

2016 Responding to Horticulture Inquiries

2016 Plant Disease Update

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2016 Plant Disease Update Winter Injury/Winter Burn

- **Causes**
 - Water stress
 - Extreme winter conditions (cold and wind)
 - Excessive salt use
- **Affected plants**
 - Evergreens (yews and boxwoods)
 - Fruit trees
 - Redbud



2016 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

2016 Plant Disease Update “Boxwood Dieback”

- **Causes**
 - Winter injury/winter burn
 - Small animal injury
 - Fungal pathogens
 - *Verticillium* sp. (Verticillium wilt)
 - *Phytophthora* sp., *Pythium* sp., *Rhizoctonia* sp. (root rots)
 - *Volutella buxi* (Volutella blight)
 - *Cylindrocladium pseudonaviculatum* (box blight) (*Cylindrocladium buxicola*)
- **Host: Boxwood**



2016 Plant Disease Update "Boxwood Dieback"

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

2016 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

2016 Plant Disease Update "Boxwood Dieback"

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

2016 Plant Disease Update "Boxwood Dieback"

- **Control**
 - Hospice method of disease management
 - 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!

2016 Plant Disease Update Verticillium Wilt

- **Causes**
 - Increasingly long list of Verticillium spp.
 - Verticillium dahliae
 - Verticillium albo-atrum

2016 Plant Disease Update Verticillium Wilt

- **Hosts**
 - Many woody ornamentals
 - Common: Maple, ash, redbud, smokebush, catalpa
 - "New": Seven son flower, wafer-ash, buttonbush, Eastern leatherwood
 - Many herbaceous plants
 - Many vegetables
 - Solanaceous vegetables: tomato, potato, eggplant
 - Cucurbits: cucumber, squash, pumpkin

2016 Plant Disease Update Verticillium Wilt

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



2016 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

2016 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

2016 Plant Disease Update Verticillium Wilt

- **Control**
 - Prevent plant stress
 - Prune diseased (wilted) areas
 - Decontaminate pruning tools
 - 70% alcohol
 - 10% bleach
 - Commercial disinfectants
 - Hospice method of disease management

2016 Plant Disease Update Verticillium Wilt

- **Control**
 - Remove diseased plants
 - Destroy infected materials
 - Burn (where allowed)
 - Compost infested materials (?)
 - DO NOT bury

2016 Plant Disease Update Anthracnose

- **Causes**
 - Many fungi
 - Gloeosporium spp.
 - Discula spp.
 - Collectotrichum spp.

2016 Plant Disease Update Anthracnose

- **Hosts**
 - Anything and everything
 - Ash, maple, oak
 - Sycamore
- **Environmental trigger**
 - Cool, moist conditions in May/June



2016 Plant Disease Update Anthracnose

- **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

2016 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**





2016 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

2016 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

2016 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

2016 Plant Disease Update Tomato Leaf Blights

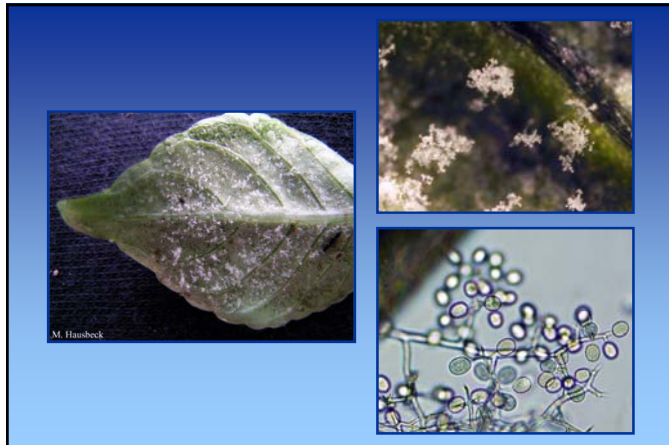
- **Control (late blight)**
 - DO use certified seed potatoes
 - Grow resistant tomato varieties
 - "Late Blight Management in Tomato with Resistant Varieties"
<http://www.extension.org/pages/72678/late-blight-management-in-tomato-with-resistant-varieties#.VVNSsPIVhBd>

2016 Plant Disease Update Tomato Leaf Blights

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

2016 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



2016 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

2016 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

2016 Plant Disease Update Impatiens Downy Mildew

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

2016 Plant Disease Update Brown Rot

- **Causes**
 - *Monilinia fructicola*
 - *Monilinia laxa*
 - *Monilinia fructigena*
- **Hosts**
 - Stone fruits (apricot, cherry, peach, plum)
 - Apple, pear
- **Environmental trigger: Wet weather**



<http://www.oakleafgardening.com/pr2/oma/brown-rot-monilinia-fructigena-and-monilinia-laxa>

2016 Plant Disease Update Brown Rot

- **Control**
 - Remove mummified fruits
 - Prune out diseased/dead branches
 - Remove volunteer stone fruit trees/shrubs
 - Dispose of contaminated plant materials
 - Burning (where allowed)
 - Burying
 - Prune healthy branches to increase air flow

2016 Plant Disease Update Brown Rot

- **Control**
 - Decontaminate pruning tools
 - 10% bleach
 - 70% alcohol
 - DO NOT overhead water
 - Carefully handle fruits at harvest

2016 Plant Disease Update Brown Rot

- **Control**
 - Use fungicides to prevent infections
 - Captan, myclobutanil, propiconazole
 - Apply at 10% flower (flower infections)
 - Apply 3 weeks prior to harvest (fruit infections)
 - Alternate active ingredients (FRAC codes)
 - Manage insects that injure fruit

2016 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**

2016 Plant Disease Update Virus Diseases

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



2016 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

2016 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 (9¼ cups + ¼ tsp/gal)
 - Trisodium phosphate (14 dry oz/gal)
 - Alcohol dip followed by flaming

2016 Plant Disease Update Thousand Cankers Disease

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



2016 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!*

2016 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*