

## 2018 Responding to Horticulture Inquiries

### 2018 Plant Disease Update

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### 2018 Plant Disease Update Bacterial Canker

- **Causes**
  - *Pseudomonas syringae* pv. *syringae*
  - *Pseudomonas syringae* pv. *mors-prunorum*
- **Hosts: Stone fruits (plum, cherry, peach)**
- **Favorable environment**
  - Wet weather
  - Wounding



### 2018 Plant Disease Update Bacterial Canker

- **Control**
  - Minimize wounding
  - Prune diseased branches
  - Decontaminate pruning tools
    - 70% alcohol (spray disinfectants)
    - Commercial disinfectants
    - 10% bleach

### 2018 Plant Disease Update Bacterial Canker

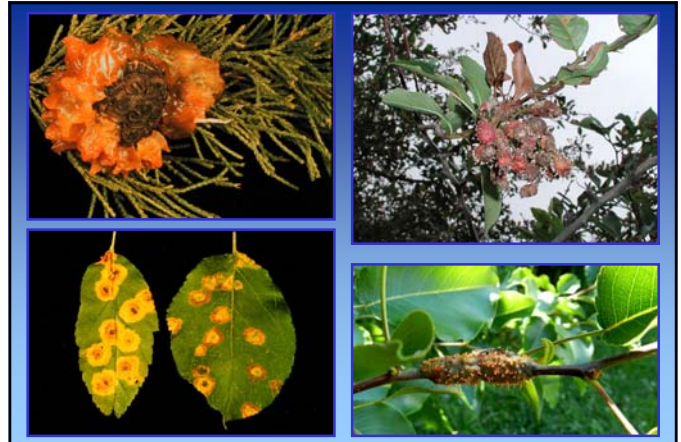
- **Control**
  - Destroy infected materials
    - Burn (where allowed)
    - Deep bury
  - DO NOT use bactericides

### 2018 Plant Disease Update Gymnosporangium Rusts

- **Causes**
  - *Gymnosporangium juniperi-virginianae*  
(Cedar-apple rust)
  - *Gymnosporangium globosum*  
(Cedar-hawthorn rust)
  - *Gymnosporangium clavipes*  
(Cedar-quince rust)

## 2018 Plant Disease Update Gymnosporangium Rusts

- **Hosts**
  - Junipers
  - Woody rosaceous plants  
(apple, crabapple, hawthorn, quince, pear, serviceberry)
- **Favorable environment**
  - Cool to moderate temperatures
  - Wet



## 2018 Plant Disease Update Gymnosporangium Rusts

- **Control**
  - Grow only the juniper or rosaceous host
  - Use resistant cultivars/varieties
    - “Juniper Diseases”  
(<https://store.extension.iastate.edu/Product/Juniper-Diseases>)
  - Remove galls

## 2018 Plant Disease Update Gymnosporangium Rusts

- **Control**
  - Decontaminate pruning tools
    - 70% alcohol (spray disinfectants)
    - Commercial disinfectants
    - 10% bleach
  - Destroy infected materials
    - Burn (where allowed)
    - Deep bury

## 2018 Plant Disease Update Gymnosporangium Rusts

- **Control**
  - Use fungicides to prevent infections
    - Ferbam, triadimefon
    - Alternate active ingredients (FRAC codes)
    - Apply at 7-21 day intervals [mid-May through mid-June (rosaceous hosts), early July through August (juniper hosts)]

## 2018 Plant Disease Update Scab (Apple and Pear)

- **Causes**
  - Venturia inaequalis
  - Venturia pirina
- **Hosts**
  - Apple/crabapple
  - Pear
  - Mountain ash
- **Favorable environment: Cool, wet weather**



## 2018 Plant Disease Update Scab (Apple and Pear)

- **Control**
  - Plant resistant varieties
    - “Growing Apples (Pears) in Wisconsin” (<https://learningstore.uwex.edu/>)
    - “Top Ornamental Crabapples for Wisconsin” (<https://pddc.wisc.edu/fact-sheet-listing-all/>)
  - Remove/destroy diseased leaves
    - Burn (where allowed)
    - Deep bury
    - Hot compost

## 2018 Plant Disease Update Scab (Apple and Pear)

- **Control**
  - Thin trees to promote air flow
  - Use fungicides to prevent infections
    - Chlorothalonil, copper, mancozeb, myclobutanil, propiconazole, thiophanate-methyl, sulfur
    - Alternate active ingredients (FRAC codes)
    - Apply from bud break through the end of favorable weather
    - Apply at 7-14 day intervals

## 2018 Plant Disease Update Bacterial Blight of Begonia

- **Cause:** *Xanthomonas campestris* pv. *begoniae*
- **Host:** Begonia
- **Favorable environment:** High moisture



## 2018 Plant Disease Update Bacterial Blight of Begonia

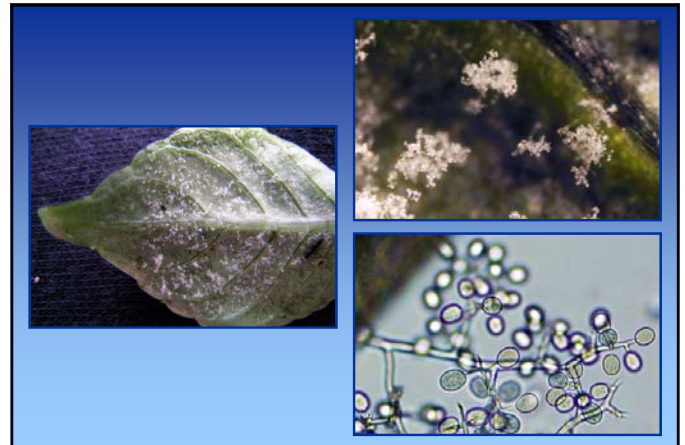
- **Control**
  - Start with clean plants
  - Remove/destroy diseased plants/debris
    - Burn (where allowed)
    - Deep bury
    - Hot compost

## 2018 Plant Disease Update Bacterial Blight of Begonia

- **Control**
  - Disinfect contaminated materials
    - 70% alcohol
    - Commercial disinfectants
    - 10% bleach
  - DO NOT use bactericides

## 2018 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)
- **Favorable environment:** Wet weather



## 2018 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

## 2018 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
    - 70% alcohol
    - Commercial disinfectants
    - 10% bleach

## 2018 Plant Disease Update Impatiens Downy Mildew

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

## 2018 Plant Disease Update Fungal Blights of Tomato

- **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



## 2018 Plant Disease Update Fungal Blights of Tomato

- **Control (early blight, Septoria leaf spot)**
  - Remove and destroy infested debris
    - Burn (where allowed)
    - Deep bury
    - Hot compost
  - Decontaminate infested items
    - 70% alcohol
    - Commercial disinfectants
    - 10% bleach

## 2018 Plant Disease Update Fungal Blights of Tomato

- **Control (early blight, Septoria leaf spot)**
  - Move tomatoes to new location
  - Plant resistant varieties
  - Space plants far apart
  - Mulch around the base of plants
  - DO NOT over-mulch
  - DO NOT overhead water
  - Remove lower leaves and suckers

## 2018 Plant Disease Update Fungal Blights of Tomato

- **Control (early blight, Septoria leaf spot)**
  - Use fungicides to prevent infections
    - Chlorothalonil, mancozeb
    - Copper
    - Alternate active ingredients (FRAC codes)
    - Apply at 7-14 days intervals

## 2018 Plant Disease Update Fungal Blights of Tomato

- **Control (late blight)**
  - Remove and destroy
    - Infected plants, fruits, tubers
    - Volunteer tomato and potato plants
    - Weed hosts
  - **DO NOT** use last year's potatoes as seed potatoes
  - **DO** use certified seed potatoes

## 2018 Plant Disease Update Fungal Blights of Tomato

- **Control (late blight)**
  - 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#.VVNSsPIVhBc>)

## 2018 Plant Disease Update Fungal Blights of Tomato

- **Control (late blight)**
  - Use fungicides to prevent infections
    - Chlorothalonil, mancozeb
    - Copper
    - Alternate active ingredients (FRAC codes)
    - Start applications based on Blitecast  
(<http://www.plantpath.wisc.edu/wivegdis/>)
    - Apply at 7-14 day intervals

## 2018 Plant Disease Update Bacterial Tomato Diseases

- **Causes**
  - *Pseudomonas syringae* pv. *tomato* (bacterial speck)
  - *Xanthomonas* spp. (bacterial spot)
- **Host: Tomato**
- **Favorable environment**
  - Cool, wet weather (bacterial speck)
  - Warm, wet weather (bacterial spot)



## 2018 Plant Disease Update Bacterial Tomato Diseases

- **Control**
  - Remove/dispose of contaminated plant debris
    - Burn (where allowed)
    - Deep bury
    - Hot compost
  - Remove/destroy volunteer tomatoes
  - Start with pathogen-free seeds and plants
  - Hot water treat seeds (122°F, 25 minutes)
  - Move tomatoes to new location

## 2018 Plant Disease Update Bacterial Tomato Diseases

- **Control**
  - Decontaminate infested items
    - 70% alcohol
    - Commercial disinfectants
    - 10% bleach
  - Space plants far apart
  - Mulch plants
  - DO NOT over-mulch
  - DO NOT overhead water

## 2018 Plant Disease Update Bacterial Tomato Diseases

- **Control**
  - DO NOT handle plants when wet
  - Use bactericides to prevent infections
    - Copper
    - Apply at 7-14 days intervals
    - Tolerant bacterial strains are a problem

## 2018 Plant Disease Update Viral Diseases

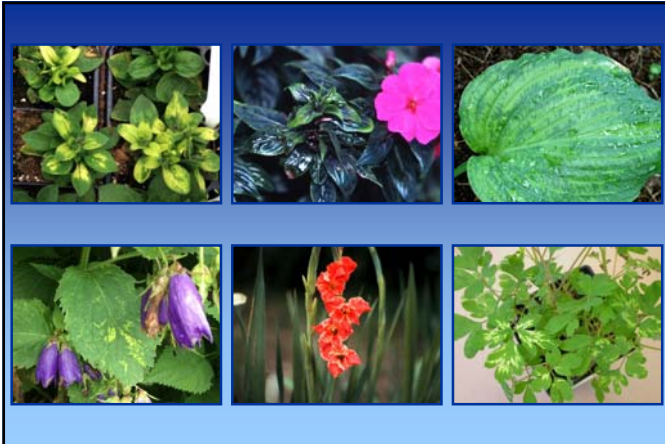
- **Pathogens**
  - Many (with more discovered all the time)
  - Wide host-range
    - Tobacco mosaic virus (TMV)
    - Cucumber mosaic virus (CMV)
    - Impatiens necrotic spot virus (INSV)
    - Tomato spotted wilt virus (TSWV)
    - Tobacco rattle virus (TRV)

## 2018 Plant Disease Update Viral Diseases

- **Pathogens**
  - Narrow host-range
    - Cymbidium mosaic virus (CyMV)
    - Odontoglossum ringspot virus (ORSV)
    - Hosta virus X (HVX)
- **Favorable environment: None**

## 2018 Plant Disease Update Virus Diseases

- **Transmission**
  - Mechanical
    - Touch (TMV)
    - Tools (TMV, CMV, INSV, TSWV, HVX, TRV, CyMV, ORSV)
  - Insects/Nematodes
    - Aphids (CMV)
    - Thrips (INSV, TSWV)
    - Stubby root nematode (TRV)
  - Plant parts/seed (TRV)



### Diseases of Greenhouse Crops Viral Diseases

- **Control**
  - Buy plants from a reputable source
  - Inspect plants prior to purchase for symptoms
  - Test plants prior to purchase (Agdia, Inc. – <https://www.agdia.com>)
  - DO NOT smoke around plants
  - Control insect vectors
  - Destroy infected plants/plant debris/weeds

### 2018 Plant Disease Update Viral Diseases

- **Control**
  - Disinfect 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 + ¾ tsp/gal)
    - Trisodium phosphate (14 dry oz/gal)
    - Alcohol dip followed by flaming
  - Wash hands (particularly if you smoke)
  - DO NOT use chemical controls

### 2018 Plant Disease Update Boxwood (Box) Blight

- **Cause**
  - *Calonectria pseudonaviculata*
  - *Cylindrocladium pseudonaviculatum* (*Cylindrocladium buxicola*)
- **Hosts**
  - Boxwood
  - Pachysandra
- **Favorable Environment: Cool, wet weather**





### 2018 Plant Disease Update Boxwood (Box) Blight

- **Control**
  - Buy locally produced boxwood
  - Grow resistant varieties
    - 'Green Mound'
    - 'Glencoe' (Chicagoland Green®)
  - Avoid symptomatic plants
  - Keep new plants isolated

### 2018 Plant Disease Update Boxwood (Box) Blight

- **Control**
  - Physically separate boxwood plantings
  - Space plants far apart
  - DO NOT overhead water
  - Prune out diseased branches

### 2018 Plant Disease Update Boxwood (Box) Blight

- **Control**
  - Disinfect pruning tools and other items
    - 70% alcohol
    - Commercial disinfectants
    - 10% bleach
  - Remove and destroy infected plants
    - Burn (where allowed)
    - Deep bury

### 2018 Plant Disease Update Boxwood (Box) Blight

- **Control**
  - Use fungicides to prevent infections
    - Chlorothalonil, fludioxonil, mancozeb, metconazole, propiconazole, tebuconazole, thiophanate-methyl
    - 7 day application intervals
    - Alternate active ingredients (FRAC codes)
  - Contact the PDDC if you believe you have found boxwood (box) blight!

### 2018 Plant Disease Update Thousand Cankers Disease

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



**2018 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!

**2018 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@wisc.edu  
<http://pddc.wisc.edu>**

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