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

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

• 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’

• 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

- **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!

**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

- **Control**
  - 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

• 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 (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)
  – 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#VVNSsPvH8)
  – 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

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**Verticillium Wilt**

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

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**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

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**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

• Favorable environment
  – Cool, wet weather (for infection)
  – Hot, dry weather (for symptom development)

• 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% (Treated)
    • 0.0%/0.0% (Non-Treated)
  – Green Ash
    • 23.7%/10.5% (Treated)
    • 0.0%/0.0% (Non-Treated)
  – Redbud
    • 10.7%/13.3% (Treated)
    • 0.0%/0.0% (Non-Treated)

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
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)

• 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

- 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)

Fire Blight

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

Bacterial Wetwood

- Control
  - Do not panic
  - Learn to ignore the problem
  - Insert tubing to help with drainage
  - Do not use chemical treatments

Bacterial Wetwood

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

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

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
    - 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

#### 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

#### Transmission

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

#### 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

#### Disinfect contaminated materials

- 1% Sodium dodecyl sulfate (sodium lauryl sulfate) + 1% Alconox® (2⅓ Tbsp + 2⅔ Tbsp/gal)
- 20% low fat dry milk (Carnation®) + 0.1% polysorbate 20 (9⅛ cups + ¾ tsp/gal)
- Trisodium phosphate (14 dry oz/gal)
- Alcohol dip followed by flaming

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*Information source: [Ten Plant Diseases to Watch for in 2019](#)*

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*Note: The images and diagrams are not included in the text representation.*
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

**Tar Spot**

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

**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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