

Talks for the General Public

Dr. Death's Plant Disease Predictions for 2023

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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

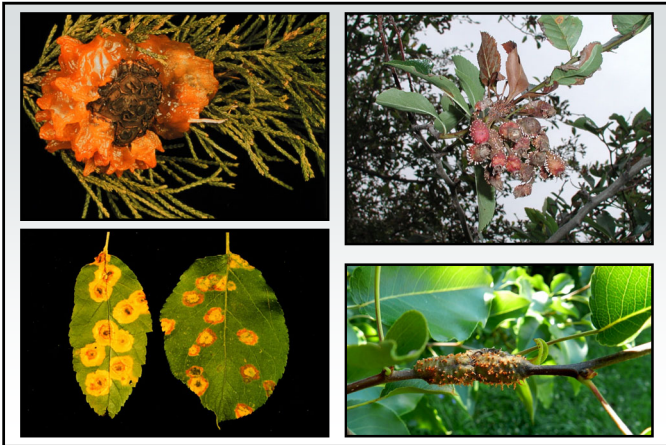
- **Management**
 - Mulch properly
 - Use high quality mulches
 - Use the right amount of mulch
 - Water properly
 - Apply two inches of water per week
 - Water from bud break through summer and into the fall
 - Continue watering for at least three years

Dr. Death's Plant Disease Predictions
Gymnosporangium Rusts

- Pathogens: *Gymnosporangium* spp.
 - *Gymnosporangium juniperi-virginianae* (Cedar-apple rust)
 - *Gymnosporangium globosum* (Cedar-hawthorn rust)
 - *Gymnosporangium clavipes* (Cedar-quince rust)
 - *Gymnosporangium yamadae* – NEW! (Lipstick rust/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” (Available upon request)
 - “Disease and Insect Resistant Ornamental Plants: Juniperus (Junipers)” (<https://ecommons.cornell.edu/handle/1813/56372.2>)

Dr. Death's Plant Disease Predictions
Gymnosporangium Rusts

- Control
 - Use resistant cultivars/varieties
 - “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 (?)
 - 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 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

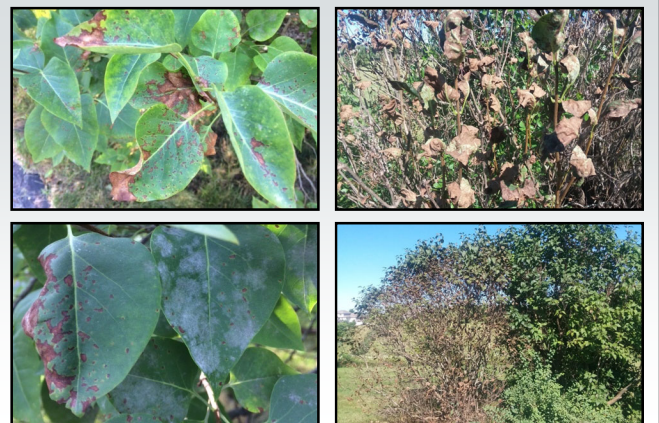
- **Control**
 - Prune out diseased branches
 - Decontaminate (70% alcohol, commercial disinfectants)
 - Remove and destroy infected plants
 - Burn (where allowed)
 - Deep bury (two feet)/Double bag and landfill
 - DO NOT compost

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

Dr. Death's Plant Disease Predictions Septoria Leaf Spot

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



Dr. Death's Plant Disease Predictions
Septoria Leaf Spot

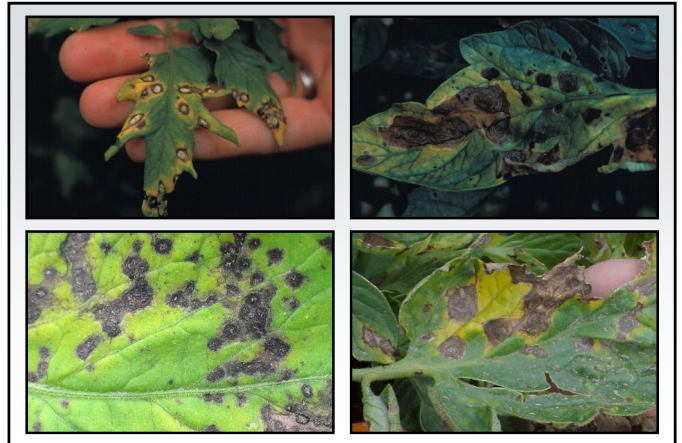
- **Control**
 - Space lilacs to promote good air flow
 - Routinely thin shrubs
 - Decontaminate pruning tools (70% alcohol, disinfectants, bleach)
 - Avoid overhead watering
 - Reduce stress

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
Tomato Leaf Blights

- **Pathogens**
 - *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 Verticillium Wilt

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

Deciduous Tree and Shrub Diseases 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
 - Newer: Vervain ('Quartz White')

Deciduous Tree and Shrub Diseases Verticillium Wilt

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



Deciduous Tree and Shrub Diseases 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

Deciduous Tree and Shrub Diseases Verticillium Wilt

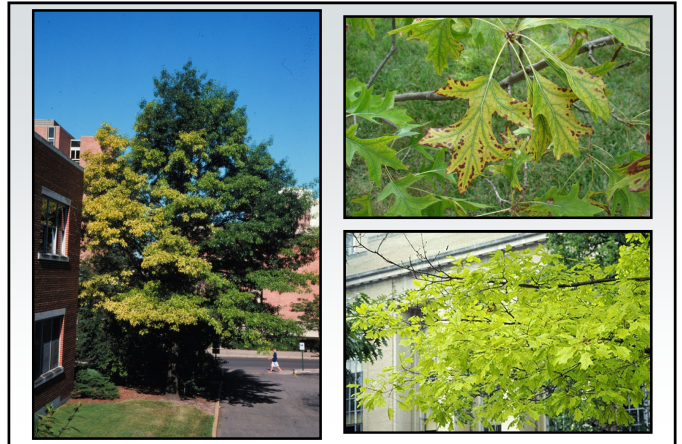
- **Control**
 - Use immune/resistant plants
 - CONIFERS: Pines, spruces, firs, junipers
 - DECIDUOUS TREES/SHRUBS: Beech, birch, ginkgo, hackberry, hawthorn, hickory, honey locust, mountain ash, white oak, bur oak, poplar, serviceberry, sycamore, willow
 - Prevent stress
 - Prune diseased (wilted) areas

Deciduous Tree and Shrub Diseases 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

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 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



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 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

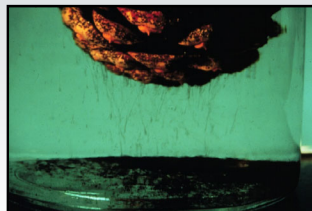
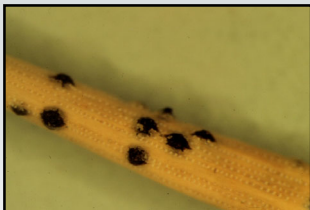
- **Control**
 - Decontaminate pruning tools (70% alcohol, disinfectants, bleach)
 - Use fungicides to prevent infections
 - Copper, chlorothalonil
 - Alternate active ingredients (FRAC Codes)
 - Start applications at bud break
 - Apply at 3-4 week intervals under favorable conditions

Dr. Death's Plant Disease Predictions
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
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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