

Barron County Master Gardeners

Dr. Death's Plant Disease Predictions for 2022

Brian D. Hudelson
Department of Plant Pathology
University of Wisconsin-Madison/Extension



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

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



Dr. Death's Plant 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
 - Reduce stress

Dr. Death's Plant 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 Plant Disease Predictions
Boxwood Blight

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



Dr. Death's Plant 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 Plant 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 Plant 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 Plant 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 Plant 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 Plant Disease Predictions **Boxwood Blight**

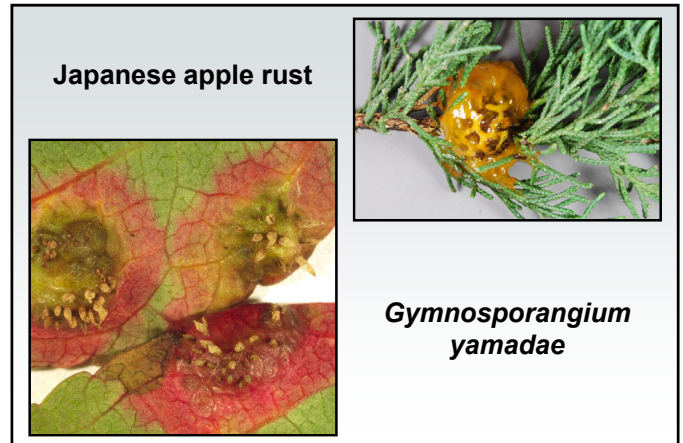
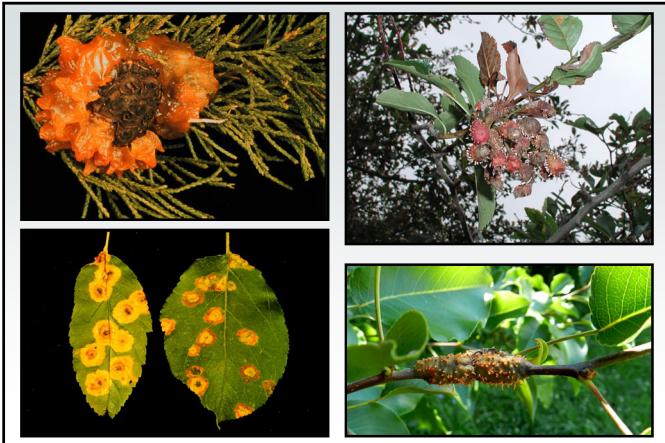
- **Control**
 - Use fungicides to prevent infections
 - Chlorothalonil (alone or with propiconazole or thiophanate-methyl), fludioxonil, metconazole, tebuconazole
 - Alternate active ingredients (FRAC codes)
 - Apply at 7 day intervals
 - Contact the PDDC if you suspect you have seen this disease

Dr. Death's Plant 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 Plant Disease Predictions Gymnosporangium Rusts

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



Dr. Death's Plant Disease Predictions 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/>)

Dr. Death's Plant 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 Plant Disease Predictions Gymnosporangium Rusts

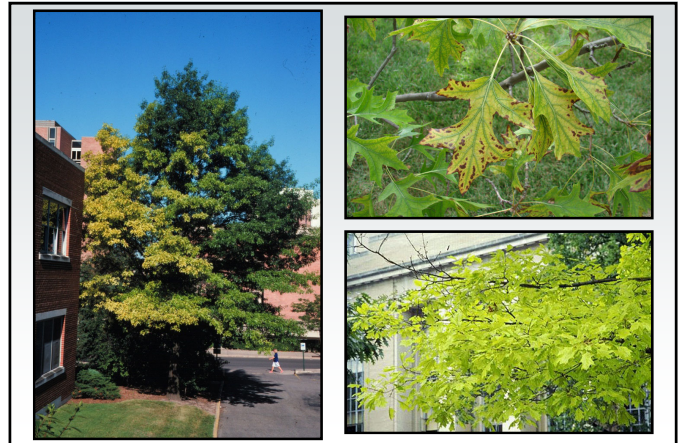
- **Control**
 - Use fungicides to prevent infections (?)
 - Questionable at best
 - Treat rosaceous hosts
 - Chlorothalonil, copper, ferbam, mancozeb, propiconazole, sulfur, and triadimefon
 - Alternate active ingredients (FRAC Codes)
 - Apply when flowers first show color, when half of flowers open,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

Dr. Death's Plant Disease Predictions Gymnosporangium Rusts

- **Control**
 - Report suspect Japanese apple rust to the PDDC

Dr. Death's Plant 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 Plant 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 Plant 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 Plant Disease Predictions 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://hort.extension.wisc.edu/>)
 - Prune diseased branches

Dr. Death's Plant Disease Predictions Fire Blight

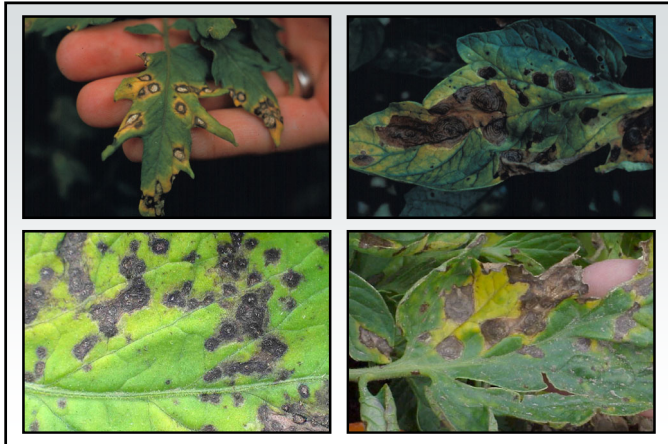
- Control
 - Decontaminate pruning tools (70% alcohol, disinfectants, bleach)
 - Destroy infected materials
 - Burn (where allowed)
 - Deep bury
 - DO NOT over-fertilize with nitrogen

Dr. Death's Plant 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 Plant Disease Predictions Tomato 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



Dr. Death's Plant Disease Predictions
Tomato 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

Dr. Death's Plant Disease Predictions
Tomato Leaf Blights

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

Dr. Death's Plant Disease Predictions
Tomato 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

Dr. Death's Plant Disease Predictions
Tomato 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

Dr. Death's Plant Disease Predictions Tomato 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>)

Dr. Death's Plant Disease Predictions Tomato Leaf Blights

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

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

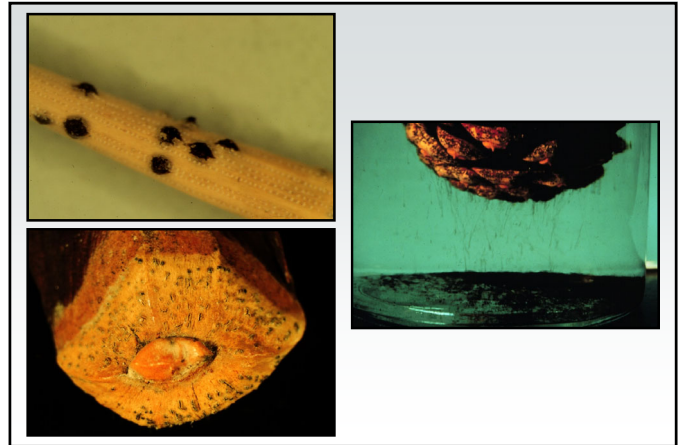
- **Control**
 - Use fungicides to prevent infections
 - Dithiocarbamates, myclobutanil, propiconazole, tebuconazole, thiophanate-methyl
 - Sulfur, neem oil, other plant-based oils
 - Baking soda (1.5 Tbsp/gal) and light weight horticultural oil (3 Tbsp/gal)
 - Alternate active ingredients (FRAC Codes)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

Dr. Death's Plant Disease Predictions
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

Dr. Death's Plant Disease Predictions
Diplodia (Sphaeropsis) Tip Blight

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



Dr. Death's Plant Disease Predictions
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 (?)

Dr. Death's Plant Disease Predictions
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

Dr. Death's Plant Disease Predictions 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)

Dr. Death's Plant Disease Predictions 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



Dr. Death's Plant Disease Predictions 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

Dr. Death's Plant 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 Plant 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
pddc@wisc.edu
<https://pddc.wisc.edu>
Follow on Facebook and Twitter @UWPDDC
Subscribe to the PDDC Listserv: UWPDDCLearn