

2023 PDDC Plant Disease Talks

Diseases of Herbaceous Ornamentals

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Diseases of Herbaceous Ornamentals 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



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
Daylily Leaf Streak

- Pathogen: *Aureobasidium microstictum*
- Host: Daylily
- Favorable environment: Wet weather



Diseases of Herbaceous Ornamentals
Daylily Leaf Streak

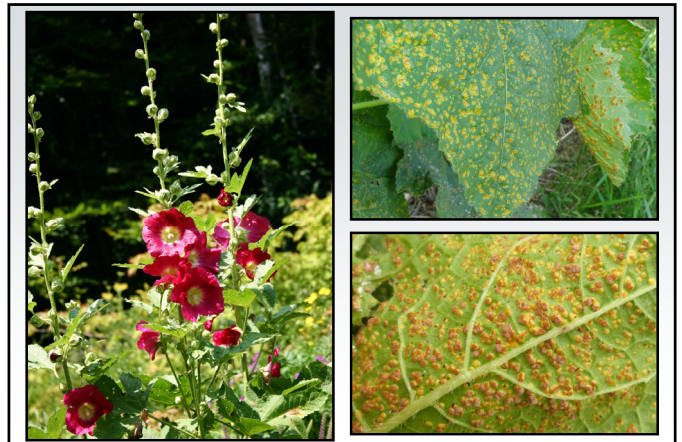
- Control
 - Promote rapid drying of leaves
 - Divide large clumps
 - Plant less densely
 - DO NOT overhead water
 - Remove diseased leaves and plant debris
 - Burn (where allowed)
 - Deep bury
 - Hot compost

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
Hollyhock Rust

- Pathogen: *Puccinia malvacearum*
- Hosts
 - Hollyhock
 - Other plants in the mallow family
- Favorable environment
 - Wet weather
 - Cool to moderate temperatures



Diseases of Herbaceous Ornamentals Hollyhock Rust

- **Control**
 - Buy rust-free hollyhock plants
 - Grow rust resistant hollyhock varieties
 - Remove weedy mallow species
 - Promote rapid drying of leaves
 - Plant less densely
 - Thin existing plant stands

Diseases of Herbaceous Ornamentals Hollyhock Rust

- **Control**
 - DO NOT overhead water
 - DO NOT overwater
 - Remove diseased leaves and plant debris
 - Burn (where allowed)
 - Deep bury
 - Hot compost

Diseases of Herbaceous Ornamentals Hollyhock Rust

- **Control**
 - Use fungicides to prevent infections
 - Chlorothalonil, mancozeb, myclobutanil, tebuconazole, triticonazole
 - Alternate active ingredients (FRAC Codes)
 - Apply during periods of high moisture (particularly early in the growing season)
 - 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 aging 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, 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 plants
 - Hot compost
 - Bury
 - Burn (where allowed)
 - Control leafhopper vector (?)

Diseases of Herbaceous Ornamentals Hosta Virus X

- **Pathogen:** *Hosta virus X* (HVX)
- **Host:** Hosta
 - ‘Gold Edger’ – ‘Striptease’
 - ‘Gold Standard’ – ‘Sum and Substance’
 - ‘Golden Tiara’
- **Favorable environment:** None

Diseases of Herbaceous Ornamentals Hosta Virus X

- **Transmission:** Mechanical
 - Shovels
 - Knives
 - String edgers
 - Lawnmowers



Diseases of Herbaceous Ornamentals Hosta Virus X

- **Control**
 - Buy hostas from a reputable source
 - Inspect hostas for symptoms
 - Test hostas prior to purchase
 - Keep new and established hostas separated
 - Remove diseased plants and plant debris
 - Burn (where allowed)
 - Deep bury
 - Hot compost

Diseases of Herbaceous Ornamentals Hosta Virus X

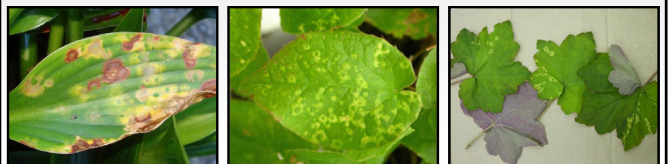
- **Control**
 - Disinfest contaminated materials
 - 1% Sodium dodecyl sulfate (sodium lauryl sulfate) + 1% Alconox® (2½ Tbsp + 2¼ Tbsp/gal)
 - Trisodium phosphate (14 dry oz/gal)
 - 20% low fat dry milk (Carnation®) + 0.1% polysorbate 20 (9½ cups + ¼ tsp/gal)
 - Alcohol dip followed by flaming
 - DO NOT use chemical controls on plants

Diseases of Herbaceous Ornamentals Tobacco Rattle

- **Pathogen:** *Tobacco rattle virus* (TRV)
- **Hosts**
 - **Ornamentals**
 - Astilbe, bleeding heart, columbine, coral bells, daffodils, epimedium, gladiolus, hyacinth, marigold, peony, tulip, vinca
 - **Vegetables**
 - Beans, beet, pepper, potato, spinach
- **Favorable environment:** None

Diseases of Herbaceous Ornamentals Tobacco Rattle

- **Transmission**
 - Stubby-root nematodes
 - *Trichodorus* spp.
 - *Paratrichodorus* spp.
 - Mechanical
 - 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**
 - Disinfest contaminated materials
 - 1% Sodium dodecyl sulfate (sodium lauryl sulfate) + 1% Alconox® (2½ Tbsp + 2¼ Tbsp/gal)
 - Trisodium phosphate (14 dry oz/gal)
 - 20% low fat dry milk (Carnation®) + 0.1% polysorbate 20 (9½ cups + ¼ tsp/gal)
 - Alcohol dip followed by flaming

Diseases of Herbaceous Ornamentals Tobacco Rattle

- **Control**
 - DO NOT use chemical controls on plants
 - DO NOT attempt to control stubby-root nematodes

Diseases of Herbaceous Ornamentals Foliar Nematode

- **Pathogen:** *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

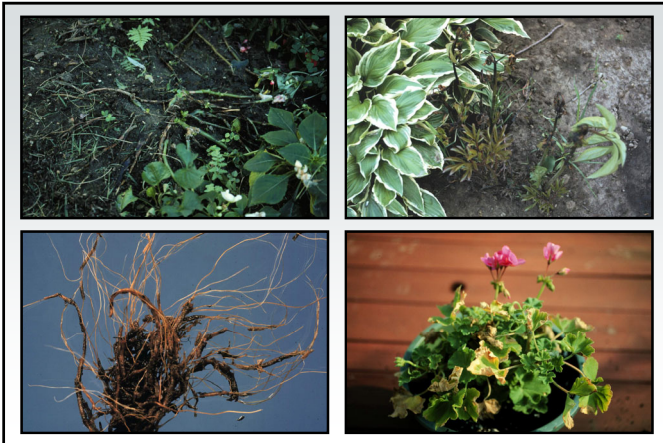
- **Control**
 - Inspect plants prior to purchase
 - Avoid overhead watering
 - Remove symptomatic plants and plant debris
 - Burn (where allowed)
 - Deep bury (landfill)
 - Hot compost

Diseases of Herbaceous Ornamentals Foliar Nematode

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

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, wet soils



Diseases of Herbaceous Ornamentals Root/Crown Rots

- **Control**
 - Moderate soil moisture
 - Grow plants in well-drained sites
 - Use a potting mix with adequate drainage
 - Improve drainage in poorly drained 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 a pasteurized potting mix for containerized plants
 - DO NOT move contaminated soil or plants
 - Disinfest contaminated materials (70% alcohol, disinfectants, 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 Southern Blight

- Pathogen: *Sclerotium rolfsii*
- Hosts
 - Many herbaceous annuals and perennials
 - Hosta
 - Bedding plants
 - Some woody ornamentals
- Favorable environment: Warm, wet weather



Diseases of Herbaceous Ornamentals Southern Blight

- Control
 - DO NOT buy infected/infested plants
 - Avoid cocoa mulch (?)
 - Remove infected plants, mulch and soil
 - Double bag and landfill
 - Disinfest contaminated materials (70% alcohol, disinfectants, 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 at 14 – 28 day intervals
 - Pray for a really, really, REALLY cold winter

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
 https://pddc.wisc.edu
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