

Winnebago County PHA Training

Diseases of Herbaceous Ornamentals

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Diseases of Herbaceous Ornamentals Powdery Mildews

- **Cause**
 - *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



Diseases of Herbaceous Ornamentals 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

Diseases of Herbaceous Ornamentals 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

Diseases of Herbaceous Ornamentals *Impatiens Downy Mildew*

- **Cause:** *Plasmopara obducens*
- **Hosts**
 - Standard garden impatiens (*I. walleriana*)
 - Balsam impatiens (*I. balsamina*)
 - Jewelweed (*I. pallida*, *I. capensis*)
 - New Guinea impatiens (*I. hawkeri*)
(resistant/tolerant)



Diseases of Herbaceous Ornamentals *Impatiens Downy Mildew*

- **Control**
 - DO NOT grow impatiens in the same location every year
 - Grow tolerant/resistant/immune plants
 - Start with clean transplants and seed
 - Keep materials from different sources physically separated
 - DO NOT overcrowd plants
 - DO NOT overhead water

Diseases of Herbaceous Ornamentals *Impatiens Downy Mildew*

- **Control**
 - Watch carefully for the disease
 - Bag and discard affected plants
 - Symptomatic plants
 - Asymptomatic surrounding plants
 - Disinfect contaminated materials
 - 70% alcohol
 - Commercial disinfectants
 - 10% bleach

Diseases of Herbaceous Ornamentals *Impatiens Downy Mildew*

- **Control**
 - Use fungicides to prevent infections
 - Mancozeb
 - Apply at 7 day intervals

Diseases of Herbaceous Ornamentals *Daylily Leaf Streak*

- **Cause:** *Aureobasidium microstictum*
- **Host:** Daylily



Diseases of Herbaceous Ornamentals Daylily Leaf Streak

- **Control**
 - Promote rapid drying of leaves
 - Divide large clumps
 - Plant less densely
 - DO NOT overhead water
 - Remove diseased leaves and plant debris
 - Burn (where allowed)
 - Deep bury
 - Hot compost

Diseases of Herbaceous Ornamentals Daylily Leaf Streak

- **Control**
 - Use varieties that are less susceptible
 - 'Betty Bennet', 'Edna Spalding', 'Ella Pettigrew', 'Globe Trotter', 'Nancy Hicks', 'Pink Superior', 'Ron Rousseau', 'Sudie', 'Tropical Tones', 'Upper Room', 'Winsome Lady'
 - Use fungicides to prevent infections
 - Chlorothalonil, mancozeb, thiophanate-methyl
 - Alternate active ingredients (FRAC Codes)
 - Apply at 7-14 day intervals

Diseases of Herbaceous Ornamentals Botrytis Blight/Gray Mold

- **Pathogen:** Botrytis cinerea
- **Hosts**
 - Virtually any herbaceous plant
 - Flowering plants
 - Geranium
 - Peony
 - Dahlia
- **Favorable environment:** Wet weather



Diseases of Herbaceous Ornamentals Botrytis Blight/Gray Mold

- **Control**
 - Remove infested plant debris/infect plant parts
 - Burn (where allowed)
 - Deep bury
 - Hot compost
 - Remove senescing plant parts
 - Promote rapid drying
 - Plant less densely
 - Thin existing plant stands

Diseases of Herbaceous Ornamentals **Botrytis Blight/Gray Mold**

- **Control**
 - DO NOT overhead water
 - DO NOT overwater
 - Use fungicides to prevent infections
 - Chlorothalonil, copper-containing fungicides, fludioxonil, mancozeb, thiophanate-methyl
 - Alternate active ingredients (FRAC Codes)
 - Apply during periods of high moisture
 - Apply at 7-14 day intervals

Diseases of Herbaceous Ornamentals **Aster Yellows**

- **Pathogen:** Aster yellows phytoplasma
- **Hosts**
 - Many plants in the Asteraceae (aster family)
 - Many other plants in many other plant families
- **Favorable environment:** None
- **Vector:** Aster leafhopper



Diseases of Herbaceous Ornamentals **Aster Yellows**

- **Control**
 - Remove diseased plant material and debris
 - Hot compost
 - Bury
 - Burn (where allowed)
 - Control leafhopper vector (?)

Diseases of Herbaceous Ornamentals **Viral Diseases**

- **Causes**
 - Many and varied
 - Tobacco mosaic virus (TMV)
 - Cucumber mosaic virus (CMV)
 - Impatiens necrotic spot virus (INSV)
 - Tomato spotted wilt virus (TSWV)
 - Hosta virus X (HVX)
 - Tobacco rattle virus (TRV)

Diseases of Herbaceous Ornamentals **Viral Diseases**

- **Hosts:** Anything and everything
- **Favorable environment:** None
- **Transmission**
 - Touch (TMV)
 - Tools (HVX)
 - Insects [aphids (CMV), thrips (INSV, TSWV)]
 - Nematodes (TRV)
 - Grafting/Seed



Diseases of Herbaceous Ornamentals Viral Diseases

- **Control**
 - Buy plants from reputable sources
 - Inspect plants for viral symptoms
 - Test plants for plant viruses
 - Keep new and established plants separated
 - DO NOT smoke around plants
 - Wash hands routinely with soap and water
 - Keep weeds under control
 - Keep insects under control

Diseases of Herbaceous Ornamentals Viral Diseases

- **Control**
 - Remove diseased plants, plant debris, weeds
 - Burn (where allowed, but not TMV)
 - Deep bury (landfill for TMV)
 - Hot compost
 - DO NOT use chemical controls on plants
 - DO NOT attempt nematode control (TRV)
 - Use insecticides for insect control where appropriate

Diseases of Herbaceous Ornamentals Viral Diseases

- **Control**
 - Disinfest contaminated materials
 - 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 Herbaceous Ornamentals Foliar Nematode

- **Cause:** Aphelenchoides spp.
- **Hosts**
 - Many types of herbaceous plants
 - Landscape plants
 - Hosta, begonia, coral bells, miterwort
 - Houseplants
 - African violets, ferns, chrysanthemum
- **Favorable environment:** Wet weather



Diseases of Herbaceous Ornamentals *Foliar Nematode*

- **Control**
 - Inspect plants prior to purchase for symptoms
 - Avoid overhead irrigation
 - Remove symptomatic plants and infested plant debris
 - Burn (where allowed)
 - Deep bury (landfill)
 - Hot compost

Diseases of Herbaceous Ornamentals *Foliar Nematode*

- **Control**
 - Disinfest contaminated materials
 - 70% alcohol
 - Commercial disinfectants
 - 10% bleach
 - Use hot water treatments (10 minutes at 125°F)
 - **DO NOT** use nematicides

Diseases of Herbaceous Ornamentals *Southern Blight*

- **Pathogen:** *Sclerotium rolfsii*
- **Hosts**
 - Many herbaceous annuals and perennials
 - May vegetables
 - Some woody ornamentals
- **Favorable environment**
 - Warm soil temperatures
 - Wet soils



Diseases of Herbaceous Ornamentals *Southern Blight*

- **Control**
 - **DO NOT** buy infected/infested plants
 - Avoid cocoa mulch (?)
 - Remove infected plants, mulch and soil
 - Double bag
 - Landfill
 - Disinfest contaminated materials
 - 70% alcohol
 - Commercial disinfectants
 - 10% bleach

Diseases of Herbaceous Ornamentals *Southern Blight*

- **Control**
 - Amend soil with organic matter (?)
 - Use fungicides for control
 - Contract with a professional pesticide applicator
 - Azoxystrobin, flutolanil, flutolanil + thiophanate-methyl, PCNB, tebuconazole, triadimefon
 - Alternate active ingredients (FRAC codes)
 - Apply 14 – 28 day intervals
 - Pray for a really, really, REALLY cold winter

Diseases of Herbaceous Ornamentals Root/Crown Rots

- **Pathogens**
 - Pythium spp.
 - Rhizoctonia solani
 - Cylindrocarpon spp.
 - Phytophthora spp.
 - Fusarium spp.
 - Thielaviopsis spp.
- **Hosts: Any herbaceous plant**
- **Favorable environment**
 - Cool soil temperatures
 - Wet soils



Diseases of Herbaceous Ornamentals Root/Crown Rots

- **Control**
 - Moderate soil moisture
 - Grow ornamentals in well-drained sites
 - Use a potting soil with adequate drainage
 - Improve drainage in poorly drained yard soils
 - Add organic matter to improve drainage
 - Use raised beds
 - DO NOT overwater
 - DO NOT overmulch

Diseases of Herbaceous Ornamentals Root/Crown Rots

- **Control**
 - Pretest soils/mulches/composts
 - Use a soil-less potting mix or pasteurized potting mixes for containerized plants
 - DO NOT move contaminated soil or plants
 - Disinfect contaminated materials
 - 70% alcohol
 - Commercial disinfectants
 - 10% bleach

Diseases of Herbaceous Ornamentals Root/Crown Rots

- **Control**
 - 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)
 - Use granular formulations if possible
 - Use during periods of wet weather

Diseases of Herbaceous Ornamentals Root/Crown Rots

- **Control**
 - Use biopesticides to prevent infections
 - Trichoderma, Gliocladium
 - Use for potted plants
 - Exercise caution when combining with chemical fungicides

***Diseases of Herbaceous Ornamentals
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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