

## WGCF Madison District

### Top Ten Plant Diseases of 2021

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## Top Ten Plant Diseases of 2021 Drought Stress

- Cause: Insufficient rain
- Hosts: Anything and everything



## Top Ten Plant Diseases of 2021 Drought Stress

- Management
  - Water properly
    - Use a soaker or drip hose
    - Apply one inch per week (established plants)
    - Apply two inches per week (recent transplants)
    - Water from bud break through summer and into the fall

## Top Ten Plant Diseases of 2021 Drought Stress

- Management
  - Mulch properly
    - Use a high quality mulch
    - Use the right amount
      - One to two inches (heavier soils)
      - Three to four inches (lighter soils)
    - DO NOT mulch too close to trunks

## Top Ten Plant Diseases of 2021 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 2021 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 2021 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 2021 Septoria Leaf Spot

- **Cause:** *Septoria* sp.
- **Host:** Lilac
- **Favorable environment:** Wet weather



## Top Ten Plant Diseases of 2021 Septoria Leaf Spot

- **Control**
  - Space lilacs to promote good air flow
  - Routinely thin shrubs
  - Decontaminate pruning tools (70% alcohol, disinfectants, bleach)
  - Avoid overhead watering
  - Reduce stress

## Top Ten Plant Diseases of 2021 Septoria Leaf Spot

- **Control**
  - Destroy infected materials
    - Burn (where allowed)
    - Deep bury
    - Hot compost
  - Use fungicides to prevent infections
    - Chlorothalonil, copper, mancozeb
    - Apply from bud break through the end of favorable weather
    - Apply at 7 to 14-day intervals

## Top Ten Plant Diseases of 2021 “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* (box blight) (*Cylindrocladium pseudonaviculatum*)
- **Host: Boxwood**



## Top Ten Plant Diseases of 2021 “Boxwood Dieback”

- **Control**
  - Water adequately
    - Apply one inch of water per water
    - 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 2021 “Boxwood Dieback”

- **Control**
  - Grow boxwood blight resistant varieties
    - Hybrid boxwood ‘Green Gem’
    - Common boxwood ‘Katerberg’ North Star®
  - Korean littleleaf boxwood
    - ‘Eseles’ Wedding Ring®
    - ‘Franklin’s Gem’
    - ‘Winter Gem’
    - ‘Wintergreen’

### Top Ten Plant Diseases of 2021 “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 2021 “Boxwood Dieback”

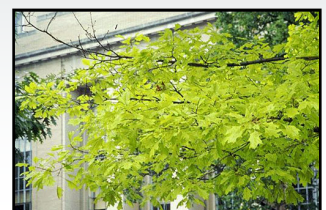
- **Control**
  - Prune out diseased branches
  - Disinfest pruning tools  
(70% alcohol, disinfectants, bleach)
  - Remove and destroy infected plants
    - Burn (where allowed)
    - Haul to your local municipal composting site

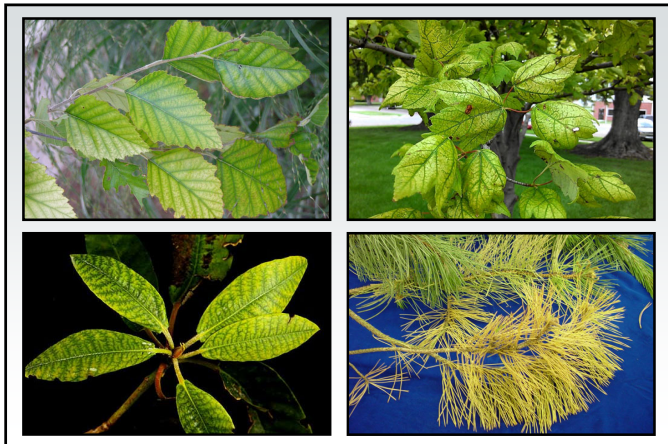
### Top Ten Plant Diseases of 2021 “Boxwood Dieback”

- **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 2021 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 2021 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 2021 Oak Wilt

- **Cause**
  - *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 2021 Oak Wilt

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



## Top Ten Plant Diseases of 2021 Oak Wilt Look-Alike: Armillaria Root Disease



## Top Ten Plant Diseases of 2021

### Oak Wilt

#### Look-Alike: Two-Lined Chestnut Borer



## Top Ten Plant Diseases of 2021

### Oak Wilt

#### • Transmission

##### – Oak bark beetles

- *Pseudopityophthorus minutissimus*
- *Pseudopityophthorus pruinosis*

##### – Sap beetles

- *Carpophilus* spp.
- *Colopterus* spp.
- *Cryptarcha* spp.
- *Epuraea* spp.
- *Clischrochilus* spp.

## Top Ten Plant Diseases of 2021

### 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 2021

### 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: What are the Options?” (<https://learningstore.extension.wisc.edu/>)
  - Mechanically (vibratory plow or trenching machine)
  - Chemically (soil fumigant)
  - Physical barriers

## Top Ten Plant Diseases of 2021

### 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 2021 Oak Wilt

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

## Top Ten Plant Diseases of 2021 Fire Blight

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



## Top Ten Plant Diseases of 2021 Fire Blight

- Control
  - Plant resistant varieties
    - “Home Fruit Cultivars for Northern Wisconsin” (<https://learningstore.uwex.edu/>)
    - “Home Fruit Cultivars for Southern Wisconsin” (<https://learningstore.uwex.edu/>)
    - “Top Ornamental Crabapples for Wisconsin” (<https://pddc.wisc.edu/fact-sheet-listing-all/>)
  - Prune diseased branches

## Top Ten Plant Diseases of 2021 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 2021 Fire Blight

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

## Top Ten Plant Diseases of 2021 Powdery Mildews

- **Cause**
  - *Erysiphe* spp.
  - *Uncinula* spp.
  - *Phyllactinia* spp.
  - *Blumeria* spp.
  - *Oidium* spp.
  - *Microsphaera* spp.
  - *Sphaerotheca* spp.
  - *Podosphaera* spp.
  - *Brasiliomyces* spp.
  - *Ovulariopsis* spp.
- **Hosts: Virtually anything**
- **Favorable environment: High humidity**



## Top Ten Plant Diseases of 2021 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 2021 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

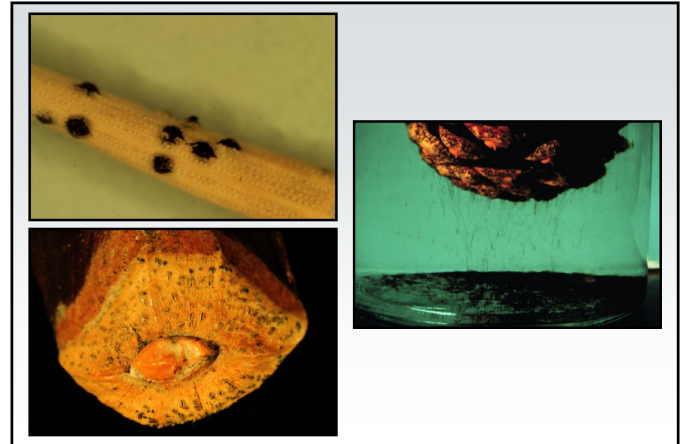
## Top Ten Plant Diseases of 2021 Diplodia (Sphaeropsis) Tip Blight

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

## Top Ten Plant Diseases of 2021 Diplodia (Sphaeropsis) Tip Blight

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





### Top Ten Plant Diseases of 2021 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, disinfectants, bleach)
  - Remove infected cones (?)

### Top Ten Plant Diseases of 2021 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

### Top Ten Plant Diseases of 2021 Rhizosphaera Needle Cast

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

### Top Ten Plant Diseases of 2021 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



### **Top Ten Plant Diseases of 2021** **Rhizosphaera Needle Cast**

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

### **Top Ten Plant Diseases of 2021** **Rhizosphaera Needle Cast**

- **Control**
  - Decontaminate pruning tools  
(70% alcohol, disinfectants, bleach)
  - 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

### **Top Ten Plant Diseases of 2021** **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](mailto:pddc@wisc.edu)  
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