

Iowa County Seminar

2018 Plant Diseases in Review

Brian D. Hudelson

Department of Plant Pathology

University of Wisconsin-Madison/Extension

2018 Plant Diseases in Review
Powdery Mildews

• Causes

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

2018 Plant Diseases in Review
Powdery Mildews

• Hosts

- Virtually everything
- Not conifers

- Favorable environment: High humidity



2018 Plant Diseases in Review Powdery Mildews

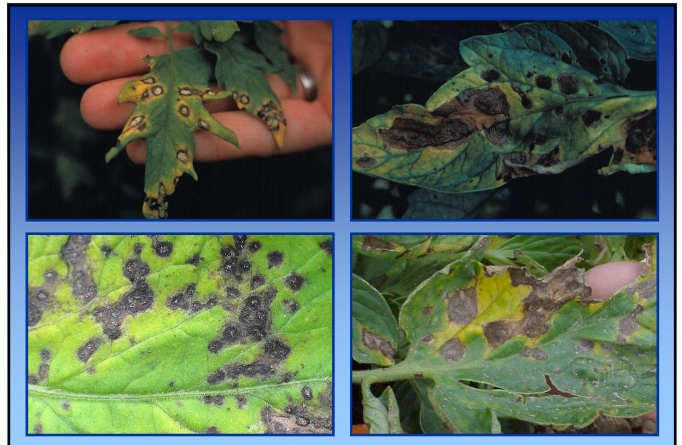
- **Control**
 - Remove/destroy diseased leaves
 - Burn (where allowed)
 - Deep bury
 - Hot compost
 - Reduce humidity
 - Plant less densely
 - Thin canopies
 - Use resistant cultivars/varieties

2018 Plant Diseases in Review Powdery Mildews

- **Control**
 - Use fungicides to prevent infections
 - Dinocap, dithiocarbamates, myclobutanil, triadimefon, triforine, sulfur or thiophanate-methyl
 - 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

2018 Plant Diseases in Review Tomato Fungal Leaf Blights

- **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 Diseases in Review Tomato Fungal Leaf Blights

- **Control (early blight, Septoria leaf spot)**
 - Remove and destroy infested debris (burn, bury, hot compost)
 - Move tomatoes to new location (?)
 - Plant resistant varieties (?)
 - Space plants far apart
 - Mulch around the base of plants
 - DO NOT over-mulch

2018 Plant Diseases in Review Tomato Fungal Leaf Blights

- **Control (early blight, Septoria leaf spot)**
 - Thin plants as they grow
 - Remove infected leaf tissue (?)
 - DO NOT overhead water
 - Use fungicides to prevent infections
 - Chlorothalonil, mancozeb
 - Copper
 - Alternate active ingredients (FRAC codes)
 - Apply at 7-14 days intervals

2018 Plant Diseases in Review Tomato Fungal Leaf Blights

- **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
 - DO use certified seed potatoes

2018 Plant Diseases in Review Tomato Fungal Leaf Blights

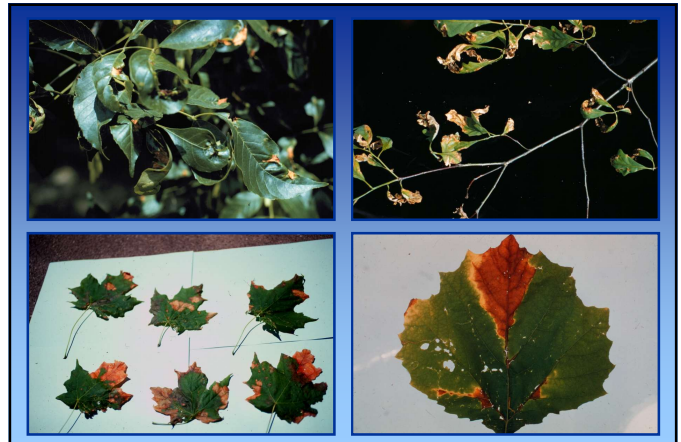
- **Control (late blight)**
 - Grow resistant tomato varieties
 - "Late Blight Management in Tomato with Resistant Varieties"
- <http://www.extension.org/pages/72678/late-blight-management-in-tomato-with-resistant-varieties#.VVNSsPIVhBd>

2018 Plant Diseases in Review Tomato Fungal Leaf Blights

- **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 Diseases in Review Anthracnose

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



2018 Plant Diseases in Review Anthracnose

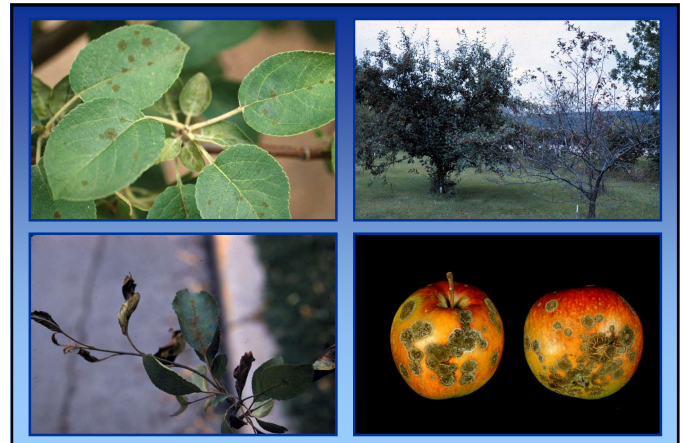
- **Control**
 - DO NOT panic
 - Remove/destroy diseased leaves and branches
 - Burn (where allowed)
 - Deep bury
 - Hot compost

2018 Plant Diseases in Review Anthracnose

- **Control**
 - Use fungicides to prevent infections
 - Copper-containing fungicides, chlorothalonil, mancozeb, thiophanate methyl
 - Alternate active ingredients (FRAC codes)
 - Apply 3 applications: at bud break, 1/2 expansion of leaves, full leaf expansion

2018 Plant Diseases in Review Scab (Apple and Pear)

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



2018 Plant Diseases in Review Scab (Apple and Pear)

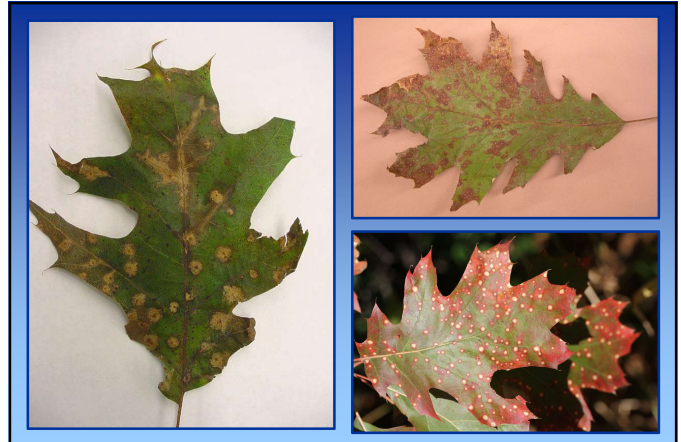
- **Control**
 - Plant resistant varieties
 - “Growing Apples (Pears) in Wisconsin” (<https://learningstore.uwex.edu/>)
 - Remove/destroy diseased leaves
 - Burn (where allowed)
 - Deep bury
 - Hot compost
 - Thin trees to promote air flow

2018 Plant Diseases in Review Scab (Apple and Pear)

- **Control**
 - 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 Diseases in Review *Tubakia* (*Actinopelte*) Leaf Spot

- **Causes:** *Tubakia* spp. (*Actinopelte* spp.)
- **Hosts:** Oaks
- **Environmental trigger:** Warm, wet weather



2018 Plant Diseases in Review *Tubakia* (*Actinopelte*) Leaf Spot

- **Control**
 - DO NOT panic
 - Remove diseased leaves
 - Burn
 - Bury
 - Compost
 - DO NOT use fungicides

2018 Plant Diseases in Review *Rhizosphaera* Needle Cast

- **Pathogen:** *Rhizosphaera kalkhoffii*
Rhizosphaera spp.
- **Hosts (major)**
 - Colorado blue spruce
 - Other spruces: Engelmann, black, Serbian, Sitka, white (Black Hills)

2018 Plant Diseases in Review *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



2018 Plant Diseases in Review *Rhizosphaera* Needle Cast

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

2018 Plant Diseases in Review *Rhizosphaera* Needle Cast

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

2018 Plant Diseases in Review *Rhizosphaera* Needle Cast

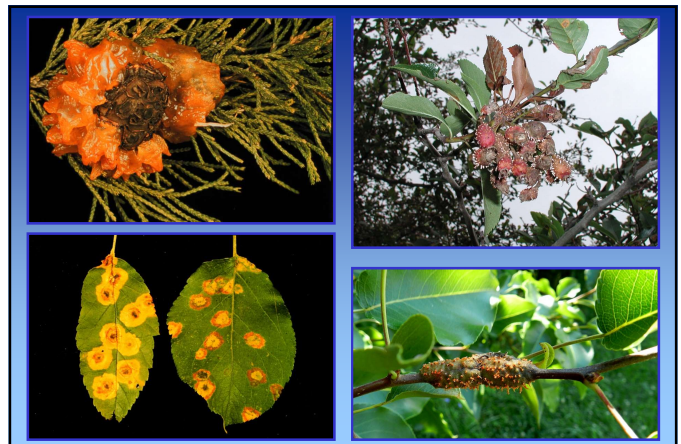
- **Control**
 - Use fungicides to prevent infections
 - Copper-containing fungicides, chlorothalonil
 - Alternate active ingredients (FRAC codes)
 - Apply starting at bud break and at 3-4 week intervals thereafter under favorable conditions

2018 Plant Diseases in Review *Gymnosporangium* Rusts

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

2018 Plant Diseases in Review *Gymnosporangium* Rusts

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



2018 Plant Diseases in Review Gymnosporangium Rusts

- **Control**
 - Grow only the juniper or rosaceous host
 - Use resistant cultivars/varieties
 - “Juniper Diseases”
(<https://store.extension.iastate.edu/Product/5247>)
 - Remove galls

2018 Plant Diseases in Review Gymnosporangium Rusts

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

2018 Plant Diseases in Review 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)]

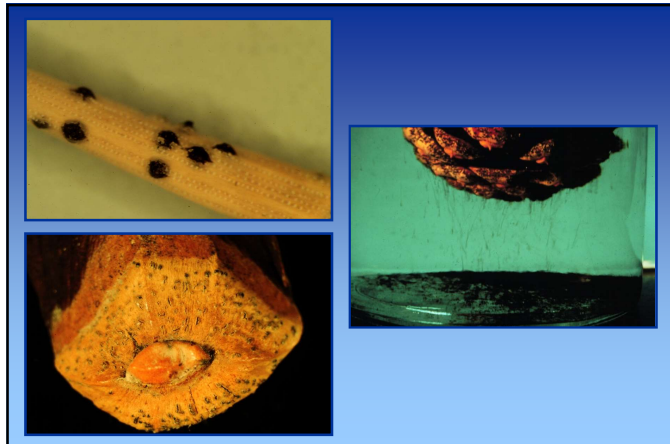
2018 Plant Diseases in Review Diplodia (Sphaeropsis) Shoot Blight

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

2018 Plant Diseases in Review Diplodia (Sphaeropsis) Shoot Blight

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





2018 Plant Diseases in Review *Diplodia (Sphaeropsis) Shoot Blight*

- **Control**
 - DO NOT plant Austrian pines
 - Prevent tree stress, particularly water stress
 - Thin branches to increase airflow
 - Prune diseased branches

2018 Plant Diseases in Review *Diplodia (Sphaeropsis) Shoot Blight*

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

2018 Plant Diseases in Review *Diplodia (Sphaeropsis) Shoot Blight*

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

2018 Plant Diseases in Review *Aster Yellows*

- **Pathogen:** *Aster yellows phytoplasma*
- **Hosts**
 - Many plants in the Asteraceae (aster family)
 - Many other plants in many other plant families
- **Favorable environment:** None
- **Vector:** Aster leafhopper





2018 Plant Diseases in Review Aster Yellows

- **Control**
 - Remove diseased plant material and debris
 - Hot compost
 - Bury
 - Burn (where allowed)
 - Control leafhopper vector (?)

2018 Plant Diseases in Review Verticillium Wilt

- **Causes**
 - Verticillium dahliae
 - Verticillium albo-atrum
 - Other Verticillium spp.
 - New Verticillium spp.

2018 Plant Diseases in Review Verticillium Wilt

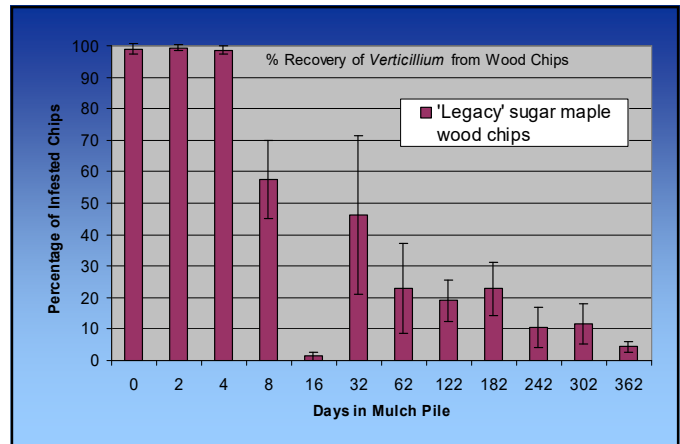
- **Hosts**
 - Many woody ornamentals
 - Common: Maple, ash, redbud, smokebush
 - “New”: Seven son flower, wafer-ash, buttonbush
 - Many herbaceous plants
 - Many vegetables (tomato, potato, EGGPLANT)
- **Favorable environment**
 - Cool, wet weather (for infection)
 - Hot, dry weather (for symptom development)



2018 Plant Diseases in Review 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)

2018 Plant Diseases in Review Verticillium Wilt

• Control

- Use immune/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
- Prevent stress
- Prune diseased (wilted) areas

2018 Plant Diseases in Review Verticillium Wilt

• Control

- Decontaminate pruning tools
 - 70% alcohol (spray disinfectants)
 - Commercial disinfectants
 - 10% bleach
- Make plants comfortable until they die
- Remove and destroy diseased plants
 - Burn (where allowed)
- DO NOT use fungicides

2018 Plant Diseases in Review 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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