Pathogen
 - *Bretziella fagacearum* (*Ceratocystis fagacearum*)
 - *Chalara* sp.
- Hosts
 - Red oak group: Red, black, pin
 - White oak group: White, bur, swamp white
 - Chinese chestnut

Ten Diseases of Native Plants Oak Wilt

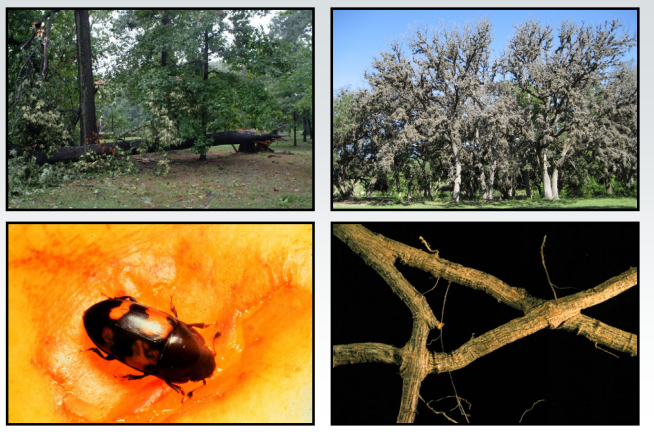
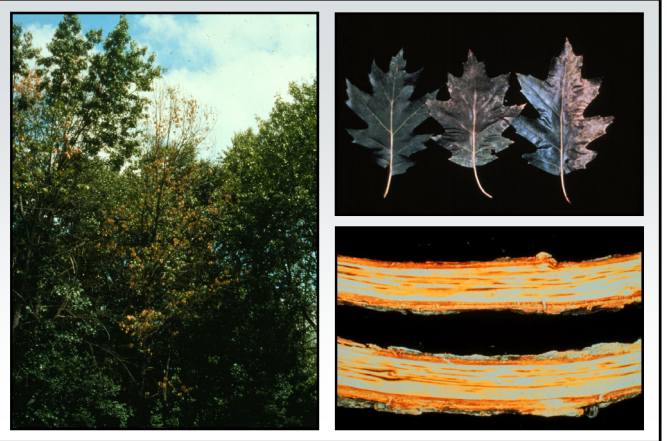
- Favorable environment
 - Cool, wet conditions (for infection)
 - Hot, dry weather (for symptom development)

Ten Diseases of Native Plants Oak Wilt

- Transmission
 - Oak bark beetles
 - *Pseudopityophthorus minutissimus*
 - *Pseudopityophthorus pruinosis*
 - Sap beetles
 - *Carpophilus* spp.
 - *Colopterus* spp.
 - *Cryptarcha* spp.
 - *Epuraea* spp.
 - *Clischrochilus* spp.

Ten Diseases of Native Plants Oak Wilt

- Transmission
 - Root grafts
 - Major method of movement in clumps of oaks
 - Commonly form between trees in the same group
 - Red oak group: Red, black, pin
 - White oak group: White, bur, swamp white
 - Rarely form between trees in different groups
 - Movement of up to 20-25 ft/year



Ten Diseases of Native Plants Oak Wilt

- Control
 - DO NOT prune or wound oaks from bud break through 2-3 weeks past full leaf development
 - Disrupt root grafts
 - “Oak Wilt Management”
(<https://widnr.widen.net/s/inwf2cgskdn/fr-825-oak-wilt-management-fact-sheet>)
 - Mechanically (vibratory plow or trenching machine)
 - Chemically (soil fumigant)
 - Physical barriers

Ten Diseases of Native Plants Oak Wilt

- **Control**
 - Remove diseased (and healthy) trees
 - Decontaminate pruning tools (70% alcohol, disinfectants, bleach)
 - Be careful using oak wood
 - Remove bark
 - Cover wood

Ten Diseases of Native Plants Oak Wilt

- **Control**
 - Use fungicide injections
 - Propiconazole
 - Prophylactic or therapeutic
 - Every 12-24 months

Ten Diseases of Native Plants Armillaria Root Disease

- **Pathogen:** *Armillaria* spp.
- **Hosts**
 - Many deciduous trees and shrubs
 - Many conifers
- **Favorable environment**
 - Drought stress
 - Defoliation stress
 - Other stresses

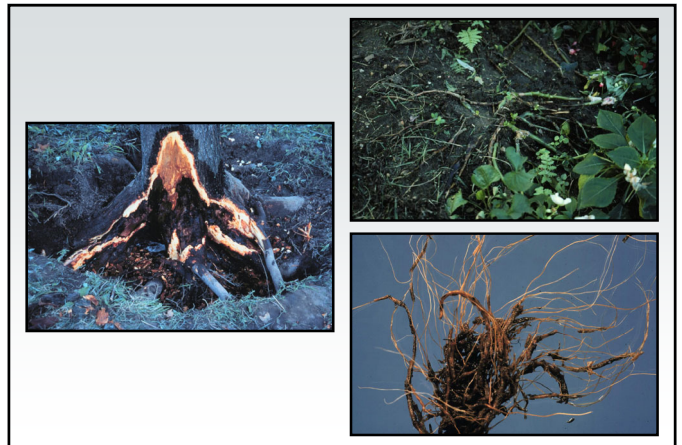


Ten Diseases of Native Plants Armillaria Root Disease

- **Control**
 - Reduce 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

Ten Diseases of Native Plants Root/Crown Rots

- Pathogens
 - *Pythium* spp.
 - *Rhizoctonia solani*
 - *Cylindrocarpon* spp.
 - *Phytophthora* spp.
 - *Fusarium* spp.
 - *Thielaviopsis* spp.
- Hosts: Anything and everything
- Favorable environment
 - Cool temperatures
 - Wet weather



Ten Diseases of Native Plants Root/Crown Rots

- Control
 - Moderate soil moisture
 - Grow plants in well-drained sites
 - Use a soil/potting mix with adequate drainage
 - Improve drainage in poorly drained soils
 - Add organic matter to improve drainage
 - Use raised beds
 - DO NOT overwater
 - DO NOT overmulch

Ten Diseases of Native Plants Root/Crown Rots

- Control
 - DO NOT move contaminated soil or plants
 - Decontaminate infested tools, pots, work areas (70% alcohol, disinfectants, bleach)
 - Pretest soils/mulches/composts
 - Use soil-less potting mixes for containerized plants

Ten Diseases of Native Plants Root/Crown Rots

- **Control**
 - Use fungicides to prevent infections
 - Contract with a professional pesticide applicator
 - PCNB, thiophanate-methyl, fludioxonil, Etridiazole, metalaxyl/mefenoxam, fosetyl-AI
 - Alternate active ingredients
 - Use granular formulations if possible
 - Use during periods of wet weather

Ten Diseases of Native Plants Root/Crown Rots

- **Control**
 - Use biopesticides to prevent infections
 - *Trichoderma*, *Gliocladium*
 - Use for potted plants

Ten Diseases of Native Plants Chlorosis

- **Cause:** Micronutrient (Fe or Mn) deficiency
- **Susceptible plants**
 - Oaks (especially pin oak)
 - Red Maple
 - Birch
 - Blueberry
 - Rhododendron
 - Other woody and herbaceous plants



Ten Diseases of Native Plants Chlorosis

- **Control**
 - 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 plants are adequately watered
 - Minimize damage to plant root systems

Ten Diseases of Native Plants
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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