

2008  
Specialized Master Gardener Training

Ten Diseases of Herbaceous Plants

Brian D. Hudelson  
Department of Plant Pathology  
University of Wisconsin-Madison/Extension

Ten Diseases of Herbaceous Plants  
Damping-Off/Seedling Blights

- Pathogens:
  - *Pythium* spp.
  - *Rhizoctonia solani*
  - *Fusarium* spp.
- Hosts: Seedlings of virtually anything

Ten Diseases of Herbaceous Plants  
Damping-Off/Seedling Blights

- Control:
  - Use a pasteurized soil mixture
  - Use decontaminated pots, working surfaces and tools
  - Moderate soil moisture
    - Use a soil with adequate drainage
    - Don't overwater

Ten Diseases of Herbaceous Plants  
Damping-Off/Seedling Blights

- Control:
  - Germinate seeds at higher temperatures
  - Use fungicides to protect seedlings
    - Etridiazole, metalaxyl, mefenoxam, captan
    - Applied as a seed treatment or drench

Ten Diseases of Herbaceous Plants  
Root/Crown Rots

- Causes: *Pythium* spp., *Phytophthora* spp.,  
*Rhizoctonia solani*, *Fusarium* spp.,  
*Cylindrocarpum* spp., *Thielviopsis* spp.
- Hosts: Anything and everything

Ten Diseases of Herbaceous Plants  
Root/Crown Rots

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

## Ten Diseases of Herbaceous Plants Root/Crown Rots

- Control:
  - DO NOT move contaminated soil or plants to non-infested areas
  - Decontaminate infested tools, pots, work areas
  - Pretest soils/mulches/composts for the presence of root rot fungi
  - Use a soil-less potting mix for containerized plants

## Ten Diseases of Herbaceous Plants Root/Crown Rots

- Control:
  - Decontaminate recycled water
    - Filtration
    - Irradiation
    - Chemical treatment

## Ten Diseases of Herbaceous Plants Root/Crown Rots

- Control:
  - Use fungicides to prevent infections
    - Etridiazole, metalaxyl, mefenoxam, fosetyl-AI, PCNB, thiophanate-methyl, fludioxonil
    - Use granular formulations if possible
    - Use during periods of wet weather
  - Use biopesticides to prevent infections
    - *Trichoderma*, *Gliocladium*
    - Use in pot production

## Ten Diseases of Herbaceous Plants Southern Blight

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

## Ten Diseases of Herbaceous Plants Southern Blight

- Control:
  - Inspect plants prior to purchase and avoid infected plants
  - Avoid cocoa mulch (????)
  - Remove infected plants
  - Use fungicides for control
    - triadimefon
    - 14 – 28 day intervals
  - Pray for a cold winter

## Ten Diseases of Herbaceous Plants Powdery Mildews

- Cause:
  - *Erysiphe* spp.    – *Microspora* spp.    – *Oidium* sp.
  - *Uncinula* spp.    – *Sphaerotheca* spp.    – *Ovulariopsis* sp.
  - *Phyllactinia* spp.    – *Podosphaera* spp.
  - *Blumeria* spp.    – *Brasiliomyces* spp.
- Hosts: Virtually everything

## Ten Diseases of Herbaceous Plants Powdery Mildews

- Control:
  - Remove diseased plant material and debris
  - Reduce humidity
    - Plant less densely
    - Thin existing stands
  - Use resistant cultivars/varieties

## Ten Diseases of Herbaceous Plants Powdery Mildews

- Control:
  - Use fungicides to prevent infections
    - Dinocap, dithiocarbamates, myclobutanil, triadimefon, triforine, sulfur or thiophanate-methyl
    - Baking soda (1.5 T/gal) and horticultural oil (3 T/gal)
    - Apply when humidity >60-70%
    - 7-14 day application interval

## Ten Diseases of Herbaceous Plants Botrytis Blight/Gray Mold

- Pathogen: *Botrytis cinerea*
- Hosts:
  - Virtually everything (particularly flower parts)
  - Hit list: roses, peonies, geranium

## Ten Diseases of Herbaceous Plants Botrytis Blight/Gray Mold

- Control:
  - Remove and destroy diseased plant material
  - Remove senescing plant parts
  - Plant less densely
  - Thin existing plant stands
  - DO NOT overhead watering
  - DO NOT overwater

## Ten Diseases of Herbaceous Plants Botrytis Blight/Gray Mold

- Control:
  - Use fungicides to prevent infections
    - Chlorothalonil, copper-containing fungicides, fludioxonil, iprodione, mancozeb, maneb, thiophanate-methyl, triflumizole
    - 7-14 day application interval
    - Apply during periods of high moisture

## Ten Diseases of Herbaceous Plants Aster Yellows

- Pathogen: Aster yellows phytoplasma
- Hosts:
  - Many plants in the Asteraceae
  - Many other plants in many other plant families
- Transmission: Aster leafhopper

## Ten Diseases of Herbaceous Plants Aster Yellows

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

## Ten Diseases of Herbaceous Plants Foliar Nematodes

- Cause: *Aphelenchoides* spp.
- Hosts:
  - Many different plants
  - Houseplants: African violets, ferns, begonia chrysanthemum
  - Landscape plants: *Hosta*

## Ten Diseases of Herbaceous Plants Foliar Nematodes

- Control:
  - Start with clean propagation materials
  - Follow strict sanitation procedures when working with plant materials
  - Remove symptomatic plants
  - Remove contaminated plant debris
  - Avoid overhead irrigation
  - Hot water treatments (10 minutes at 125°F)

## Ten Diseases of Herbaceous Plants Hosta Virus X

- Cause: Hosta virus X virus
- Host: *Hosta*
  - ‘Gold Edger’
  - ‘Gold Standard’
  - ‘Golden Tiara’
  - ‘Striptease’
  - ‘Sum and Substance’

## Ten Diseases of Herbaceous Plants Hosta Virus X

- Transmission: Mechanical
  - Pruning tools
  - String edgers
  - Shovels
  - Touch

## Ten Diseases of Herbaceous Plants Hosta Virus X

- Control:
  - Buy *Hosta* plants from reputable sources
  - Inspect hostas prior to purchase for symptoms of Hosta virus X
  - Request that plants be tested for Hosta virus X prior to purchase
  - Keep new *Hosta* plants isolated from established *Hosta* plants

## Ten Diseases of Herbaceous Plants Hosta Virus X

- Control:
  - Remove and destroy infected plants
  - Remove infested plant debris
  - Disinfect tools (and other items) that come into contact with potentially infected plants
    - Sodium dodecyl sulfate (sodium lauryl sulfate) + Alconox® (1% + 1%)
    - Trisodium phosphate
    - Alcohol dip followed by flaming

## Ten Diseases of Herbaceous Plants 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

## Ten Diseases of Herbaceous Plants Tobacco Rattle

- Transmission: Stubby-root nematodes
  - *Trichodorus*
  - *Paratrichodorus*

## Ten Diseases of Herbaceous Plants 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

## Ten Diseases of Herbaceous Plants Tobacco Rattle

- Control:
  - Disinfect tools (and other items) that come into contact with infected plants (e.g., when dividing plants)
    - Sodium dodecyl sulfate (sodium lauryl sulfate) + Alconox® (1% + 1%)
    - Trisodium phosphate
    - Alcohol dip followed by flaming
  - Control of stubby-root nematode is not practical

## Ten Diseases of Herbaceous Plants Herbicide Injury

- Causes:
  - Growth regulator herbicides
    - 2,4-D
    - Dicamba
  - Other herbicides
- Affected plants: Anything and everything

## Ten Diseases of Herbaceous Plants Herbicide Injury

- Control:
  - Apply herbicides only when needed
  - Follow application directions exactly
  - Apply herbicides only when wind speed is low (< 5 mph)
  - DO NOT apply herbicides too close to nontarget plants
  - Apply herbicides at low pressure
  - Use amine rather than ester forms of herbicides

## Plant Diseases 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  
bdh@plantpath.wisc.edu  
<http://www.plantpath.wisc.edu/pddc>  
(<http://wihort.uwex.edu>)