

2017 Garden Expo

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 everything



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%
 - 7-14 day application interval

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*

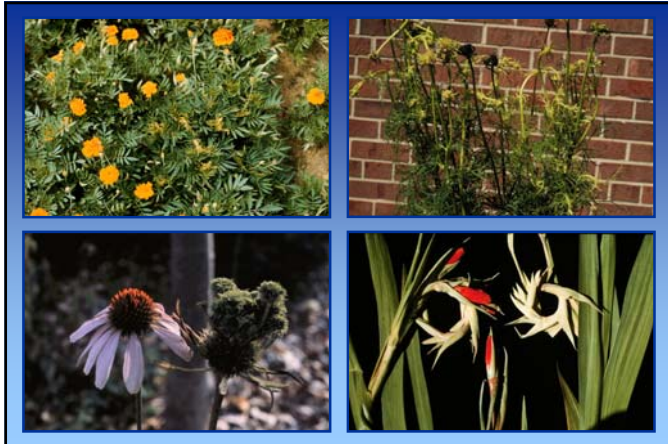
- Control
 - Watch carefully for the disease
 - Bag and discard affected plants
 - Symptomatic plants
 - Asymptomatic surrounding plants
 - Disinfect contaminated materials
 - 10% bleach
 - 70% alcohol
 - Commercial disinfectants

Diseases of Herbaceous Ornamentals *Impatiens Downy Mildew*

- Control
 - Use fungicides to prevent infections
 - Mancozeb
 - Apply at 7 day application 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
- Vector: Aster leafhopper



Diseases of Herbaceous Ornamentals Aster Yellows

- **Control**
 - Remove infected plants
 - Control leafhopper vector (?)

Diseases of Herbaceous Ornamentals Black Spot

- **Cause:** Marssonina rosae
- **Host:** Rose



Diseases of Herbaceous Ornamentals Black Spot

- **Control**
 - Plant resistant rose varieties
 - Promote rapid drying of leaves and canes
 - DO NOT overcrowd plants
 - Prune to thin established plants
 - DO NOT overhead water
 - DO NOT overwater

Diseases of Herbaceous Ornamentals Black Spot

- **Control**
 - Remove and destroy infested leaf debris and infected canes
 - Burn (where allowed)
 - Deep bury
 - Hot compost

Diseases of Herbaceous Ornamentals Black Spot

- **Control**
 - Use fungicides to prevent infections
 - Chlorothalonil, copper-containing fungicides, mancozeb, maneb, myclobutanil, propiconazole, thiophanate-methyl
 - Neem oil
 - Baking soda (1.5 Tbsp/gal) and light weight horticultural oil (3 Tbsp/gal)
 - Alternate active ingredients (FRAC Codes)
 - 7-14 day application interval

Diseases of Herbaceous Ornamentals Leaf Streak

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



Diseases of Herbaceous Ornamentals Leaf Streak

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

Diseases of Herbaceous Ornamentals 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)
 - 7-14 day application interval

Diseases of Herbaceous Ornamentals *Hosta Virus X*

- **Cause:** *Hosta virus X virus (HVX)*
- **Host:** *Hosta*
 - ‘Gold Edger’, ‘Gold Standard’, ‘Golden Tiara’, ‘Striptease’, ‘Sum and Substance’
- **Transmission:** **Mechanical**
 - **Tools**
 - Shovels
 - String edgers
 - **Touch**



Diseases of Herbaceous Ornamentals *Hosta Virus X*

- **Control**
 - Buy hostas from reputable sources
 - Inspect hostas prior to purchase for symptoms of HVX
 - Request that hostas be tested for HVX prior to purchase
 - Keep new hostas isolated from established hostas

Diseases of Herbaceous Ornamentals *Hosta Virus X*

- **Control**
 - Remove and destroy infected plants and infested plant debris
 - Disinfest contaminated materials
 - 1% Sodium dodecyl sulfate (sodium lauryl sulfate) + 1% Alconox® (2½ Tbsp + 2¼ Tbsp/gal)
 - 20% low fat dry milk (Carnation®) + 0.1% polysorbate 20 (9¼ cups + ¾ tsp/gal)
 - Trisodium phosphate (14 dry oz/gal)
 - Alcohol dip followed by flaming

Diseases of Herbaceous Ornamentals *Tobacco Rattle*

- **Cause:** *Tobacco Rattle Virus*
- **Hosts**
 - **Ornamentals**
 - Astilbe, bleeding heart, columbine, coral bells, daffodils, epimedium, gladiolus, hyacinth, marigold, peony, tulip, vinca
 - **Vegetables**
 - Beans, beet, pepper, potato, spinach

Diseases of Herbaceous Ornamentals *Tobacco Rattle*

- **Transmission**
 - Stubby-root nematodes
 - *Trichodorus* spp.
 - *Paratrichodorus* spp.
 - Mechanical inoculation
 - Grafting
 - Seed



Diseases of Herbaceous Ornamentals Tobacco Rattle

- **Control**
 - **DO NOT** buy symptomatic plants
 - **Grow non-susceptible plants**
 - Annual phlox, carnation, devil's trumpet (downy thorn-apple), sweet William, zinnia, zombie cucumber
 - **Remove and destroy infected plants**
 - Burn (where allowed)
 - Deep bury
 - Hot compost

Diseases of Herbaceous Ornamentals Tobacco Rattle

- **Control**
 - **Disinfect contaminated materials**
 - 1% Sodium dodecyl sulfate (sodium lauryl sulfate) + 1% Alconox® (2½ Tbsp + 2¼ 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
 - **DO NOT attempt to control stubby-root nematodes**

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



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
 - 10% bleach
 - 70% alcohol
 - Commercial disinfectants
 - Hot water treatments (10 minutes at 125°F)

Diseases of Herbaceous Ornamentals Southern Blight

- **Pathogen:** Sclerotium rolfsii
- **Hosts**
 - Many herbaceous annuals and perennials
 - Hosta
 - Bedding plants
 - Some woody ornamentals



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
 - 10% bleach
 - 70% alcohol
 - Commercial disinfectants

Diseases of Herbaceous Ornamentals Southern Blight

- **Control**
 - Amend soil with organic matter (?)
 - Use fungicides for control
 - Azoxystrobin, flutolanil, flutolanil + thiophanate-methyl, PCNB, tebuconazole, triadimefon
 - 14 – 28 day intervals
 - Pray for a really, really, REALLY cold winter

Diseases of Herbaceous Ornamentals Root/Crown Rots

- **Pathogens**
 - Pythium spp.
 - Phytophthora spp.
 - Rhizoctonia solani
 - Fusarium spp.
 - Cylindrocarpum spp.
 - Thielaviopsis spp.
- **Hosts:** Anything and everything



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
 - 10% bleach
 - 70% alcohol
 - Commercial disinfectants

Diseases of Herbaceous Ornamentals Root/Crown Rots

- **Control**
 - Use fungicides to prevent infections
 - 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
 - Use biopesticides to prevent infections
 - Trichoderma, Gliocladium
 - Use in pot production

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@plantpath.wisc.edu
<http://pddc.wisc.edu>
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