

Talks for the General Public

Top Ten Plant Diseases of 2023

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Top Ten Plant Diseases of 2023 Planting-Related Decline

- **Causes**
 - Impatience
 - Improper planting techniques
 - Overly deep planting
 - Failure to remove burlap, wire basket, wires
 - Lack of watering post installation
- **Hosts: Any tree or shrub**



Top Ten Plant Diseases of 2023 Planting-Related Decline

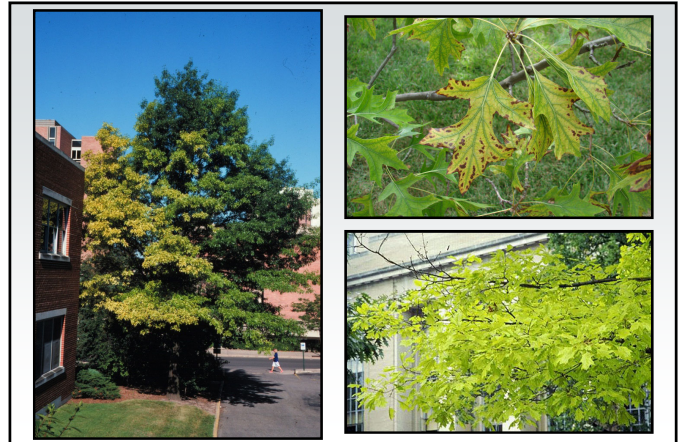
- **Management**
 - Plant small trees
 - Plant bare-root trees
 - Prepare balled and burlaped trees properly
 - Remove burlap
 - Remove wire basket
 - Remove wires/cords
 - Expose the root flare

Top Ten Plant Diseases of 2023 Planting-Related Decline

- **Management**
 - Mulch properly
 - Use high quality mulches
 - Use the right amount of mulch
 - Water properly
 - Apply two inches of water per week
 - Water from bud break through summer and into the fall
 - Continue watering for at least three years

Top Ten Plant Diseases of 2023 Chlorosis

- Cause: Micronutrient (Fe or Mn) deficiency
- Affected plants
 - Oaks (especially pin oak)
 - Red maple
 - Rhododendron
 - White pine
 - Blueberries
 - Other woody (and herbaceous) plants



Top Ten Plant Diseases of 2023 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

Top Ten Plant Diseases of 2023 Powdery Mildews

- Pathogens

– <i>Erysiphe</i> spp.	– <i>Microsphaera</i> spp.
– <i>Uncinula</i> spp.	– <i>Sphaerotheca</i> spp.
– <i>Phyllactinia</i> spp.	– <i>Podosphaera</i> spp.
– <i>Blumeria</i> spp.	– <i>Brasiliomyces</i> spp.
– <i>Oidium</i> spp.	– <i>Ovulariopsis</i> spp.
- Hosts: Virtually anything
- Favorable environment: High humidity



Top Ten Plant Diseases of 2023 Powdery Mildews

- **Control**
 - Remove diseased plant material and debris
 - Burn (where allowed)
 - Deep bury
 - Hot compost
 - Reduce humidity
 - Plant less densely
 - Thin existing stands
 - Use resistant cultivars/varieties

Top Ten Plant Diseases of 2023 Powdery Mildews

- **Control**
 - Use fungicides to prevent infections
 - Dithiocarbamates, myclobutanil, propiconazole, tebuconazole, thiophanate-methyl
 - Sulfur, neem oil, other plant-based oils
 - 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

Top Ten Plant Diseases of 2023 Fire Blight

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



Top Ten Plant Diseases of 2023 Fire Blight

- **Control**
 - Plant resistant varieties
 - “Home Fruit Cultivars for Northern Wisconsin” (<https://learningstore.extension.wisc.edu/>)
 - “Home Fruit Cultivars for Southern Wisconsin” (<https://learningstore.extension.wisc.edu/>)
 - “Top Ornamental Crabapples for Wisconsin” (<https://hort.extension.wisc.edu/>)
 - Prune diseased branches

Top Ten Plant Diseases of 2023 Fire Blight

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

Top Ten Plant Diseases of 2023 Fire Blight

- **Control**
 - Use bactericides to prevent infections (?)
 - Copper, streptomycin
 - Apply
 - Pre-bloom (copper)
 - During flowering (streptomycin)
 - Apply
 - Two applications at spaced 4 days apart (copper)
 - Multiple applications spaced 3-4 days apart (streptomycin)

Top Ten Plant Diseases of 2023 Bacterial Canker

- **Pathogens**
 - *Pseudomonas syringae* pv. *syringae*
 - *Pseudomonas syringae* pv. *mors-prunorum*
- **Hosts: Stone fruits (plum, cherry, peach)**
- **Favorable environment**
 - Wet weather
 - Cold temperatures
 - Wounding



Top Ten Plant Diseases of 2023 Bacterial Canker

- **Control**
 - Minimize wounding
 - Prune diseased branches
 - Decontaminate pruning tools (70% alcohol, disinfectants, bleach)
 - Destroy infected materials
 - Burn (where allowed)
 - Deep bury
 - DO NOT use bactericides

Top Ten Plant Diseases of 2023 Blister Canker

- **Pathogen: *Biscogniauxia marginata***
- **Hosts**
 - Select woody rosaceous plants
 - Apple, crabapple, serviceberry
- **Favorable environment: Hot, dry weather**



Top Ten Plant Diseases of 2023 Blister Canker

- **Control**
 - Reduce stress
 - Water appropriately
 - Fertilize as needed
 - Prune diseased branches
 - Remove diseased trees
 - Decontaminate pruning tools
(70% alcohol, disinfectants, bleach)

Top Ten Plant Diseases of 2023 Blister Canker

- **Control**
 - Destroy infected materials
 - Burn (where allowed)
 - Deep bury
 - DO NOT use fungicides for control

Top Ten Plant Diseases of 2023 “Boxwood Dieback”

- **Causes**
 - Winter injury/winter burn
 - Small animal injury
 - Fungal pathogens
 - *Verticillium* sp. (Verticillium wilt)
 - *Phytophthora* sp., *Pythium* sp., *Rhizoctonia* sp. (root rots)
 - *Volutella buxi* (Volutella blight)
 - *Calonectria pseudonaviculata* (boxwood blight)
(*Cylindrocladium pseudonaviculatum*)
- **Host: Boxwood**



Top Ten Plant Diseases of 2023 “Boxwood Dieback”

- **Control**
 - Water adequately
 - Apply one inch of water per week
 - Water from bud break through summer and into the fall up until ground freeze/snow
 - Protect plants from winter winds
 - Reduce other stresses
 - Control small animal populations

Top Ten Plant Diseases of 2023 “Boxwood Dieback”

- **Control**
 - Grow boxwood blight resistant varieties
 - Hybrid boxwood
 - ‘Green Gem’
 - ‘Karzgreen’ (Green Ice®)
 - Japanese littleleaf boxwood
 - ‘Jim Stauffer’
 - ‘Little Missy’
 - ‘Winter Gem’

Top Ten Plant Diseases of 2023
“Boxwood Dieback”

- **Control**
 - Grow boxwood resistant varieties
 - Korean littleleaf boxwood
 - ‘Eseles’ (Wedding Ring®)
 - ‘Franklin’s Gem’
 - ‘Pincushion’
 - ‘Wee Willie’
 - ‘Winter Beauty’
 - ‘Wintergreen’

Top Ten Plant Diseases of 2023
“Boxwood Dieback”

- **Control**
 - Inspect new plants for symptoms
 - Keep new plants isolated
 - Space plants far apart
 - DO NOT overhead water

Top Ten Plant Diseases of 2023
“Boxwood Dieback”

- **Control**
 - Prune out diseased branches
 - Disinfest pruning tools (70% alcohol, disinfectants, bleach)
 - Remove and destroy infected plants
 - Burn (where allowed)
 - Haul to your local municipal composting site

Top Ten Plant Diseases of 2023
“Boxwood Dieback”

- **Control**
 - Use fungicides treatments
 - Chlorothalonil, mancozeb, thiophanate-methyl
 - 7 day application intervals
 - Alternate active ingredients (FRAC codes)
 - Contact the PDDC if you believe you have found boxwood blight!

Top Ten Plant Diseases of 2023
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

Top Ten Plant Diseases of 2023
Oak Wilt

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



Top Ten Plant Diseases of 2023
Oak Wilt
Look-Alike: Armillaria Root Disease

Top Ten Plant Diseases of 2023
Oak Wilt
Look-Alike: Two-Lined Chestnut Borer

Top Ten Plant Diseases of 2023
Oak Wilt

- **Transmission**
 - Oak bark beetles
 - *Pseudopityophthorus ninutissimus*
 - *Pseudopityophthorus pruinosus*
 - Sap beetles
 - *Carpophilus* spp.
 - *Colopterus* spp.
 - *Cryptarcha* spp.
 - *Epuraea* spp.
 - *Clischrochilus* spp.

Top Ten Plant Diseases of 2023
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



Top Ten Plant Diseases of 2023 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: Testing and Other Techniques” (<https://widnr.widen.net/s/nwf2cgskdn/fr-825-oak-wilt-management-fact-sheet>)
 - Mechanically (vibratory plow or trenching machine)
 - Chemically (soil fumigant)
 - Physical barriers

Top Ten Plant Diseases of 2023 Oak Wilt

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

Top Ten Plant Diseases of 2023 Oak Wilt

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

Top Ten Plant Diseases of 2023 Verticillium Wilt

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

Top Ten Plant Diseases of 2023 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’)

Top Ten Plant Diseases of 2023 Verticillium Wilt

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



Top Ten Plant Diseases of 2023
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

Top Ten Plant Diseases of 2023
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

Top Ten Plant Diseases of 2023
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

Top Ten Plant Diseases of 2023
Bacterial Wilt

- Pathogen: *Erwinia tracheiphila*
- Hosts: Cucurbits (cucumber, squash, pumpkin)
- Favorable environment: None
- Transmission: Cucumber beetles



Top Ten Plant Diseases of 2023 Bacterial Wilt

- Control
 - Use floating row covers
 - Apply insecticides to control cucumber beetles
 - Remove infected plants
 - If you decide to keep infected plants, water them adequately
 - DO NOT use bactericides

Top Ten Plant Diseases of 2023 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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