2015 Responding to Horticulture Inquiries

2015 Plant Disease Update

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Winter Injury/Winter Burn

- Causes
  - Drought stress
  - Extreme winter conditions

- Affected plants
  - Virtually anything
  - Evergreens (yews and boxwoods)
  - Fruit trees
  - Redbud

Winter Injury/Winter Burn

- Causes
  - Many and varied
  - Insufficient watering
  - Cold winter temperatures
  - Excessive winter winds
  - Exposure to excessive salt
  - Small animal injury

- Control
  - Water trees and shrubs adequately, particularly in the fall
  - Plant sensitive trees and shrubs in protected locations
  - Insulate sensitive plants where possible
  - Pray for snow

"Boxwood Dieback"

- Causes
  - Fungal pathogens
    - Verticillium sp. (Verticillium wilt)
    - Phytophthora sp., Pythium sp., Rhizoctonia sp. (root rots)
    - Volutella buxi (Volutella blight)
    - Cylindrocladium pseudonaviculatum (box blight) (Cyindrocladium buxicola)

- Host: Boxwood
**2015 Plant Disease Update**

**“Boxwood Dieback”**

- **Control**
  - Produce and use cold hardy varieties
  - ‘Green Gem’
  - ‘Green Mound’
  - ‘Wilson’ (Northern Charm™) (?)
  - ‘Glencoe’ (Chicagoland Green®) (?)
  - Water adequately
  - Reduce stress
  - Control small animal populations

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**“Boxwood Dieback”**

- **Control**
  - Be cautious when buying boxwood from areas with reported box blight
  - Inspect new plants for symptoms
  - Keep new plants isolated
  - Physically separate boxwood plantings
  - Space plants far apart
  - DO NOT overhead water

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**“Boxwood Dieback”**

- **Control**
  - Prune out diseased branches
  - Disinfect pruning tools
    - 70% alcohol
    - 10% bleach
  - Remove and destroy infected plants
    - Burn (where allowed)
    - Haul to your local municipal composting site
  - Hospice method of disease management

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**“Boxwood Dieback”**

- **Control**
  - Use fungicides treatments
    - Chlorothalonil, mancozeb, thiophanate-methyl
    - 7 day application intervals
    - Alternate active ingredients (FRAC codes)
  - Contact the PDDC if you believe you have found box blight!

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**Verticillium Wilt**

- **Causes:**
  - *Verticillium dahliae*
  - *Verticillium albo-atrum*

- **Hosts**
  - Many woody ornamentals
    - Common: Maple, ash, redbud, smokebush
    - “New”: Seven son flower, wafer-ash, buttonbush
  - Many herbaceous plants
  - Many vegetables (tomato, potato, eggplant)

- **Favorable environment:** Cool, wet weather
2015 Plant Disease Update  
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% (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)

• Control  
  – Use “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

2015 Plant Disease Update  
Verticillium Wilt

• Control  
  – Prevent plant stress  
  – Prune diseased (wilted) areas  
  – Decontaminate pruning tools  
  – Hospice method of disease management  
  – Remove diseased plants  
  – Destroy infected materials  
  – Composting?
2015 Plant Disease Update
Volutella Blight

• Cause: *Volutella pachysandricola*
• Host: *Pachysandra*
• Favorable environment: Cool, wet weather

**Control**
- Plant *pachysandra* in a shady area
- DO NOT overcrowd plants
- Water appropriately
- DO NOT overprune
- Limit insect feeding damage
- Limit salt exposure
- Remove diseased leaves, stems or plants

2015 Plant Disease Update
Guignardia Leaf Blotch

• Cause: *Guignardia aesculi*
• Hosts
  – Horse-chestnut
  – Ohio buckeye
• Favorable environment: Cool, wet weather

**Control**
- Use fungicides to prevent infections
  - Copper-containing fungicides, chlorothalonil, mancozeb, thiophanate methyl
- Apply every 7-14 days as needed
- Use when there is a history of the disease
**2015 Plant Disease Update**

**Guignardia Leaf Blotch**

- **Control**
  - DO NOT panic
  - Remove diseased leaves
  - Use fungicides to prevent infections
    - Copper-containing fungicides, chlorothalonil, mancozeb, thiophanate methyl
    - 3 applications at bud break, 1/2 expansion of leaves, full leaf expansion

**Tomato Leaf Blights**

- **Causes**
  - *Alternaria solani* (early blight)
  - *Septoria lycopersici* (Septoria leaf spot)
  - *Phytophthora infestans* (late blight)
- **Hosts**
  - Tomato
  - Potato (early blight, late blight)
- **Environmental trigger:** Wet weather

**Tomato Leaf Blights**

- **Control (early blight, Septoria leaf spot)**
  - Remove and destroy infested debris
  - Move tomatoes to new location (?)
  - Plant resistant varieties (?)
  - Space plants far apart
  - Mulch around the base of plants
  - DO NOT over-mulch

- **Control (late blight)**
  - DO NOT overhead water
  - Thin plants/remove healthy leaves
  - Remove diseased leaves
  - Use fungicides to prevent infections
    - Copper, chlorothalonil
    - Applications every 7-14 days
2015 Plant Disease Update
Tomato Leaf Blights

• Control (late blight)
  – Remove infected plants
    • Leaves, stems, fruits, roots, tubers
    • Volunteer tomato and potato plants
    • Weed hosts
  – Destroy infected plants
    • Double bag
    • Landfill
  – DO NOT use last year’s potatoes as seed

2015 Plant Disease Update
Tomato Leaf Blights

• Control (late blight)
  – 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#.VVNSsP1VhBd

2015 Plant Disease Update
Tomato Leaf Blights

• Cause: *Xanthomonas campestris pv. campestris*
• Hosts
  – Crucifers
    – Brussels sprouts, cabbage, collards
    – Broccoli, cauliflower, kale, kohlrabi, rutabaga, turnips
  – Environmental trigger: Wet weather

2015 Plant Disease Update
Black Rot

• Control
  – Use high quality (certified disease-free) seed
  – Heat treat seeds
    • 35 min, 122°F
      (Brussels sprouts, cabbage, collards)
    • 20 min, 122°F
      (broccoli, cauliflower, kale, kohlrabi, rutabaga, turnips)
  – Rotate crucifer production
2015 Plant Disease Update

**Black Rot**

- **Control**
  - Fertilize properly (particularly nitrogen)
  - DO NOT overhead water
  - DO NOT handle plants when wet
  - Remove and dispose of contaminated plants
    - Burning
    - Burying
    - Hot composting

- **Burning**
- **Burying**
- **Hot composting**

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**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)
- **Environmental trigger:** Wet weather

- **Control**
  - Grow tolerant/resistant/immune plants
  - Start with clean transplants and seed
  - Keep materials from different sources physically separated
  - DO NOT grow impatiens in the same area every year
  - DO NOT overcrowd plants
  - DO NOT overhead water

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**2015 Plant Disease Update**  
**Impatiens Downy Mildew**

- **Control**
  - Watch for disease on a regular basis
  - Bag and discard affected plants
    - Symptomatic plants
    - Asymptomatic surrounding plants
  - Disinfect contaminated materials
    - 10% bleach
    - 70% alcohol
    - Commercial disinfectants

- **Symptomatic plants**
- **Asymptomatic surrounding plants**

**2015 Plant Disease Update**  
**Virus Diseases**

- **Causes**
  - Many and varied
  - Tobacco mosaic virus (TMV)
  - Cucumber mosaic virus (CMV)
  - Impatiens necrotic spot virus (INSV)
  - Hosta virus X (HVX)
  - Tobacco rattle virus (TRV)

- **Hosts:** Anything and everything

**2015 Plant Disease Update**  
**Impatiens Downy Mildew**

- **Control**
  - Use fungicides to prevent infections
    - Mancozeb
    - Apply at 7 day application intervals

**2015 Plant Disease Update**  
**Virus Diseases**

- **Environmental trigger:** None
- **Transmission**
  - Touch (TMV)
  - Mechanical injury (HVX)
  - Insects (CMV, INSV)
  - Nematodes (TRV)
  - Grafting
  - Seed

**Anette Phibbs, WI DATCP**

[hostalibrary.org/firstlook/HVX.htm](http://hostalibrary.org/firstlook/HVX.htm)
2015 Plant Disease Update

**Virus Diseases**

- **Control**
  - Buy plants from a reputable source
  - DO NOT buy symptomatic plants
  - Pretest plants for viruses
  - Keep weeds under control
  - Control vectors (insects)
  - DO NOT smoke around your plants
  - Remove and destroy infected plants

- **1% Sodium dodecyl sulfate (sodium lauryl sulfate) + 1% Alconox® (2½ Tbsp + 2½ 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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**Thousand Cankers Disease**

- **Cause:** *Geosmithia morbida*
- **Hosts**
  - Black walnut
  - Other walnuts
- **Environmental trigger:** None
- **Transmission**
  - Walnut twig beetle
    *(Pityophthorous juglandis)*

- **Control**
  - DO NOT transport walnut wood/products from areas known to have the disease
  - Remove and destroy affected trees (burn)
  - No effective fungicide strategies known
  - No effective insecticide strategies known
  - Contact the PDDC if you believe you have found this disease!