2015 Responding to Horticulture Inquiries

2015 Plant Disease Update

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2015 Plant Disease Update
Winter Injury/Winter Burn

- Causes
  - Drought stress
  - Extreme winter conditions
- Affected plants
  - Virtually anything
  - Evergreens (yews and boxwoods)
  - Fruit trees
  - Redbud

2015 Plant Disease Update
Winter Injury/Winter Burn

- 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

2015 Plant Disease Update
"Boxwood Dieback"

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

2015 Plant Disease Update
"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

2015 Plant Disease Update
"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

2015 Plant Disease Update
"Boxwood Dieback"

- Control
  - Prune out diseased branches
  - Disinfest 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

2015 Plant Disease Update
"Boxwood Dieback"

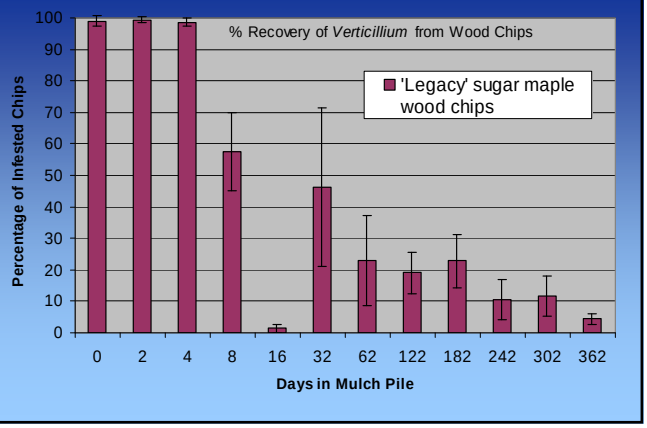
- Control
  - Use fungicides treatments
    - Chlorothalonil, mancozeb, thiophanate-methyl
    - 7 day application intervals
    - Alternate active ingredients (FRAC codes)
  - Contact the PDDC if you believe you have found box blight!

2015 Plant Disease Update
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% (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)

2015 Plant Disease Update
Verticillium Wilt

- 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

2015 Plant Disease Update
Volutella Blight

- 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
Volutella Blight

- 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

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

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

2015 Plant Disease Update
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

2015 Plant Disease Update
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

2015 Plant Disease Update
Tomato Leaf Blights

- Control (early blight, Septoria leaf spot)
  - 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#.VVNSsPlVhBd

2015 Plant Disease Update
Tomato Leaf Blights

- Control (late blight)
  - Use fungicides to prevent infections
    - Copper, chlorothalonil
    - Start applications based on Blitecast (http://www.plantpath.wisc.edu/wivegdis/)
    - Applications every 7-14 days

2015 Plant Disease Update
Black Rot

- 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

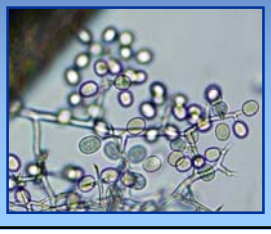
- Control
  - Fertilize properly (particularly nitrogen)
  - DO NOT overhead water
  - DO NOT handle plants when wet
  - Remove and dispose of contaminated plants
    - Burning
    - Burying
    - Hot composting

2015 Plant Disease Update
Black Rot

- Control
  - Decontaminate infested items
    - 10% bleach
    - 70% alcohol
  - Use fungicides to prevent infections
    - Copper
    - Applications every 7-14 days

2015 Plant Disease Update
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



2015 Plant Disease Update
Impatiens Downy Mildew

- 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

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
  - Disinfest contaminated materials
    - 10% bleach
    - 70% alcohol
    - Commercial disinfectants

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

- 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
Virus Diseases

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

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

2015 Plant Disease Update
Virus Diseases

- Control
  - Wash hands routinely
  - Disinfest 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 (9⅛ cups + ¾ tsp/gal)
    - Trisodium phosphate (14 dry oz/gal)
    - Alcohol dip followed by flaming

2015 Plant Disease Update
Thousand Cankers Disease

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

2015 Plant Disease Update
Thousand Cankers Disease

- 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!

2015 Plant Disease Update
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@plantpath.wisc.edu
http://pddc.wisc.edu
Follow the clinic on Twitter @UWPDDC