

Talks for the General Public

New and Emerging Plant Diseases

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New and Emerging Plant Diseases Ralstonia wilt

- Pathogen: *Ralstonia solanacearum*
 - races
 - biovars
- Hosts
 - Geranium
 - Many other herbaceous plants
 - Potato
- Favorable environment: Warm weather



New and Emerging Plant Diseases Ralstonia wilt

- Control
 - Start with clean propagation materials
 - Follow strict sanitation procedures when working with plant materials
 - Keep plants from different sources separated
 - Disinfect pruning tools
 - Disinfect hands when working with plants
 - Contact the PDDC if you suspect you have seen this disease

New and Emerging Plant Diseases Soybean Rust

- Pathogen: *Phakopsora pachyrhizi*
- Hosts
 - Over 90 known hosts
 - Soybean
 - Kudzu

New and Emerging Plant Diseases Soybean Rust

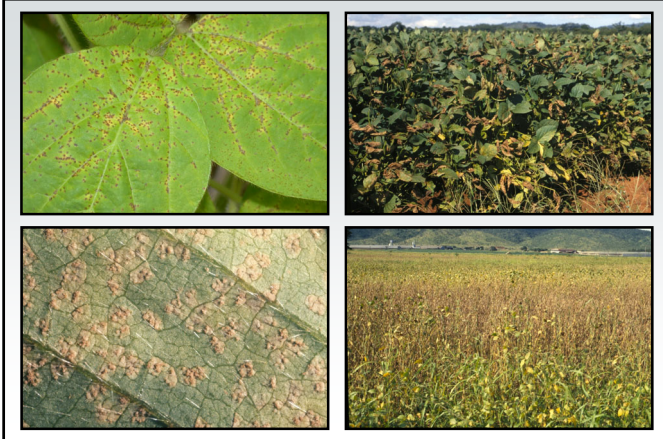
- Hosts
 - Common potential Wisconsin hosts
 - Snap/kidney bean (*Phaseolus vulgaris*)
 - White clover (*Trifolium repens*)
 - Purple crownvetch (*Coronilla varia*)
 - Lupine (*Lupinus* spp.)
 - Pea (*Pisum sativum*)
 - Yellow sweetclover (*Melilotus officinalis*)

New and Emerging Plant Diseases Soybean Rust

- **Hosts**
 - Less common potential Wisconsin hosts
 - American bird's-foot trefoil (*Lotus unifoliolatus*)
 - Crimson clover (*Trifolium incarnatum*)
 - Korean clover (*Kummerowia stipulacea*)
 - Chinese lespedeza (*Lespedeza cuneata*)
 - Rattlebox (*Crotalaria* spp.)
 - Ticktrefoil (*Desmodium* spp.)
 - Winter vetch (*Vicia villosa*)

New and Emerging Plant Diseases Soybean Rust

- **Favorable environment**
 - Long periods of leaf wetness
 - Moderate temperatures (59-77°F)
 - High relative humidity (75-80%)



New and Emerging Plant Diseases Soybean Rust

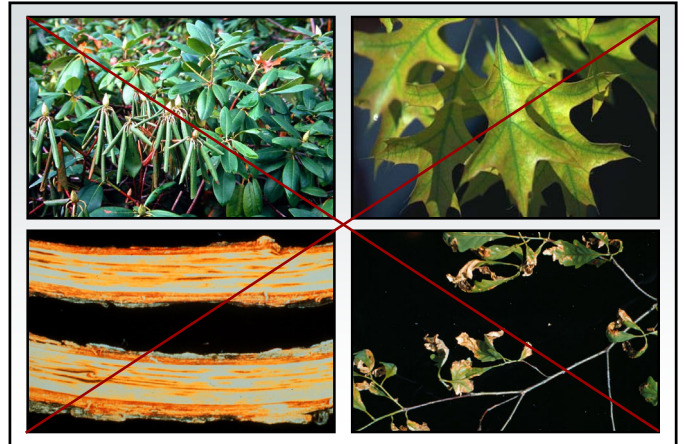
- **Control**
 - Monitor closely for the disease
 - Use fungicides to as needed
 - Azoxystrobin, pyraclostrobin, trifloxystrobin
 - Flutriafol, metconazole, propiconazole, prothioconazole, tebuconazole
 - Chlorothalonil
 - Alternate active ingredients (FRAC codes)
 - Two or more applications may be needed

New and Emerging Plant Diseases Soybean Rust

- **Control**
 - Modify planting dates
 - Plant early with an early maturing variety
 - Plant later so flowering/pod development occurs during dry periods
 - Modify plant spacing
 - Widen rows
 - Decrease stand counts
 - Use resistant varieties (?)

New and Emerging Plant Diseases Sudden Oak Death (Ramorum Blight)

- **Pathogen:** *Phytophthora ramorum*
- **Hosts**
 - A wide range of woody and herbaceous ornamentals
 - Rhododendrons/Azaleas
 - Roses ('Double Red Knockout')
 - Viburnums
 - Lilacs
 - Oaks



New and Emerging Plant Diseases Sudden Oak Death (Ramorum Blight)

- Control
 - Buy woody ornamentals from a reputable source
 - Inspect plants prior to purchase for symptoms of sudden oak death
 - Keep new plants isolated from established plants

New and Emerging Plant Diseases Sudden Oak Death (Ramorum Blight)

- Control
 - Remove and destroy infected plants
 - Decontaminate (70% alcohol, bleach, commercial disinfectants)
 - Contact the PDDC if you believe you have seen this disease

New and Emerging Plant Diseases Boxwood Blight

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



New and Emerging Plant Diseases Boxwood Blight

- **Control**
 - Be cautious about holiday wreaths
 - Grow shrubs other than boxwood
 - Buy from a reputable supplier
 - Buy locally produced boxwood

New and Emerging Plant Diseases Boxwood Blight

- **Control**
 - Grow resistant varieties
 - Hybrid boxwood
 - ‘Green Gem’
 - ‘Kazgreen’ (Green Ice®)
 - Japanese littleleaf boxwood
 - ‘Jim Stauffer’
 - ‘Little Missy’
 - ‘Winter Gem’

New and Emerging Plant Diseases Boxwood Blight

- **Control**
 - Grow resistant varieties
 - Korean littleleaf boxwood
 - ‘Eseles’ (Wedding Ring®)
 - ‘Franklin’s Gem’
 - ‘Pincushion’
 - ‘Wee Willie’
 - ‘Winter Beauty’
 - ‘Wintergreen’

New and Emerging Plant Diseases Boxwood Blight

- **Control**
 - DO NOT replant in an area where boxwood blight has been a problem
 - Avoid symptomatic plants
 - Keep new plants isolated
 - Space plants far apart
 - DO NOT overhead water

New and Emerging Plant Diseases Boxwood Blight

- **Control**
 - Prune out diseased branches
 - Decontaminate (70% alcohol, commercial disinfectants)
 - Remove and destroy infected plants
 - Burn (where allowed)
 - Deep bury (two feet)/Double bag and landfill
 - DO NOT compost

New and Emerging Plant Diseases Boxwood Blight

- **Control**
 - Use fungicides to prevent infections
 - Chlorothalonil (alone or with propiconazole or thiophanate-methyl), fludioxonil, metconazole, tebuconazole
 - Alternate active ingredients (FRAC codes)
 - Apply at 7 day intervals
 - Contact the PDDC if you suspect you have seen this disease

New and Emerging Plant Diseases Japanese Apple Rust

- Pathogen: *Gymnosporangium yamadae*
- Hosts
 - Junipers
 - *Juniperus chinensis*
 - *Juniperus chinensis* var. *procumbens*
 - *Juniperus chienensis* var. *sargentii*
 - *Juniperus squamata*

New and Emerging Plant Diseases Japanese Apple Rust

- Hosts
 - *Malus* spp.
 - *M. asiatica*
 - *M. halliana*
 - *M. platycarpa*
 - *M. pumila* var. *domestica*
 - *M. spontanea*
 - *M. toringo*
 - *M. yunnanensis*
 - *M. baccata*
 - *M. micromalus*
 - *M. prunifolia*
 - *M. scheideckeri*
 - *M. theifera*
 - *M. transitoria*
- Favorable environment: Wet weather



New and Emerging Plant Diseases Japanese Apple Rust

- Control
 - Grow only junipers or rosaceous hosts
 - Carefully inspect junipers prior to purchase
 - Remove galls
 - Decontaminate pruning tools (70% alcohol, disinfectants, bleach)

New and Emerging Plant Diseases Japanese Apple Rust

- Control
 - Destroy infected materials
 - Burn (where allowed)
 - Deep bury
 - DO NOT use fungicides
 - Contact the PDDC if you suspect you have seen this disease

New and Emerging Plant Diseases Thousand Cankers Disease

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

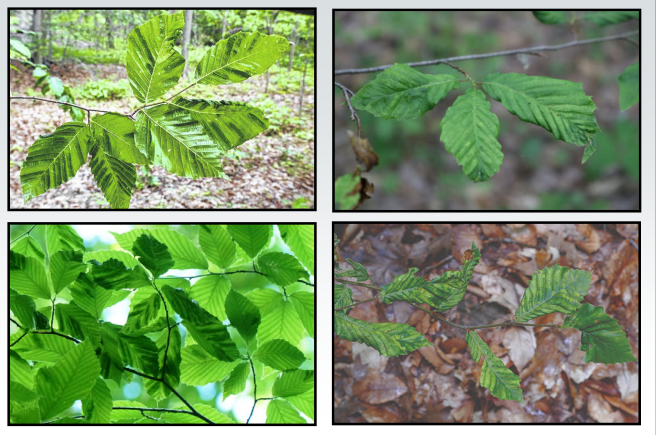


New and Emerging Plant Diseases Thousand Cankers Disease

- **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 seen this disease

New and Emerging Plant Diseases Beech Leaf Disease

- **Pathogen:** *Litylenchus crenatae* subsp. *mccannii*
- **Hosts**
 - American beech
 - European beech
 - Asian beech
- **Favorable environment:** None

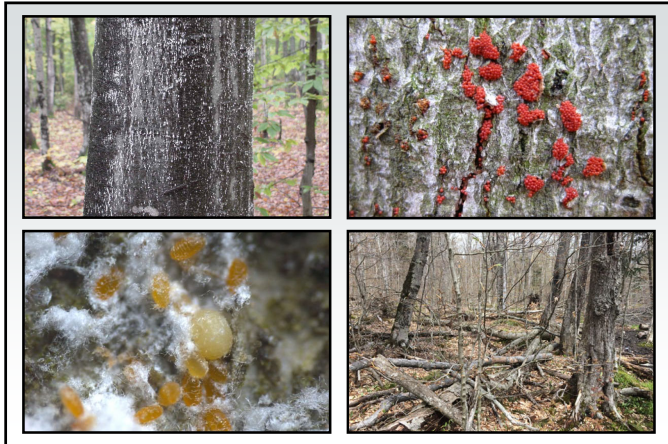


New and Emerging Plant Diseases Beech Leaf Disease

- **Control**
 - Limit movement of beech wood
 - Avoid symptomatic nursery stock
 - Remove affected trees
 - Hope for eventual resistant varieties
 - Contact the PDDC if you believe you have seen this disease

New and Emerging Plant Diseases Beech Bark Disease

- **Favorable Environment:** None
- **Insect Contributors**
 - Woolly beech scale (*Cryptococcus fagisuga*)
 - American beech scale (*Xylococcus betulae*)



New and Emerging Plant Diseases Beech Bark Disease

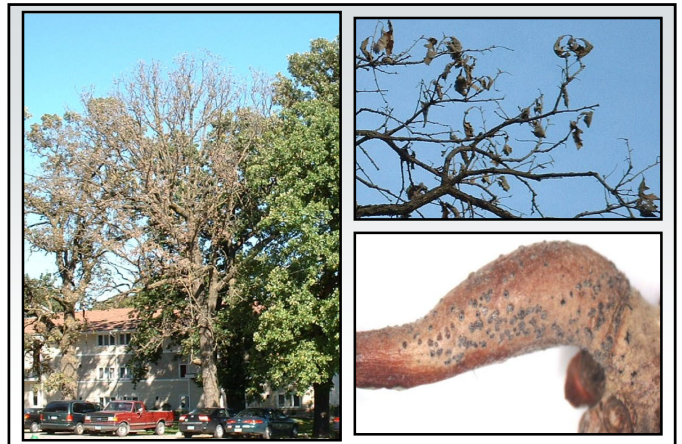
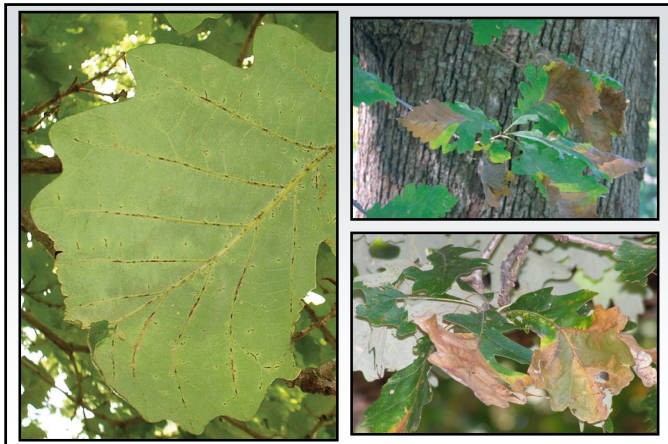
- **Control**
 - Limit movement of beech wood (firewood)
 - Remove trees in healthy stands
 - Eliminate more susceptible trees (older, structurally unsound, rough-barked)
 - Increase diversity of forest composition
 - Remove affected trees in diseased stands
 - Thins the stand potentially affecting scale levels
 - Limits tree fall/increases wood marketability

New and Emerging Plant Diseases Beech Bark Disease

- **Control**
 - Reduce tree stress
 - Water stress
 - Nutrient stress
 - Root disturbance
 - Manage scale infestations
 - Water sprays
 - Use insecticides/insecticidal soaps
 - Hope for eventual resistant varieties

New and Emerging Plant Diseases Bur Oak Blight

- **Pathogen:** *Tubakia iowensis*
- **Host:** Bur oak
 - *Quercus macrocarpa* var. *oliviformis*
 - *Quercus macrocarpa* var. *macrocarpa*
- **Favorable Environment**
 - Cool, wet weather
 - Stress?



New and Emerging Plant Diseases Bur Oak Blight

- **Control**
 - Reduce stress
 - Water stress
 - Nutrient stress (chlorosis)
 - Diseases/insect pests
 - Oak wilt
 - Armillaria root disease
 - Leaf diseases (anthracnose, Tubakia leaf spot, etc.)
 - Two-lined chestnut borer

New and Emerging Plant Diseases Bur Oak Blight

- **Control**
 - Use fungicide injections
 - Propiconazole
 - Prophylactic
 - Late May or early June
 - Every 12-24 months

New and Emerging Plant Diseases Beech Bark Disease

- **Pathogens**
 - *Neonectria faginata*
 - *Neonectria ditissima*
 - *Bionectria ochroleuca*
- **Hosts**
 - American beech
 - European beech

New and Emerging Plant Diseases Southern Blight

- **Pathogen:** *Sclerotium rolfsii*
- **Hosts**
 - Many herbaceous annuals and perennials
 - Many vegetables
 - Some woody ornamentals
- **Favorable environment:** Warm, wet weather



New and Emerging Plant Diseases Southern Blight

- **Control**
 - DO NOT buy infected/infested plants
 - Avoid cocoa mulch (?)
 - Remove infected plants, mulch and soil
 - Double bag and landfill
 - Disinfest contaminated materials (70% alcohol, disinfectants, bleach)

New and Emerging Plant Diseases Southern Blight

- Control
 - Amend soil with organic matter (?)
 - Use fungicides for control
 - Contract with a professional pesticide applicator
 - Azoxystrobin, flutolanil, flutolanil + thiophanate-methyl, PCNB, tebuconazole, triadimefon
 - Alternate active ingredients (FRAC codes)
 - Apply at 14 – 28 day intervals
 - Pray for a really, really, REALLY cold winter

New and Emerging Plant Diseases Late Blight

- Pathogen: *Phytophthora infestans*
- Hosts
 - Potato
 - Tomato
- Favorable environment: Cool, wet weather



New and Emerging Plant Diseases Late Blight

- Control
 - Remove any infected plants and plant parts
 - Infected tomato/potato plants including fruits and tubers
 - Volunteer tomato and potato plants
 - Weed hosts
 - Destroy any infected plants and plant parts
 - Burn (where allowed)
 - Double bag and landfill

New and Emerging Plant Diseases Late Blight

- Control
 - DO NOT use last year's potatoes as seed
 - DO use certified seed potatoes
 - Grow resistant tomato varieties
 - "Late Blight Management in Tomato with Resistant Varieties"
(<https://eorganic.org/node/10822>)

New and Emerging Plant Diseases Late Blight

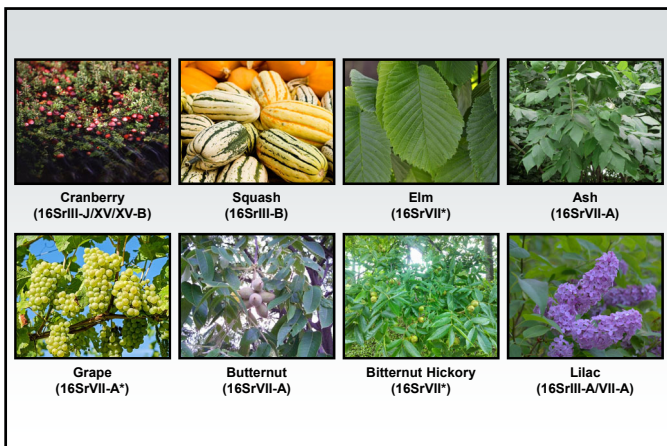
- Control
 - Use fungicides to prevent infections
 - Chlorothalonil, mancozeb
 - Copper
 - Alternate active ingredients (FRAC codes)
 - Start applications based on Blitecast
(<https://wisconsinpotatoes.com/blog-news/>)
 - Apply at 7-14 day intervals

New and Emerging Plant Diseases Phytoplasma Diseases

- **Examples**
 - Aster yellows
 - Ash yellows
- **Pathogens: Miscellaneous phytoplasmas**
- **Hosts**
 - Many herbaceous plants (aster yellows)
 - Ash, lilac (ash yellows)
 - “The more you look, the more you find.”

New and Emerging Plant Diseases Phytoplasma Diseases

- **Favorable environment: None**
- **Transmission: Leafhoppers**



New and Emerging Plant Diseases Phytoplasma Diseases

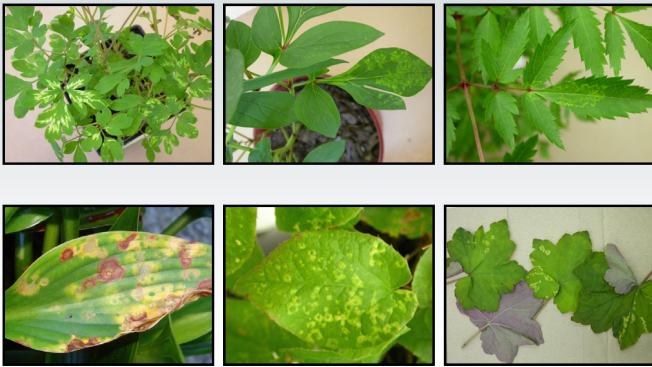
- **Control**
 - Remove infected plants
 - Destroy infected materials
 - Compost
 - Bury
 - Burn (where allowed)
 - Avoid growing susceptible plants
 - Use insecticides for leafhopper control (?)

New and Emerging Plant Diseases Tobacco Rattle

- **Pathogen:** *Tobacco rattle virus*
- **Hosts**
 - **Ornamentals**
 - Astilbe, bleeding heart, columbine, coral bells, daffodils, epimedium, gladiolus, hyacinth, marigold, peony, tulip, vinca
 - **Vegetables**
 - Beans, beet, pepper, potato, spinach
- **Favorable environment:** None

New and Emerging Plant Diseases Tobacco Rattle

- **Transmission**
 - Plant propagation
 - Stubby-root nematodes
 - *Trichodorus* spp.
 - *Paratrichodorus* spp.
 - Mechanical
 - Grafting
 - Seed



New and Emerging Plant Diseases Tobacco Rattle

- **Control**
 - DO NOT buy symptomatic plants
 - Grow non-susceptible plants
 - Annual phlox, carnation, devil's trumpet (downy thorn-apple), sweet William, zinnia, zombie cucumber
 - Remove and destroy infected plants
 - Burn (where allowed)
 - Deep bury
 - Hot compost

New and Emerging Plant Diseases Tobacco Rattle

- **Control**
 - **Decontaminate**
 - 1% Sodium dodecyl sulfate (sodium lauryl sulfate) + 1% Alconox® (2½ Tbsp + 2¾ 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

New and Emerging Plant Diseases Tobacco Rattle

- **Control**
 - DO NOT use chemical controls on plants
 - DO NOT attempt to control stubby-root nematodes

New and Emerging Plant Diseases
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
<https://pddc.wisc.edu>**

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