

## Garden Visions 2020

### Top Ten Plant Diseases for 2019

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### Top Ten Plant Diseases for 2019 Boxwood Blight

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



### Top Ten Plant Diseases for 2019 Boxwood Blight

- Control
  - Be cautious about holiday wreaths
  - Grow shrubs other than boxwood
  - Buy from a reputable supplier
  - Buy locally produced boxwood

### Top Ten Plant Diseases for 2019 Boxwood Blight

- Control
  - Grow 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 for 2019 Boxwood Blight

- Control
  - DO NOT replant in an area where boxwood blight has been a problem
  - Avoid symptomatic plants
  - Keep new plants isolated
  - Space plants far apart
  - DO NOT overhead water

### Top Ten Plant Diseases for 2019 Boxwood Blight

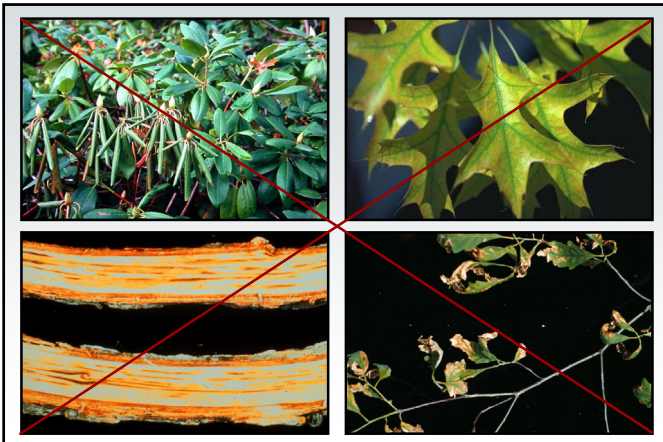
- **Control**
  - Prune out diseased branches
  - Decontaminate (70% alcohol, commercial disinfectants)
  - Remove and destroy infected plants
    - Burn (where allowed)
    - Deep bury (two feet)/Double bag and landfill
    - DO NOT compost

### Top Ten Plant Diseases for 2019 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 the PDDC if you suspect you have seen this disease

### Top Ten Plant Diseases for 2019 Sudden Oak Death (Ramorum Blight)

- **Cause:** *Phytophthora ramorum*
- **Hosts**
  - A wide range of woody and herbaceous ornamentals
  - Rhododendrons/Azaleas
  - Roses ('Double Red Knockout')
  - Viburnums
  - Lilacs
  - Oaks



### Top Ten Plant Diseases for 2019 Sudden Oak Death (Ramorum Blight)

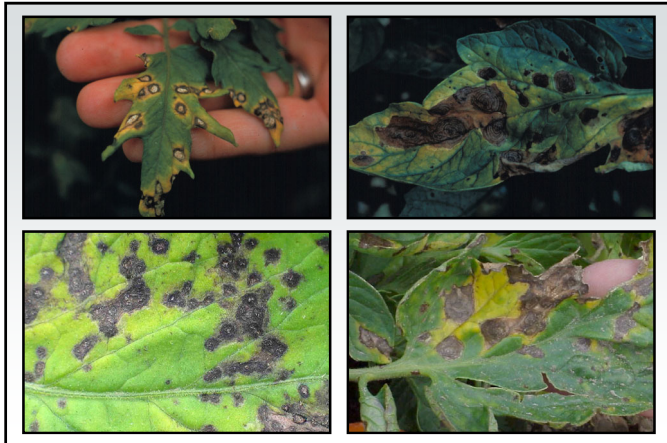
- **Control**
  - Buy woody ornamentals from a reputable source
  - Inspect plants prior to purchase for symptoms of sudden oak death
  - Keep new plants isolated from established plants

### Top Ten Plant Diseases for 2019 Sudden Oak Death (Ramorum Blight)

- **Control**
  - Remove and destroy infected plants
  - Decontaminate (70% alcohol, 10% bleach, commercial disinfectants)
  - Contact the PDDC if you believe you have seen this disease

### Top Ten Plant Diseases for 2019 Tomato Fungal Leaf Blights

- **Causes**
  - *Septoria lycopersici* (Septoria leaf spot)
  - *Alternaria solani* (early blight)
  - *Phytophthora infestans* (late blight)
- **Hosts**
  - Tomato
  - Potato (early blight, late blight)
- **Favorable environment:** Cool, wet weather



### Top Ten Plant Diseases for 2019 Tomato Fungal Leaf Blights

- **Control (early blight, Septoria leaf spot)**
  - Remove and destroy contaminated debris
    - Burn (where allowed)
    - Deep bury
    - Hot compost
  - Move tomatoes to new location

### Top Ten Plant Diseases for 2019 Tomato Fungal Leaf Blights

- **Control (early blight, Septoria leaf spot)**
  - Plant resistant varieties
  - Space plants far apart
  - Mulch around the base of plants
  - DO NOT overmulch

### Top Ten Plant Diseases for 2019 Tomato Fungal Leaf Blights

- Control (early blight, Septoria leaf spot)
  - DO NOT overhead water
  - Thin plants as they grow
  - Use fungicides to prevent infections
    - Chlorothalonil, mancozeb
    - Copper
    - Alternate active ingredients (FRAC codes)
    - Apply at 7-14 days intervals

### Top Ten Plant Diseases for 2019 Tomato Fungal Leaf Blights

- Control (late blight)
  - Remove any infected plants and plant parts
    - Infected tomato/potato plants including fruits and tubers
    - Volunteer tomato and potato plants
    - Weed hosts
  - Destroy any infected plants and plant parts
    - Burn (where allowed)
    - Double bag and landfill

### Top Ten Plant Diseases for 2019 Tomato Fungal Leaf Blights

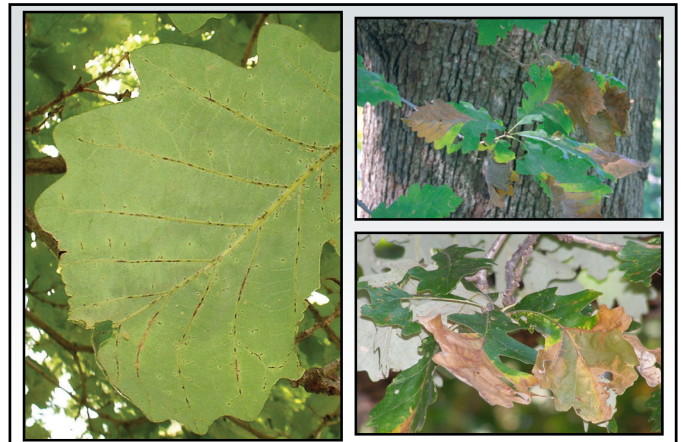
- Control (late blight)
  - DO NOT use last year's potatoes as seed
  - DO use certified seed potatoes
  - Grow resistant tomato varieties
    - "Late Blight Management in Tomato with Resistant Varieties"  
(<https://eorganic.org/node/10822>)

### Top Ten Plant Diseases for 2019 Tomato Fungal Leaf Blights

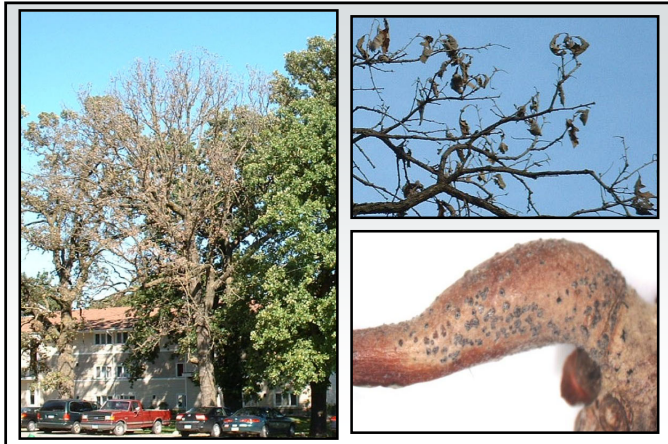
- Control (late blight)
  - Use fungicides to prevent infections
    - Chlorothalonil, mancozeb
    - Copper
    - Alternate active ingredients (FRAC codes)
    - Start applications based on Blitecast  
(<https://wivegdis.plantpath.wisc.edu>)
    - Apply at 7-14 day intervals

### Top Ten Plant Diseases for 2019 Bur Oak Blight

- Cause: *Tubakia iowensis*
- Host: Bur oak
  - *Quercus macrocarpa* var. *oliviformis*
  - *Quercus macrocarpa* var. *macrocarpa*
- Favorable Environment
  - Cool, wet weather
  - Stress?







### Top Ten Plant Diseases for 2019 Bur Oak Blight

- **Control**
  - Reduce stress
    - Water stress
    - Nutrient stress (chlorosis)
  - Diseases/insect pests
    - Oak wilt
    - Armillaria root disease
    - Leaf diseases (anthracnose, Tubakia leaf spot, etc.)
    - Two-lined chestnut borer

### Top Ten Plant Diseases for 2019 Bur Oak Blight

- **Control**
  - Use fungicide injections
    - Propiconazole
    - Prophylactic
    - Late May or early June
    - Every 12-24 months

### Top Ten Plant Diseases for 2019 Winter Injury

- **Causes**
  - Water stress
  - High winds
  - Extreme winter temperatures
  - Cycling winter temperatures
  - Insufficient snow cover
  - Excessive snow
  - Ice

### Top Ten Plant Diseases for 2019 Winter Injury

- **Affected plants**
  - Evergreens
    - Yew
    - Boxwood
    - Spruce (Alberta)
    - Arborvitae

### Top Ten Plant Diseases for 2019 Winter Injury

- **Affected plants**
  - Deciduous woody trees and shrubs
    - Fruit trees
      - Pome fruits (apple, pear)
      - Stone fruits (cherry, plum, peach, apricot)
    - Maples
      - Japanese
      - Korean
    - Redbud



### Top Ten Plant Diseases for 2019 Winter Injury

- **Management**
  - Water trees and shrubs adequately
  - Plant trees and shrubs
    - Properly
    - In protected locations (sensitive plants)
  - Protect sensitive plants
  - Pray for
    - Lots of snow
    - A slow, gradual spring warm up

### Top Ten Plant Diseases for 2019 Phytoplasma Diseases

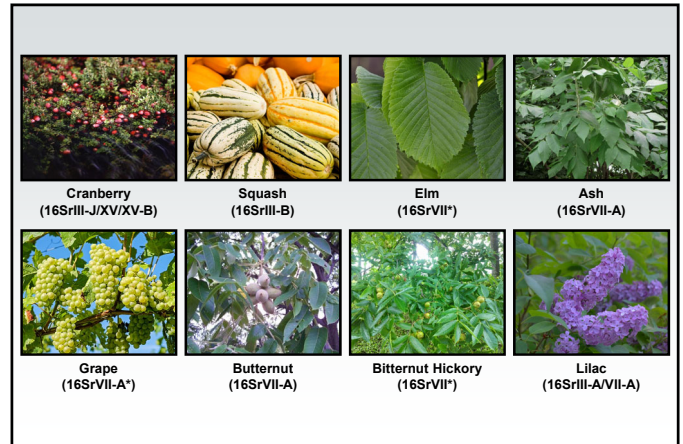
- **Examples**
  - Aster yellows
  - Ash yellows
- **Causes: Miscellaneous phytoplasmas**
- **Hosts**
  - Many herbaceous plants (aster yellows)
  - Ash, lilac (ash yellows)
  - “The more you look, the more you find.”

### Top Ten Plant Diseases for 2019 Phytoplasma Diseases

- **Favorable environment: None**
- **Transmission: Leafhoppers**







### Top Ten Plant Diseases for 2019 Phytoplasma Diseases

- Control
  - Remove infected plants
  - Destroy infected materials
    - Compost
    - Bury
    - Burn (where allowed)
  - Avoid growing susceptible plants
  - Use insecticides for leafhopper control (?)

### Top Ten Plant Diseases for 2019 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 for 2019 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



### Top Ten Plant Diseases for 2019 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 for 2019 Rhizosphaera Needle Cast

- **Control**
  - Decontaminate pruning tools  
(70% alcohol, disinfectants, 10% 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 for 2019 Scab (Apple and Pear)

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



### Top Ten Plant Diseases for 2019 Scab (Apple and Pear)

- **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://pddc.wisc.edu/fact-sheet-listing-all/>)

### Top Ten Plant Diseases for 2019 Scab (Apple and Pear)

- **Control**
  - Remove/destroy diseased leaves
    - Burn (where allowed)
    - Deep bury
    - Hot compost
  - Thin trees to promote air flow



### Top Ten Plant Diseases for 2019 Scab (Apple and Pear)

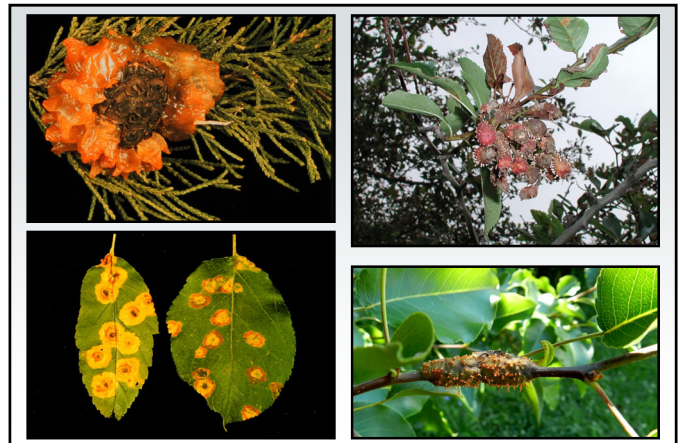
- Control
  - Use fungicides to prevent infections
    - Chlorothalonil, copper, mancozeb, myclobutanil, propiconazole, thiophanate-methyl, sulfur
    - Alternate active ingredients (FRAC codes)
    - Apply from bud break through the end of favorable weather
    - Apply at 7 to 14-day intervals

### Top Ten Plant Diseases for 2019 Gymnosporangium Rusts

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

### Top Ten Plant Diseases for 2019 Gymnosporangium Rusts

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



### Top Ten Plant Diseases for 2019 Gymnosporangium Rusts

- Control
  - Grow only junipers or rosaceous hosts
  - Use resistant cultivars/varieties
    - “Juniper Diseases” (<https://store.extension.iastate.edu/Product/Juniper-Diseases>)
    - “Home Fruit Cultivars for Northern Wisconsin” (<https://learningstore.extension.wisc.edu/>)
    - “Home Fruit Cultivars for Southern Wisconsin” (<https://learningstore.extension.wisc.edu/>)

### Top Ten Plant Diseases for 2019 Gymnosporangium Rusts

- Control
  - Remove galls
  - Decontaminate pruning tools (70% alcohol, disinfectants, 10% bleach)
  - Destroy infected materials
    - Burn (where allowed)
    - Deep bury

### Top Ten Plant Diseases for 2019 Gymnosporangium Rusts

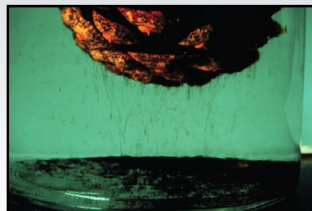
- **Control**
  - Use fungicides to prevent infections (?)
    - Treat rosaceous hosts
    - Chlorothalonil, copper, ferbam, mancozeb, propiconazole, sulfur, and triadimefon
    - Alternate active ingredients (FRAC Codes)
    - Apply when flowers first show color, when half of flowers open, at petal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

### Top Ten Plant Diseases for 2019 Diplodia (Sphaeropsis) Tip Blight

- **Pathogen:** *Diplodia* 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 for 2019 Diplodia (Sphaeropsis) Tip Blight

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



### Top Ten Plant Diseases for 2019 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, 10% bleach)
  - Remove infected cones (?)

**Top Ten Plant Diseases for 2019**  
**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 for 2019**  
**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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