

## 2014 Responding to Horticulture Inquiries

### 2014 Plant Disease Update

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### 2014 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**



### 2014 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

### 2014 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

### 2014 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

### 2014 Plant Disease Update Tomato Leaf Blights

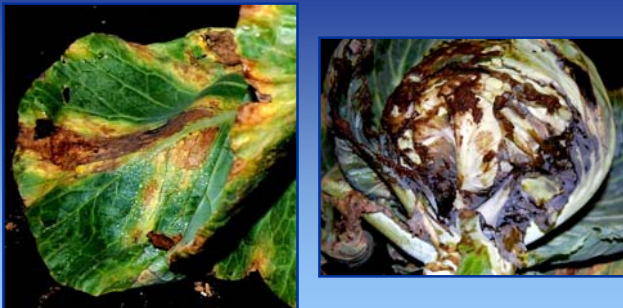
- **Control (late blight)**
  - DO use certified seed potatoes
  - Grow resistant tomato varieties
    - 'Better Boy', 'Golden Sweet', 'Green Zebra', 'Juliet', 'Legend', 'Magic Mountain', 'Matt's Wild Cherry', 'Pruden's Purple', 'Regal Plum', 'Roma', 'Slava', 'Stupice', 'Sun Sugar', 'Wapsipinicon', 'Wisconsin 55'

### 2014 Plant Disease Update Tomato Leaf Blights

- **Control (late blight)**
  - Use fungicides to prevent infections
    - Copper, chlorothalonil
    - Applications every 7-14 days

### 2014 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



### 2014 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

### 2014 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

### 2014 Plant Disease Update Black Rot

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

### 2014 Plant Disease Update Aster Yellows

- **Cause:** Aster yellows phytoplasma
- **Hosts**
  - Many plants in the Asteraceae (aster family)
  - Many plants in many other plant families
- **Environmental trigger:** None
- **Transmission:** Aster leafhopper

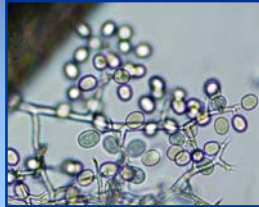


### 2014 Plant Disease Update Aster Yellows

- **Control**
  - Remove and destroy infected plants (composting)
  - Control leafhopper vector (?)

## 2014 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



## 2014 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

## 2014 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

## 2014 Plant Disease Update Impatiens Downy Mildew

- **Control**
  - Use fungicides to prevent infections
    - Mefenoxam, fluopicolide, potassium phosphite, mancozeb, pyraclostrobin + boscalid, fluoxastobin, cyazofamid, dimethomorph, fenamidone, azoxystrobin
    - Alternate active ingredients (FRAC codes)
    - Apply at 7 day application intervals



## 2014 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**

## 2014 Plant Disease Update Virus Diseases

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



## 2014 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

## 2014 Plant Disease Update Virus Diseases

- **Control**
  - Wash hands routinely
  - Disinfest contaminated materials
    - 1% Sodium dodecyl sulfate (sodium lauryl sulfate) + 1% Alconox® (2½ Tbsp + 2¼ 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

### 2014 Plant Disease Update Plum Pockets

- Cause: *Taphrina communis*
- Host: Plum
- Environmental trigger: Wet weather



### 2014 Plant Disease Update Plum Pockets

- Control
  - Remove and destroy symptomatic fruits
    - Burn
    - Bury
    - Hot compost
  - Prune/thin trees to improve air flow
  - Use fungicides to prevent infections
    - Chlorothalonil, copper, ferbam
    - Apply after leaf fall and/or before leaf emergence

### 2014 Plant Disease Update Brown Rot

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



### 2014 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
    - Burying
  - Prune healthy branches to increase air flow

### 2014 Plant Disease Update Brown Rot

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

### 2014 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

### 2014 Plant Disease Update Tar Spot

- **Causes**
  - Rhytisma americanum
  - Rhytisma acerinum
- **Hosts: Maples**
- **Environment trigger: Wet weather**



### 2014 Plant Disease Update Tar Spot

- **Control**
  - DO NOT panic
  - Remove and dispose of diseased leaves
    - Burn
    - Bury
    - Hot compost
  - Use fungicides to prevent infections
    - Copper-containing fungicides
    - At bud break, ½ expansion, full expansion

### 2014 Plant Disease Update “Boxwood Dieback”

- **Causes**
  - Many and varied
  - Cold/winter injury
  - Small animal injury
  - Fungal pathogens
    - Volutella buxi (Volutella blight)
    - Cylindrocladium pseudonaviculatum (box blight)
    - Cylindrocladium buxicola
- **Host: Boxwood**

## 2014 Plant Disease Update "Boxwood Dieback"

- **Environmental triggers**
  - Cold temperatures
  - Excessive wind
  - Excessive snow cover
  - Wet weather



## 2014 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

## 2014 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

## 2014 Plant Disease Update "Boxwood Dieback"

- **Control**
  - Prune out diseased branches
  - Disinfect pruning tools
    - 10% bleach
    - 70% alcohol
  - Remove and destroy infected plants
    - Burn
    - Bury

## 2014 Plant Disease Update "Boxwood Dieback"

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



## 2014 Plant Disease Update Thousand Cankers Disease

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



## 2014 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!

## 2014 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](mailto:pddc@plantpath.wisc.edu)  
<http://pddc.wisc.edu>  
Follow the clinic on Twitter @UWPDDC