

## Spring into Gardening 2019

### Top Ten Plant Diseases of 2018

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### Top Ten Plant Diseases of 2018 Boxwood Blight

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



### Top Ten Plant Diseases of 2018 Boxwood Blight

- Control
  - Be cautious about holiday wreaths
  - Use shrubs other than boxwood
  - Buy locally produced boxwood
  - Buy from a reputable supplier
  - Avoid symptomatic plants

### Top Ten Plant Diseases of 2018 Boxwood Blight

- Control
  - Grow resistant varieties
    - Hybrid boxwood 'Green Gem'
    - Common boxwood 'Katerberg' North Star®
    - Korean littleleaf boxwood
      - 'Eseles' Wedding Ring®
      - 'Franklin's Gem'
      - 'Winter Gem'
      - 'Wintergreen'

### Top Ten Plant Diseases of 2018 Boxwood Blight

- Control
  - Keep new plants isolated
  - DO NOT replant in an area where boxwood blight has been a problem
  - Physically separate boxwood plantings
  - Space plants far apart
  - DO NOT overhead water
  - Prune out diseased branches

### Top Ten Plant Diseases of 2018 Boxwood Blight

- **Control**
  - Decontaminate pruning tools and other items (70% alcohol, 10% bleach, disinfectants)
  - Remove and destroy infected plants
    - Burn (where allowed)
    - Deep bury (two feet)/Double bag and landfill
    - DO NOT compost

### Top Ten Plant Diseases of 2018 Boxwood Blight

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

### Top Ten Plant Diseases of 2018 Tomato Leaf Blights

- **Causes**
  - *Septoria lycopersici* (Septoria leaf spot)
  - *Alternaria solani* (early blight)
- **Host: Tomato**
- **Favorable environment: Cool, wet weather**



### Top Ten Plant Diseases of 2018 Tomato Leaf Blights

- **Control**
  - Remove and destroy contaminated debris
    - Burn (where allowed)
    - Deep bury
    - Hot compost
  - Move tomatoes to new location

### Top Ten Plant Diseases of 2018 Tomato Leaf Blights

- **Control**
  - Plant resistant varieties
  - Space plants far apart
  - Mulch around the base of plants
  - DO NOT overmulch

### Top Ten Plant Diseases of 2018 Tomato Leaf Blights

- **Control**
  - DO NOT overhead water
  - Thin plants as they grow
  - Use fungicides to prevent infections
    - Chlorothalonil, mancozeb
    - Copper
    - Alternate active ingredients (FRAC codes)
    - Apply at 7-14 days intervals

### Top Ten Plant Diseases of 2018 Rhizosphaera Needle Cast

- **Pathogens:** *Rhizosphaera kalkhoffii*  
*Rhizosphaera* spp.
- **Look-Alike:** Stigmina Needle Cast  
(*Stigmina* spp.)
- **Hosts (major)**
  - Colorado blue spruce
  - Other spruces: Black, Engelmann, Serbian, Sitka, white (Black Hills)

### Top Ten Plant Diseases of 2018 Rhizosphaera Needle Cast

- **Hosts (minor)**
  - Pines: Austrian, mugo, eastern white pine
  - Douglas fir
  - Hemlock
  - Balsam fir and other firs
- **Favorable environment:**
  - Wet weather
  - High humidity



### Top Ten Plant Diseases of 2018 Rhizosphaera Needle Cast

- **Control**
  - DO NOT plant Colorado blue spruce
  - DO NOT crowd trees when planting
  - Plant dwarf spruce varieties
  - Thin healthy branches to increase airflow
  - Prevent tree stress
  - Prune diseased branches

### Top Ten Plant Diseases of 2018 Rhizosphaera Needle Cast

- **Control**
  - Decontaminate pruning tools  
(70% alcohol, disinfectants, 10% bleach)
  - Use fungicides to prevent infections
    - Copper, chlorothalonil
    - Alternate active ingredients (FRAC Codes)
    - Start applications at bud break
    - Apply at 3-4 week intervals under favorable conditions

### Top Ten Plant Diseases of 2018 Anthracnose

- **Causes**
  - *Gloeosporium* spp.
  - *Colletotrichum* spp.
  - *Discula* spp.
  - Many other fungi
- **Hosts**
  - Any deciduous tree
  - Ash, maple, oak
  - Sycamore
- **Favorable environment:** Cool, wet weather



### Top Ten Plant Diseases of 2018 Anthracnose

- **Control**
  - DO NOT panic
  - Remove/destroy diseased leaves and branches
    - Burn (where allowed)
    - Deep bury
    - Hot compost

### Top Ten Plant Diseases of 2018 Anthracnose

- **Control**
  - Use fungicides to prevent infections
    - Copper, chlorothalonil, mancozeb, thiophanate-methyl
    - Alternate active ingredients (FRAC codes)
    - Apply at bud break, 1/2 and full leaf expansion

### Top Ten Plant Diseases of 2018 Powdery Mildews

- **Cause**
  - *Erysiphe* spp.
  - *Uncinula* spp.
  - *Phyllactinia* spp.
  - *Blumeria* spp.
  - *Oidium* spp.
  - *Microsphaera* spp.
  - *Sphaerotheca* spp.
  - *Podosphaera* spp.
  - *Brasiliomyces* spp.
  - *Ovulariopsis* spp.

### Top Ten Plant Diseases of 2018 Powdery Mildews

- **Hosts**
  - Virtually anything
  - NOT conifers
- **Favorable environment:** High humidity





### Top Ten Plant Diseases of 2018 Powdery Mildews

- **Control**
  - Remove diseased plant material and debris
    - Burn (where allowed)
    - Deep bury
    - Hot compost
  - Reduce humidity
    - Plant less densely
    - Thin existing stands
  - Use resistant cultivars/varieties

### Top Ten Plant Diseases of 2018 Powdery Mildews

- **Control**
  - Use fungicides to prevent infections
    - Dithiocarbamates, myclobutanil, propiconazole, tebuconazole, thiophanate-methyl
    - Sulfur, neem oil, other plant-based oils
    - Baking soda (1.5 Tbsp/gal) and light weight horticultural oil (3 Tbsp/gal)
    - Alternate active ingredients (FRAC Codes)
    - Apply when humidity >60-70%
    - Apply at 7-14 day intervals

### Top Ten Plant Diseases of 2018 Botrytis Blight/Gray Mold

- Pathogen: *Botrytis cinerea*
- Hosts
  - Virtually any herbaceous plant
  - Flowering plants
    - Geranium
    - Peony
    - Rose
- Favorable environment: Wet weather



### Top Ten Plant Diseases of 2018 Botrytis Blight/Gray Mold

- Control
  - Remove infested plant debris/infect plant parts
    - Burn (where allowed)
    - Deep bury
    - Hot compost
  - Remove aging plant parts
  - Promote rapid drying
    - Plant less densely
    - Thin existing plant stands

### Top Ten Plant Diseases of 2018 Botrytis Blight/Gray Mold

- Control
  - DO NOT overhead water
  - DO NOT overwater
  - Use fungicides to prevent infections
    - Chlorothalonil, copper, fludioxonil, mancozeb, thiophanate-methyl
    - Alternate active ingredients (FRAC Codes)
    - Apply during periods of high moisture
    - Apply at 7-14 day intervals

### Top Ten Plant Diseases of 2018 Viral Diseases

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

### Top Ten Plant Diseases of 2018 Viral Diseases

- Pathogens
  - Narrow-range viruses
    - *Cymbidium mosaic virus* (CyMV)
    - *Odontoglossum ringspot virus* (ORSV)
    - *Hosta virus X* (HVX)
- Favorable environment: None
- Transmission: Insect, mechanical, seed



### Top Ten Plant Diseases of 2018 Viral Diseases

- **Control**
  - Inspect/test plants prior to purchase (Agdia, Inc. – [www.agdia.com](http://www.agdia.com))
  - DO NOT smoke around plants
  - Control insects
  - Control weeds
  - Remove infected plant parts/infested debris
    - Burn (where allowed)/incinerate
    - Deep bury

### Top Ten Plant Diseases of 2018 Viral Diseases

- **Control**
  - Decontaminate pots/working surfaces/tools
    - 1% Sodium dodecyl sulfate (sodium lauryl sulfate) + 1% Alconox® (2½ Tbsp + 2½ 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

### Top Ten Plant Diseases of 2018 Viral Diseases

- **Control**
  - Wash hands, particularly if you smoke
  - Decontaminate recycled water
  - DO NOT use chemical control

### Top Ten Plant Diseases of 2018 Black Rot

- **Cause:** *Xanthomonas campestris* pv. *campestris*
- **Hosts:** Crucifers
  - Brussels sprouts, cabbage, collards
  - Broccoli, cauliflower, kale, kohlrabi, rutabaga, turnips
- **Favorable environment:** Wet weather





### Top Ten Plant Diseases of 2018 Black Rot

- **Control**
  - Buy high quality (certified pathogen-free) seed or transplants
  - Heat treat seeds
    - 35 min, 122°F (Brussels sprouts, cabbage, collards)
    - 20 min, 122°F (broccoli, cauliflower, kale, kohlrabi, rutabaga, turnips)

### Top Ten Plant Diseases of 2018 Black Rot

- **Control**
  - Routinely rotate crops
    - DO NOT grow host plants in an infested areas
    - Plant non-hosts in infested areas
  - Fertilize properly (particularly nitrogen)
  - DO NOT overhead water
  - DO NOT handle plants when wet

### Top Ten Plant Diseases of 2018 Black Rot

- **Control**
  - Remove and dispose of contaminated plants
    - Burn (where allowed)
    - Deep bury
    - Hot compost
  - Decontaminate infested items (70% alcohol, disinfectants, 10% bleach)

### Top Ten Plant Diseases of 2018 Black Rot

- **Control**
  - Use bactericides to prevent infections
    - Copper
    - Apply at 7-14 days intervals
    - Tolerant bacterial strains are a problem

### Top Ten Plant Diseases of 2018 Bacterial Soft Rot

- **Cause:** *Pectobacterium carotovorum*
- **Hosts**
  - Potato
  - Carrot
  - Other vegetables
- **Favorable environment**
  - Wet soils
  - Wet storage conditions





### Top Ten Plant Diseases of 2018 Bacterial Soft Rot

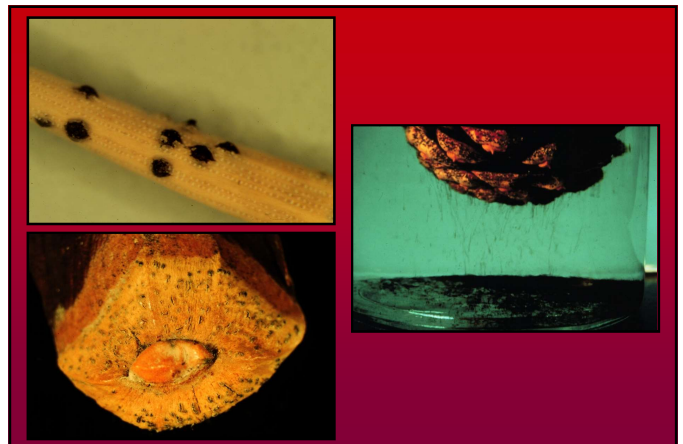
- Control
  - Moderate soil moisture
  - DO NOT overhead water
  - Have good soil fertility (particularly calcium)
  - Harvest vegetables (potatoes) promptly
  - DO NOT bruise/injure vegetables
  - Keep harvested vegetables dry
  - Remove any rotted vegetables immediately

### Top Ten Plant Diseases of 2018 Diplodia (Sphaeropsis) Tip Blight

- Pathogen: *Diplodia pinea*  
(*Sphaeropsis sapinea*)
- Hosts (major)
  - Austrian pine
  - Other pines: red, jack, Scots, mugo
- Hosts (minor)
  - Other conifers: cedars, cypresses, firs, spruces, junipers, yews

### Top Ten Plant Diseases of 2018 Diplodia (Sphaeropsis) Tip Blight

- Favorable environment
  - Wet weather (for infection)
  - Drought (for extensive colonization)



**Top Ten Plant Diseases of 2018**  
**Diplodia (Sphaeropsis) Tip Blight**

- **Control**
  - DO NOT plant Austrian pines
  - Prevent tree stress, particularly water stress
  - Thin branches to increase airflow
  - Prune diseased branches
  - Decontaminate pruning tools (70% alcohol, disinfectants, 10% bleach)
  - Remove infected cones (?)

**Top Ten Plant Diseases of 2018**  
**Diplodia (Sphaeropsis) Tip Blight**

- **Control**
  - Use fungicides to prevent infections
    - Thiophanate-methyl, chlorothalonil
    - Alternate active ingredients (FRAC Codes)
    - Apply from bud break through shoot elongation
    - Apply at 14 day intervals

**Top Ten Plant Diseases of 2018**  
**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](mailto:pddc@wisc.edu)  
<https://pddc.wisc.edu>  
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