

Milwaukee Bonsai Society

Diseases of Bonsai Plants

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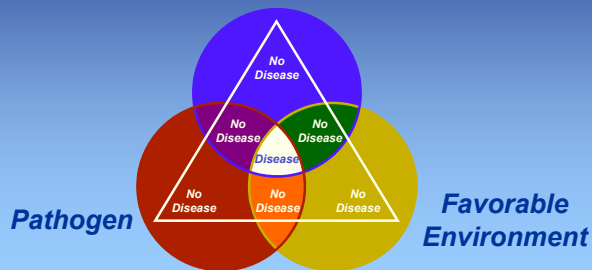


Diseases of Bonsai Plants Introductory Comments

- I am not an expert on bonsai (but I think bonsai is SUPER cool)
- I know a little about plant diseases (I think they are SUPER cool, too)
- I expect to learn as much from you (if not more) than you learn from me
- Bonsai plants seem poor candidates for disease problems

Diseases of Bonsai Plants The Disease Triangle

Susceptible Host



Diseases of Bonsai Plants Drought Stress

- Cause: Insufficient water
- Hosts: Any bonsai plant



Diseases of Bonsai Plants Drought Stress

- Management
 - Use an appropriate growth medium
 - Water adequately

Diseases of Bonsai Plants Root/Crown Rots

- **Pathogens**
 - Pythium spp.
 - Phytophthora spp.
 - Rhizoctonia solani
 - Fusarium spp.
 - Cylindrocarpon spp.
- **Hosts**
 - Any bonsai plant
 - Yew, rhododendron/azalea
- **Favorable environment: Wet, cool soils**



Diseases of Bonsai Plants Root/Crown Rots

- **Control**
 - Use a proper growth medium
 - Adequately drained
 - Pasteurized
 - DO NOT use garden soils
 - Decontaminate tools, containers, work areas
 - 70% alcohol (spray disinfectants)
 - Commercial disinfectants
 - 10% bleach

Diseases of Bonsai Plants Root/Crown Rots

- **Control**
 - DO NOT overwater
 - Use fungicides to prevent infections
 - Contract with a professional pesticide applicator
 - Etridiazole, metalaxyl/mefenoxam, fosetyl-AI, PCNB, thiophanate-methyl, fludioxonil
 - Alternate active ingredients (FRAC codes)
 - Apply as needed

Diseases of Bonsai Plants Powdery Mildews

- **Causes**
 - Erysiphe spp.
 - Uncinula spp.
 - Phyllactinia spp.
 - Blumeria spp.
 - Oidium spp.
 - Microsphaera spp.
 - Sphaerotheca spp.
 - Podosphaera spp.
 - Brasiliomyces spp.
 - Ovulariopsis spp.

Diseases of Bonsai Plants Powdery Mildews

- **Hosts**
 - Virtually any broad-leaved bonsai plant
 - Jade plant, maple
 - Not conifers
- **Favorable environment: High humidity**



Diseases of Bonsai Plants Powdery Mildews

- **Control**
 - Remove/destroy diseased leaves
 - Reduce humidity
 - Thin canopies
 - Increase air flow

Diseases of Bonsai Plants Powdery Mildews

- **Control**
 - Use fungicides to prevent infections
 - Dinocap, dithiocarbamates, myclobutanil, triadimefon, triforine, sulfur or thiophanate-methyl
 - 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

Diseases of Bonsai Plants Leaf Spots and Blights

- **Diseases (Causes)**
 - Anthracnose (*Discula* spp., *Colletotrichum* spp., et al.)
 - Tar spot (*Rhytisma* spp.)
 - Black spot (*Gnomonia ulmea*)
 - Apple scab (*Venturia inaequalis*)
 - Boxwood blight (*Cylindrocladium pseudonaviculatum*)

Diseases of Bonsai Plants Leaf Spots and Blights

- **Hosts**
 - Any bonsai plant
 - Maple, oak (anthracnose)
 - Maple (tar spot)
 - Elm (black spot)
 - Crabapple (apple scab)
- **Favorable environment: Wet, cool weather**



Diseases of Bonsai Plants Leaf Spots and Blights

- **Control (non-boxwood blight)**
 - DO NOT panic
 - Remove/destroy diseased leaves
 - Limit leaf wetness
 - Thin canopies
 - Increase air flow
 - DO NOT overhead water
 - Use resistant varieties where available

Diseases of Bonsai Plants Leaf Spots and Blights

- **Control (non-boxwood blight)**
 - Use fungicides to prevent infections
 - Exact product depends on the disease
 - Chlorothalonil, copper, mancozeb, myclobutanil, propiconazole, thiophanate-methyl, sulfur
 - Alternate active ingredients (FRAC codes)
 - Apply starting at bud break
 - Number and frequency of applications depends on the disease

Diseases of Bonsai Plants Leaf Spots and Blights

- **Control (boxwood blight)**
 - Contact the PDDC for a free diagnosis!
 - Most likely outcome
 - Remove/destroy entire plant
 - Landfill
 - Burn (where allowed)
 - Consult with WI DATCP regarding trace back

Diseases of Bonsai Plants Leaf Spots and Blights

- **Control (boxwood blight)**
 - Less likely outcome
 - Remove/destroy affected plant parts
 - Limit leaf wetness
 - Use fungicides treatments
 - Chlorothalonil, mancozeb, thiophanate-methyl
 - Alternate active ingredients (FRAC codes)
 - Apply every 7 days
 - Decontaminate, decontaminate, decontaminate

Diseases of Bonsai Plants Leaf Spots and Blights

- **Control (boxwood blight)**
 - Buy locally produced boxwood
 - Grow resistant varieties
 (“Susceptibility of Commercial Boxwood Cultivars to Boxwood Blight” – NC State)
 - Avoid symptomatic plants
 - Keep new plants isolated

Diseases of Bonsai Plants Canker Diseases

- **Diseases (Causes)**
 - *Phomopsis* canker (*Phomopsis* spp.)
 - *Diplodia* canker (*Diplodia* spp.)
 - *Nectria* canker (*Nectria* spp.)
 - Fire blight (*Erwinia amylovora*)
 - Bacterial canker
 (*Pseudomonas syringae* pv. *syringae*)
 (*Pseudomonas syringae* pv. *mors-prunorum*)

Diseases of Bonsai Plants Canker Diseases

- **Hosts**
 - Juniper (*Phomopsis canker*)
 - Pine (*Diplodia canker*)
 - Maple (*Nectria canker*, *Phomopsis canker*)
 - Crabapple, cotoneaster (*fire blight*)
 - Cherry (*bacterial canker*)

Diseases of Bonsai Plants Canker Diseases

- **Favorable environment**
 - Wet weather
 - Stress
 - Physical injuries





Diseases of Bonsai Plants Canker Diseases

- **Control**
 - Reduce environmental stresses/injuries
 - Water and fertilize properly
 - Prune properly
 - Prune/destroy diseased branches
 - Decontaminate pruning tools
 - Fungicides may or may not be available
 - Yes: *Phomopsis canker*, *Diplodia canker*, *fire blight*
 - No: *Nectria canker*, *bacterial canker*

Diseases of Bonsai Plants Virus Diseases

- **Diseases (Causes)**
 - *Impatiens necrotic spot (INSV)*
 - *Tomato spotted wilt (TSWV)*
- **Host: Fuchsia**
- **Favorable environment: Numerous thrips**



Diseases of Bonsai Plants Virus Diseases

- **Control**
 - Keep thrips populations under control
 - See “Managing Thrips in Greenhouses” (<https://pddc.wisc.edu/fact-sheet-listing-all/>)
 - Contract with a professional pesticide applicator
 - Live with or discard infected plants

Diseases of Bonsai Plants Virus Diseases

- **Control**
 - Decontaminate tools, containers, work areas
 - 1% Sodium dodecyl sulfate (sodium lauryl sulfate) + 1% Alconox® (2½ Tbsp + 2¾ Tbsp/gal)
 - 20% low fat dry milk (Carnation®) + 0.1% polysorbate 20 (9½ cups + ¼ tsp/gal)
 - Trisodium phosphate (14 dry oz/gal)
 - Alcohol dip followed by flaming

Diseases of Bonsai Plants Chlorosis

- **Cause:** Micronutrient (Fe or Mn) deficiency
- **Affected plants**
 - Oak
 - Birch
 - Rhododendron/azalea
 - Evergreens



Diseases of Bonsai Plants Chlorosis

- **Management**
 - Monitor soil/water pH and soil nutrients
 - UW Soil and Forage Analysis Lab
 - <https://uwlab.soils.wisc.edu/>
 - Decrease pH
 - Apply sulfur or aluminum sulfate
 - Use acidified water
 - Add chelated Fe and/or Mn as needed
 - Make sure trees are adequately watered

***Diseases of Bonsai Plants
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
<http://pddc.wisc.edu>***

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