

## Wisconsin Arborist Association

### Dr. Death's Tree/Shrub Disease Predictions for 2022

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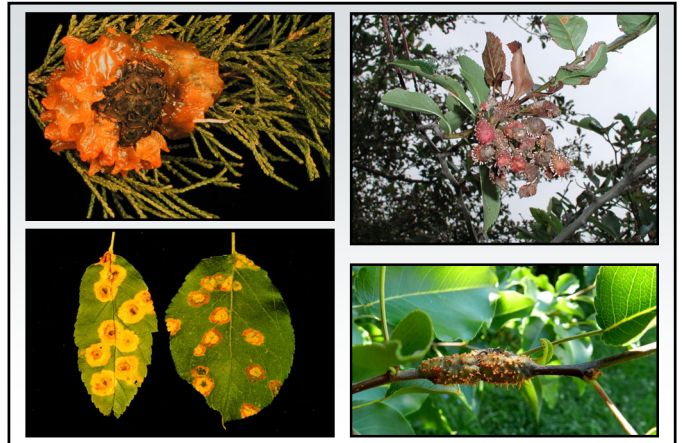


## Dr. Death's Disease Predictions Gymnosporangium Rusts

- Pathogens: *Gymnosporangium* spp.
  - *Gymnosporangium juniperi-virginianae* (Cedar-apple rust)
  - *Gymnosporangium globosum* (Cedar-hawthorn rust)
  - *Gymnosporangium clavipes* (Cedar-quince rust)
  - *Gymnosporangium yamadae* – NEW! (Japanese apple rust)

## Dr. Death's Disease Predictions Gymnosporangium Rusts

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



## Dr. Death's Disease Predictions Gymnosporangium Rusts

- Control
  - Grow only junipers or rosaceous hosts
  - Use resistant cultivars/varieties
    - “Disease and Insect Resistant Ornamental Plants: Juniperus (Junipers)” (<https://ecommons.cornell.edu/handle/1813/56372.2>)
    - “Home Fruit Cultivars for Northern Wisconsin” (<https://learningstore.extension.wisc.edu/>)
    - “Home Fruit Cultivars for Southern Wisconsin” (<https://learningstore.extension.wisc.edu/>)

## Dr. Death's Disease Predictions Gymnosporangium Rusts

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

## Dr. Death's Disease Predictions 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

## Dr. Death's Disease Predictions Boxwood Blight

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



## Dr. Death's Disease Predictions Boxwood Blight

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

## Dr. Death's Disease Predictions Boxwood Blight

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

## Dr. Death's Disease Predictions Boxwood Blight

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

## Dr. Death's Disease Predictions 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

## Dr. Death's Disease Predictions 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

## Dr. Death's Disease Predictions 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

## Dr. Death's Disease Predictions Sudden Oak Death (Ramorum Blight)

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



**Dr. Death's Disease Predictions**  
Sudden Oak Death (Ramorum Blight)

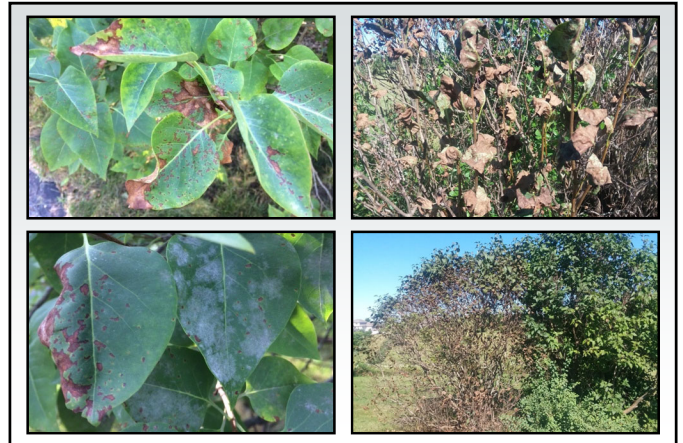
- **Control**
  - Buy woody ornamentals from a reputable source
  - Inspect plants prior to purchase for symptoms of sudden oak death
  - Keep new plants isolated from established plants

**Dr. Death's Disease Predictions**  
Sudden Oak Death (Ramorum Blight)

- **Control**
  - Remove and destroy infected plants
  - Decontaminate (70% alcohol, bleach, commercial disinfectants)

**Dr. Death's Disease Predictions**  
Septoria Leaf Spot

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



**Dr. Death's Disease Predictions**  
Septoria Leaf Spot

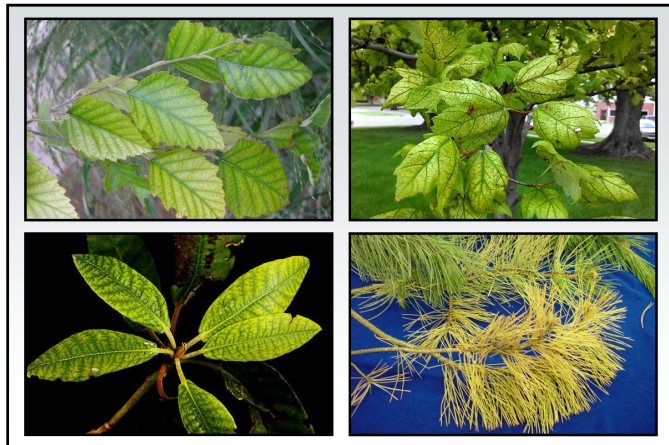
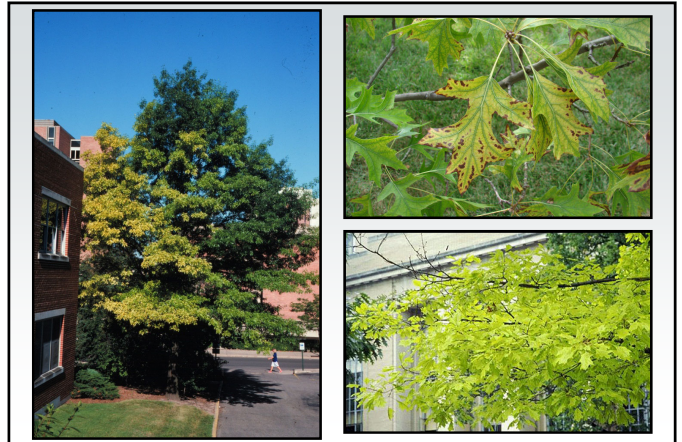
- **Control**
  - Space lilacs to promote good air flow
  - Routinely thin shrubs
  - Decontaminate pruning tools (70% alcohol, disinfectants, bleach)
  - Avoid overhead watering

**Dr. Death's Disease Predictions**  
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

### Dr. Death's Disease Predictions Chlorosis

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



### Dr. Death's Disease Predictions 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

### Dr. Death's Disease Predictions Fire Blight

- Pathogen: *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)



## Dr. Death's Disease Predictions 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

## Dr. Death's Disease Predictions Fire Blight

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

## Dr. Death's Disease Predictions 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)

## Dr. Death's Disease Predictions Powdery Mildews

- Pathogens
  - *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



## Dr. Death's Disease Predictions 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

### Dr. Death's Disease Predictions Powdery Mildews

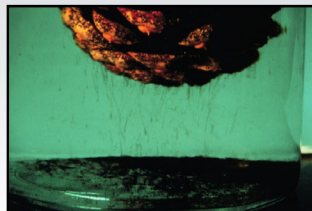
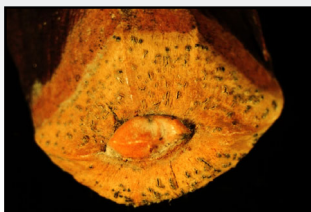
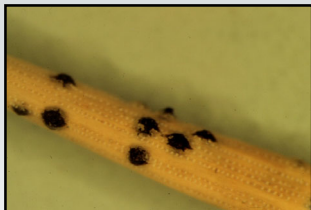
- **Control**
  - Use fungicides to prevent infections
    - Dithiocarbamates, myclobutanil, propiconazole, tebuconazole, thiophanate-methyl
    - Sulfur, neem oil, other plant-based oils
    - Baking soda (1.5 Tbsp/gal) and light weight horticultural oil (3 Tbsp/gal)
    - Alternate active ingredients (FRAC Codes)
    - Apply when humidity >60-70%
    - Apply at 7-14 day intervals

### Dr. Death's Disease Predictions Diplodia Shoot Blight and Canker

- **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

### Dr. Death's Disease Predictions Diplodia Shoot Blight and Canker

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



### Dr. Death's Disease Predictions Diplodia Shoot Blight and Canker

- **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 (?)

### Dr. Death's Disease Predictions Diplodia Shoot Blight and Canker

- 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

### Dr. Death's Disease Predictions Rhizosphaera Needle Cast

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

### Dr. Death's Disease Predictions Rhizosphaera Needle Cast

- Hosts (minor)
  - Balsam fir and other firs
  - Pines: Austrian, mugo, eastern white pine
  - Douglas fir
  - Hemlock
- Favorable environment
  - Wet weather
  - High humidity



### Dr. Death's Disease Predictions Rhizosphaera Needle Cast

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

### Dr. Death's Disease Predictions 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



## Dr. Death's Disease Predictions 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**



## Dr. Death's Disease Predictions 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

## Dr. Death's Disease Predictions 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

## Dr. Death's Disease Predictions 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  
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<https://pddc.wisc.edu>  
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