

## 2019 Spring Garden Conference

### Ten Plant Diseases to Watch for in 2019

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### Ten Plant Diseases to Watch for in 2019 Boxwood Blight

- Cause
  - *Calonectria pseudonaviculata*
  - *Cylindrocladium pseudonaviculatum* (*Cylindrocladium buxicola*)
- Hosts
  - Boxwood
  - Pachysandra
- Favorable Environment: Cool, wet weather



### Ten Plant Diseases to Watch for in 2019 Boxwood Blight

- Control
  - Be cautious about holiday wreaths
  - Use shrubs other than boxwood
  - Buy locally produced boxwood
  - Buy from a reputable supplier
  - Avoid symptomatic plants

### Ten Plant Diseases to Watch for in 2019 Boxwood Blight

- Control
  - Grow resistant varieties
    - Hybrid boxwood 'Green Gem'
    - Common boxwood 'Katerberg' North Star®
    - Korean littleleaf boxwood
      - 'Eseles' Wedding Ring®
      - 'Franklin's Gem'
      - 'Winter Gem'
      - 'Wintergreen'

### Ten Plant Diseases to Watch for in 2019 Boxwood Blight

- Control
  - Keep new plants isolated
  - DO NOT replant in an area where boxwood blight has been a problem
  - Physically separate boxwood plantings
  - Space plants far apart
  - DO NOT overhead water
  - Prune out diseased branches

### Ten Plant Diseases to Watch for in 2019 Boxwood Blight

- **Control**
  - Disinfect pruning tools and other items (70% alcohol, 10% bleach, disinfectants)
  - Remove and destroy infected plants
    - Burn (where allowed)
    - Deep bury (two feet)/Double bag and landfill
    - DO NOT compost

### Ten Plant Diseases to Watch for in 2019 Boxwood Blight

- **Control**
  - Use fungicides to prevent infections
    - Chlorothalonil (alone or with propiconazole or thiophanate-methyl), fludioxonil, metconazole, tebuconazole
    - 7 day application intervals
    - Alternate active ingredients (FRAC codes)
  - Contact the PDDC if you believe you have found boxwood blight!

### Ten Plant Diseases to Watch for in 2019 Fungal Leaf Blights

- **Causes**
  - *Septoria lycopersici* (Septoria leaf spot)
  - *Alternaria solani* (early blight)
  - *Phytophthora infestans* (late blight)
- **Hosts**
  - Tomato
  - Potato (early blight, late blight)
- **Favorable environment:** Cool, wet weather



### Ten Plant Diseases to Watch for in 2019 Fungal Leaf Blights

- **Control (early blight, Septoria leaf spot)**
  - Remove and destroy contaminated debris
    - Burn (where allowed)
    - Deep bury
    - Hot compost
  - Move tomatoes to new location

### Ten Plant Diseases to Watch for in 2019 Fungal Leaf Blights

- **Control (early blight, Septoria leaf spot)**
  - Plant resistant varieties
  - Space plants far apart
  - Mulch around the base of plants
  - DO NOT overmulch

### Ten Plant Diseases to Watch for in 2019 Fungal Leaf Blights

- **Control (early blight, Septoria leaf spot)**
  - DO NOT overhead water
  - Thin plants as they grow
  - Use fungicides to prevent infections
    - Chlorothalonil, mancozeb
    - Copper
    - Alternate active ingredients (FRAC codes)
    - Apply at 7-14 days intervals

### Ten Plant Diseases to Watch for in 2019 Fungal Leaf Blights

- **Control (late blight)**
  - Remove any infected plants and plant parts
    - Infected tomato/potato plants including fruits and tubers
    - Volunteer tomato and potato plants
    - Weed hosts
  - Destroy any infected plants and plant parts
    - Burn (where allowed)
    - Double bag and landfill

### Ten Plant Diseases to Watch for in 2019 Fungal Leaf Blights

- **Control (late blight)**
  - DO NOT use last year's potatoes as seed
  - DO use certified seed potatoes
  - Grow resistant tomato varieties
    - "Late Blight Management in Tomato with Resistant Varieties"  
(<http://www.extension.org/pages/72678/late-blight-management-in-tomato-with-resistant-varieties#.VVNSsPIVhBc>)

### Ten Plant Diseases to Watch for in 2019 Fungal Leaf Blights

- **Control (late blight)**
  - Use fungicides to prevent infections
    - Chlorothalonil, mancozeb
    - Copper
    - Alternate active ingredients (FRAC codes)
    - Start applications based on Blitecast  
(<http://www.plantpath.wisc.edu/wivegdis/>)
    - Apply at 7-14 day intervals

### Ten Plant Diseases to Watch for in 2019 Phytoplasmas Diseases

- **Examples**
  - Aster yellows
  - Ash yellows
- **Causes: Miscellaneous phytoplasmas**
- **Hosts**
  - Many herbaceous plants (aster yellows)
  - Ash, lilac (ash yellows)
  - "The more you look, the more you find."

## Ten Plant Diseases to Watch for in 2019 Phytoplasmas Diseases

- **Favorable environment**
  - High leafhopper populations



## Ten Plant Diseases to Watch for in 2019 Phytoplasmas Diseases

- **Control**
  - Remove infected plants
  - Destroy infected materials
    - Compost
    - Bury
    - Burn (where allowed)
  - Avoid growing susceptible plants
  - Use insecticides for leafhopper control (?)

## Ten Plant Diseases to Watch for in 2019 Verticillium Wilt

- **Causes**
  - *Verticillium dahliae*
  - *Verticillium albo-atrum*
  - *Verticillium nonalfalfae*
  - Other *Verticillium* spp.
  - New *Verticillium* spp.

## Ten Plant Diseases to Watch for in 2019 Verticillium Wilt

- **Hosts**
  - Many woody ornamentals
    - Common: Maple, ash, redbud, smokebush
    - Newer: Seven son flower, wafer-ash, buttonbush
  - Many herbaceous plants
    - Common: Purple coneflower, blazing star
    - New: Vervain ('Quartz White')
  - Many vegetables
    - Tomato, potato, pepper, EGGPLANT, cucurbits



## Ten Plant Diseases to Watch for in 2019

### Verticillium Wilt

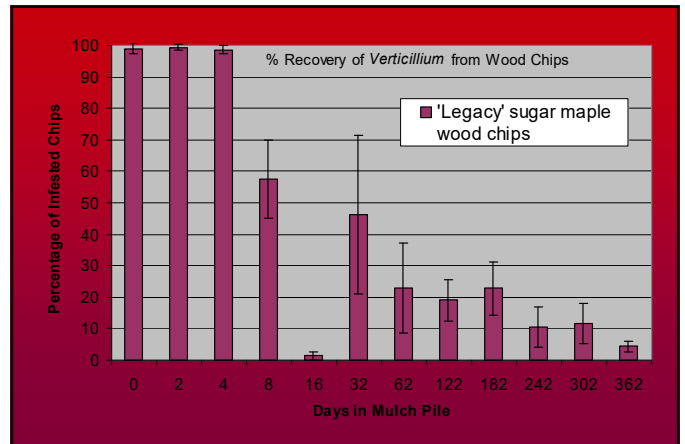
- **Favorable environment**
  - Cool, wet weather (for infection)
  - Hot, dry weather (for symptom development)



## Ten Plant Diseases to Watch for in 2019

### Verticillium Wilt

- **Control**
  - Avoid *Verticillium*-infested areas
  - Pretest soils/mulches/composts for the presence of *Verticillium*
  - Fumigate heavily infested soils
  - Keep broad-leaf weeds under control
  - Avoid municipal mulches





### • Wood Chips as an Inoculum Source

- Amur maple
  - 30.0%/25.0% (Trted)
  - 0.0%/0.0% (Non-Trted)
- Green Ash
  - 23.7%/10.5% (Trted)
  - 0.0%/0.0% (Non-Trted)
- Redbud
  - 10.7%/13.3% (Trted)
  - 0.0%/0.0% (Non-Trted)

## Ten Plant Diseases to Watch for in 2019 Verticillium Wilt

### • Control

- Use immune/resistant plants
  - CONIFERS: Pines, spruces, firs, junipers
  - DECIDUOUS TREES/SHRUBS: Beech, birch, ginkgo, hackberry, hawthorn, hickory, honey locust, mountain ash, white oak, bur oak, poplar, serviceberry, sycamore, willow
  - HERBACEOUS ORNAMENTALS: Call for info.
- Prevent stress
- Prune diseased (wilted) areas

## Ten Plant Diseases to Watch for in 2019 Verticillium Wilt

### • Control

- Decontaminate pruning tools (70% alcohol, 10% bleach, disinfectants)
- Make plants comfortable until they die
- Remove and destroy diseased plants
  - Burn (where allowed)
- DO NOT use fungicides

## Ten Plant Diseases to Watch for in 2019 Fire Blight

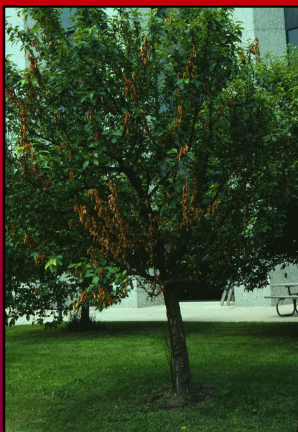
### • Cause: *Erwinia amylovora*

### • Hosts

- Many woody rosaceous plants
- Apple, crabapple, pear, mountain ash, cotoneaster

### • Favorable environment

- Wet (but not too wet) weather
- Hail (or other wounding)



## Ten Plant Diseases to Watch for in 2019 Fire Blight

### • Control

#### – Plant resistant varieties where available

- “Top Ornamental Crabapples for Wisconsin” (<https://pddc.wisc.edu/fact-sheet-listing-all/>)
- “Apple Cultivars for Wisconsin” (<https://learningstore.uwex.edu/Assets/pdfs/A2105.pdf>)
- “Home Fruit Cultivars for Northern Wisconsin” (<https://learningstore.uwex.edu/Assets/pdfs/A2488.pdf>)
- “Home Fruit Cultivars for Southern Wisconsin” (<https://learningstore.uwex.edu/Assets/pdfs/A2582.pdf>)

### Ten Plant Diseases to Watch for in 2019 Fire Blight

- **Control**
  - Prune diseased branches
  - Decontaminate pruning tools (70% alcohol, 10% bleach, disinfectants)
  - Destroy infected materials
    - Burn (where allowed)
    - Deep bury

### Ten Plant Diseases to Watch for in 2019 Fire Blight

- **Control**
  - DO NOT over-fertilize with nitrogen
  - Use bactericides to prevent infections (?)
    - Copper-containing fungicides, streptomycin
    - Apply during flowering
    - Apply every 7-14 days (3-4 days)

### Ten Plant Diseases to Watch for in 2019 Bacterial Wetwood

- **Cause: Miscellaneous bacteria**
  - *Enterobacterium* spp.
  - *Klebsiella* spp.
  - *Pseudomonas* spp.
- **Hosts**
  - Common: Elm, birch, poplar
  - Other: Aspen, maple, mulberry
- **Favorable Environment: None**



### Ten Plant Diseases to Watch for in 2019 Bacterial Wetwood

- **Control**
  - DO NOT panic
  - Learn to ignore the problem
  - Insert tubing to help with drainage
  - DO NOT use chemical treatments

### Ten Plant Diseases to Watch for in 2019 Armillaria Root Disease

- **Pathogens: *Armillaria* spp.**
- **Hosts**
  - Many trees and shrubs
  - Some herbaceous plants
- **Favorable environment**
  - Drought stress
  - Stress due to defoliation
  - Other stresses





### Ten Plant Diseases to Watch for in 2019 Armillaria Root Disease

- **Control**
  - Reduce tree/shrub stress where possible
    - Water adequately
    - Fertilize properly
    - Control foliar pathogens
    - Control foliar insect pests
  - DO NOT wound trees
  - Remove *Armillaria*-infested materials
  - DO NOT use fungicides

### Ten Plant Diseases to Watch for in 2019 Southern Blight

- **Pathogen:** *Sclerotium rolfsii*
- **Hosts**
  - Anything herbaceous
  - Some (particularly young) woody ornamentals
- **Favorable environment**
  - Warm soil temperatures
  - Wet soils



### Ten Plant Diseases to Watch for in 2019 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, 10% bleach, disinfectants)



## Ten Plant Diseases to Watch for in 2019 Southern Blight

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

## Ten Plant Diseases to Watch for in 2019 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
- **Favorable environment:** None

## Ten Plant Diseases to Watch for in 2019 Tobacco Rattle

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



## Ten Plant Diseases to Watch for in 2019 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

## Ten Plant Diseases to Watch for in 2019 Tobacco Rattle

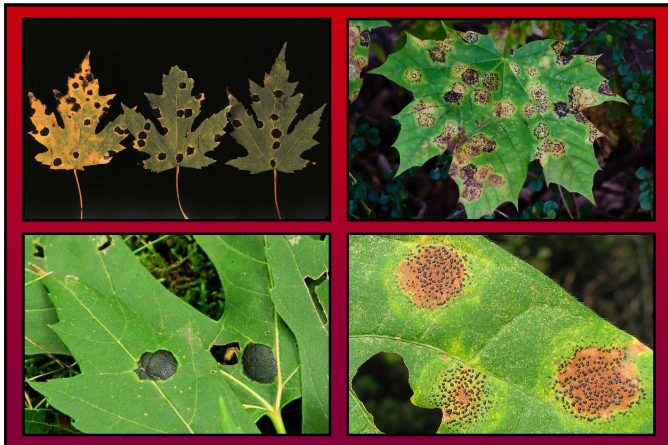
- **Control**
  - Disinfect contaminated materials
    - 1% Sodium dodecyl sulfate (sodium lauryl sulfate) + 1% Alconox® (2½ Tbsp + 2¾ Tbsp/gal)
    - 20% low fat dry milk (Carnation®) + 0.1% polysorbate 20 (9½ cups + ¼ tsp/gal)
    - Trisodium phosphate (14 dry oz/gal)
    - Alcohol dip followed by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

### Ten Plant Diseases to Watch for in 2019 Tobacco Rattle

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

### Ten Plant Diseases to Watch for in 2019 Tar Spot

- Causes: *Rhytisma americanum*  
*Rhytisma acerinum*
- Hosts: Maples
- Favorable environment: Cool, wet weather



### Ten Plant Diseases to Watch for in 2019 Tar Spot

- Control
  - DO NOT panic
  - Remove/destroy diseased leaves
    - Burn (where allowed)
    - Deep bury
    - Hot compost
  - Use fungicides to prevent infections
    - Copper-containing fungicides
    - Apply at bud break, 1/2 and full leaf expansion

### Ten Plant Diseases to Watch for in 2019 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](mailto:pddc@wisc.edu)  
<https://pddc.wisc.edu>

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