

The background of the slide is a close-up photograph of several vibrant red maple leaves. The leaves are in various stages of fall color, with some showing a mix of red and orange. They are set against a soft, out-of-focus background of green foliage, suggesting a healthy tree in summer or early fall. The lighting is bright, highlighting the intricate vein structure of the leaves.

# Common Diseases of Ornamental Trees

# Verticillium wilt (*Verticillium albo atrum*, *Verticillium dahliae* )



Joseph O'Brien, USDA Forest Service, Bugwood.org



# Verticillium wilt (*Verticillium albo atrum*, *Verticillium dahliae*)



Robert L. Anderson, USDA Forest Service, Bugwood.org



Roland J. Stipes, Virginia Polytechnic Institute and State University, Bugwood.org

# Susceptible species

<b>Maple</b>	<b>Persimmon</b>	<b>Olive</b>
<b>Box elder</b>	<b>Russian olive</b>	<b>Rose</b>
<b>Tree of heaven</b>	<b>Weeping fig</b>	<b>Chinese pistache</b>
<b>Pecan</b>	<b>Indian laurel</b>	<b>Pistache</b>
<b>Catalpa</b>	<b>Ash</b>	<b>Almond, Apricot, Peach, Cherry</b>
<b>Azalea</b>	<b>Golden rain tree</b>	<b>Black locust</b>
<b>Redbud</b>	<b>Tulip tree</b>	<b>Barberry</b>
<b>Boxwood</b>	<b>Southern magnolia</b>	<b>Brambles</b>
<b>Yellow wood</b>	<b>Black gum</b>	<b>Elm</b>
<b>Cork tree</b>	<b>Olive</b>	<b>Current</b>
<b>Honeysuckle</b>	<b>Horse chestnut</b>	<b>Lilac</b>
<b>Kentucky coffee tree</b>	<b>Osage orange</b>	<b>Privet</b>
<b>Sassafras</b>	<b>Serviceberry</b>	<b>Smoke tree</b>
<b>Sumac</b>	<b>Viburnum</b>	<b>Weigela</b>

# Resistant species

<b>Apple</b>	<b>Holly</b>	<b>Pear</b>
<b>Beech</b>	<b>Honey locust</b>	<b>Poplar</b>
<b>Birch</b>	<b>Hornbeam</b>	<b>Pine</b>
<b>Crabapple</b>	<b>Juniper</b>	<b>Rhododendron</b>
<b>Dogwood</b>	<b>Katsura tree</b>	<b>Spruce</b>
<b>Fir</b>	<b>Larch</b>	<b>Sweetgum</b>
<b>Firethorn</b>	<b>Linden</b>	<b>Sycamore</b>
<b>Ginkgo</b>	<b>Mountain ash</b>	<b>Walnut</b>
<b>Hackberry</b>	<b>Mulberry</b>	<b>Willow</b>
<b>Hawthorn</b>	<b>Oak</b>	<b>Yew</b>
<b>Hickory</b>	<b>Pawpaw</b>	<b>Zelkova</b>



# Bacterial leaf scorch (*Xylella fastidiosa*)





# Bacterial leaf scorch (*Xylella fastidiosa*)

Sherrie Smith University of Arkansas Cooperative Extension



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Johnny N. Dell, Bugwood.org



John Hartman, University of Kentucky, Bugwood.org



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# Control

- **Trunk injections with antibiotics annually in late May or early June. oxytetracycline**
- **Pruning**
- **Mulching and irrigating**
- **Fertilization**
- **Removing trees**



# Maple phytophthora root and butt

**rot** (*Phytophthora cactorum*)

- Good drainage
- No water on the trunk
- Remove soil, mulch from root flare
- Fertilize per soil test.
- Do not overuse nitrogen.
- Fungicides: Aliette, Subdue MAXX, Adorn, Stature, Banrot, and Allude



Photo, courtesy of Jessica Rice

# Maple cankers

(numerous organisms)







Jim Robbins University of Arkansas Cooperative Extension



Jim Robbins University of Arkansas Cooperative Extension





Jim Robbins University of Arkansas Cooperative Extension





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- ✓ **Planting location**
- ✓ **Proper watering/fertilizer**
- ✓ **Yearly pruning**
- ✓ **Fungicides**



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# Maple canker (*stegonosporium ovatum*)

Maintain tree vigor with  
adequate water/fertilize  
per soil test



# Maple anthracnose

(*Gloeosporium* spp., *Discula* spp., *Kabatiella apocrypta*)





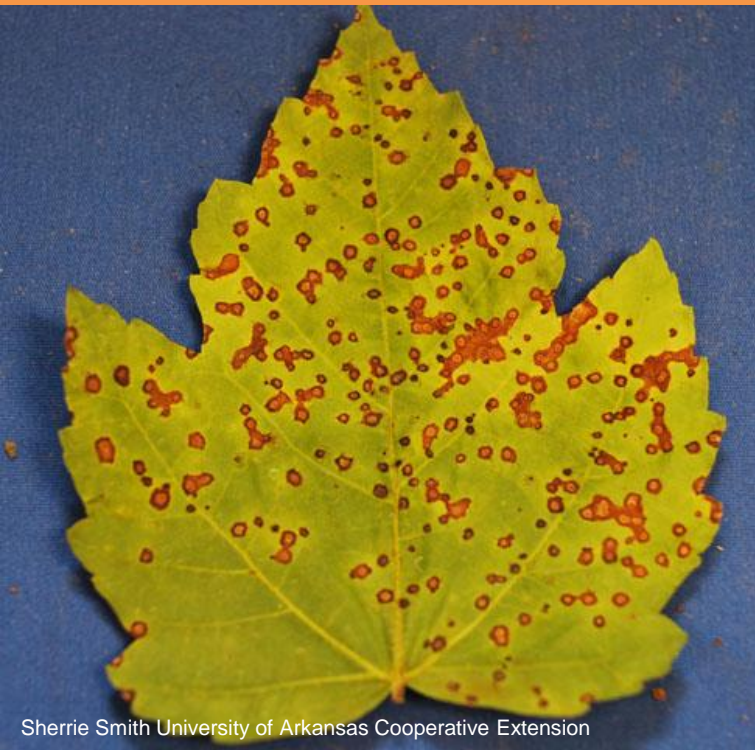
# Control

- Clean up all fallen leaves and twigs.
- Maintain tree vigor with adequate water/fertilize per soil test
- Fungicides applied just before and at bud break
  - thiophanate-methyl
  - chlorothalonil
  - copper sulfate
  - mancozeb

# Maple Phyllosticta leaf spot

*(Phyllosticta minima)*

- Sanitation
- Fungicides such as chlorothalonil





# Maple Tar spot (*Rhytisma acerinum*)

- Sanitation
- Fungicides such as chlorothalonil



Frantisek Soukup, Bugwood.org



Steven Katovich, USDA Forest Service, Bugwood.org



# Oak Hypoxylon canker (*Biscogniauxia atropunctata*, formerly *Hypoxylon atropunctata*)



USDA Forest Service - Region 8 - Southern Archive, USDA Forest Service, Bugwood.org



Randy Cyr, Greentree, Bugwood.org



USDA Forest Service - Region 8 - Southern Archive, USDA Forest Service, Bugwood.org



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# **Hypoxylon *canker*** (*Hypoxylon* spp.)

- **Oak**
- **Hickory**
- **Beech**
- **Aspen**
- **Maple**

# Oak Wilt (*Ceratocystis fagacearum*)





# Oak Wilt root graft

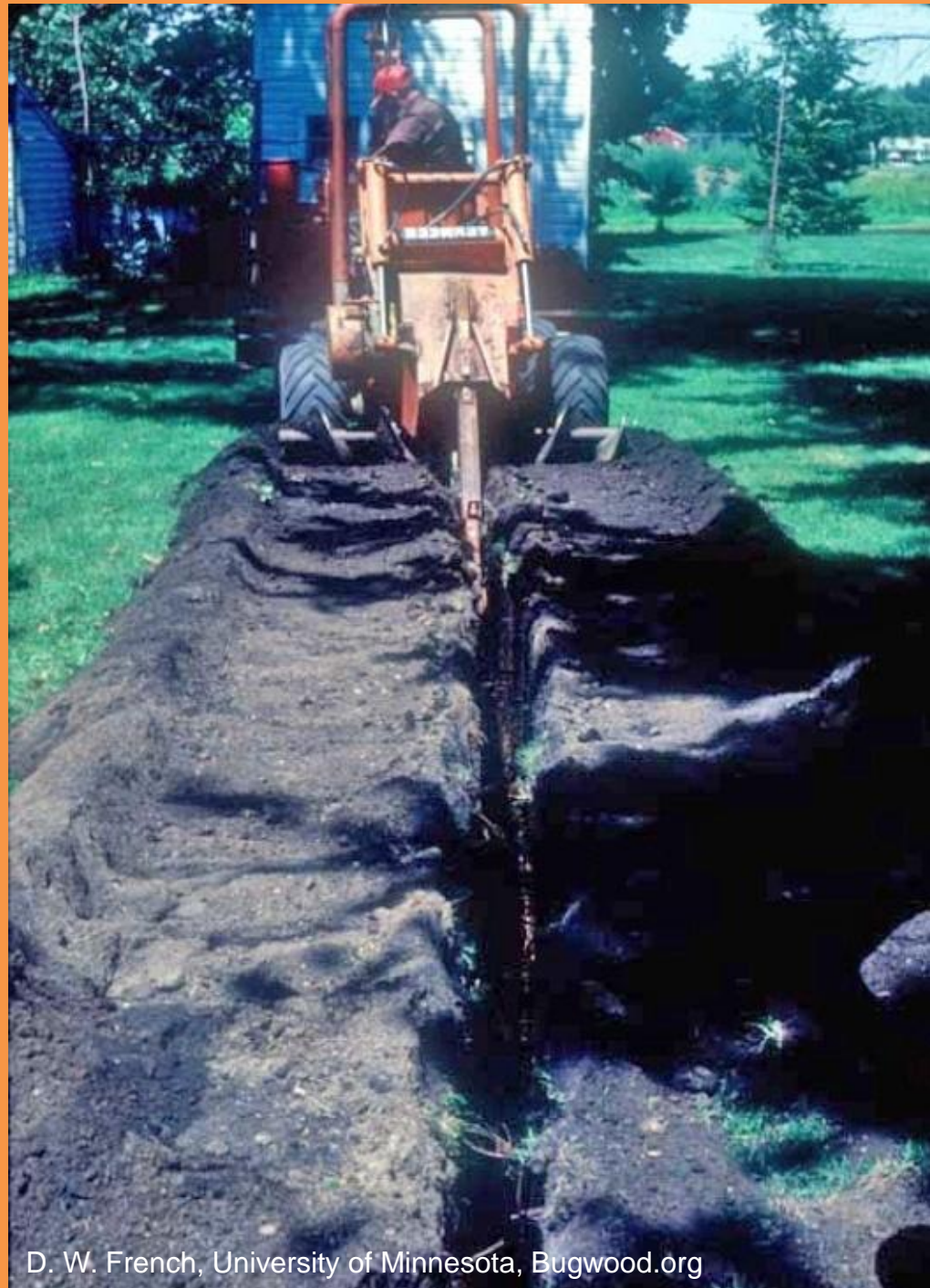


# Control

- Tree removal
- Trenching



D. W. French, University of Minnesota, Bugwood.org



D. W. French, University of Minnesota, Bugwood.org



# Oak Botryosphaeria canker (*Botryosphaeria quercuum*)



# Oak Botryosphaeria canker (*Botryosphaeria quercuum*)

- pH
- Water/fertilize
- Thiophanate-methyl





# Oak Coryneum twig canker

- Sanitation



# Oak Tubakia leaf spot (*Actinopelte dryina*)

- pH
- Micronutrients
- Sanitation
- Fungicides





# Oak leaf blister (*Taphrina caerulescens*)



Rick Cartwright University of Arkansas Cooperative Extension

Sherrie Smith University of Arkansas Cooperative Extension

# Control

- **Sanitation**
- **Copper or chlorothalonil prior to bud break and at bud break**



# Oak anthracnose (*Apiognomonia quercina*)



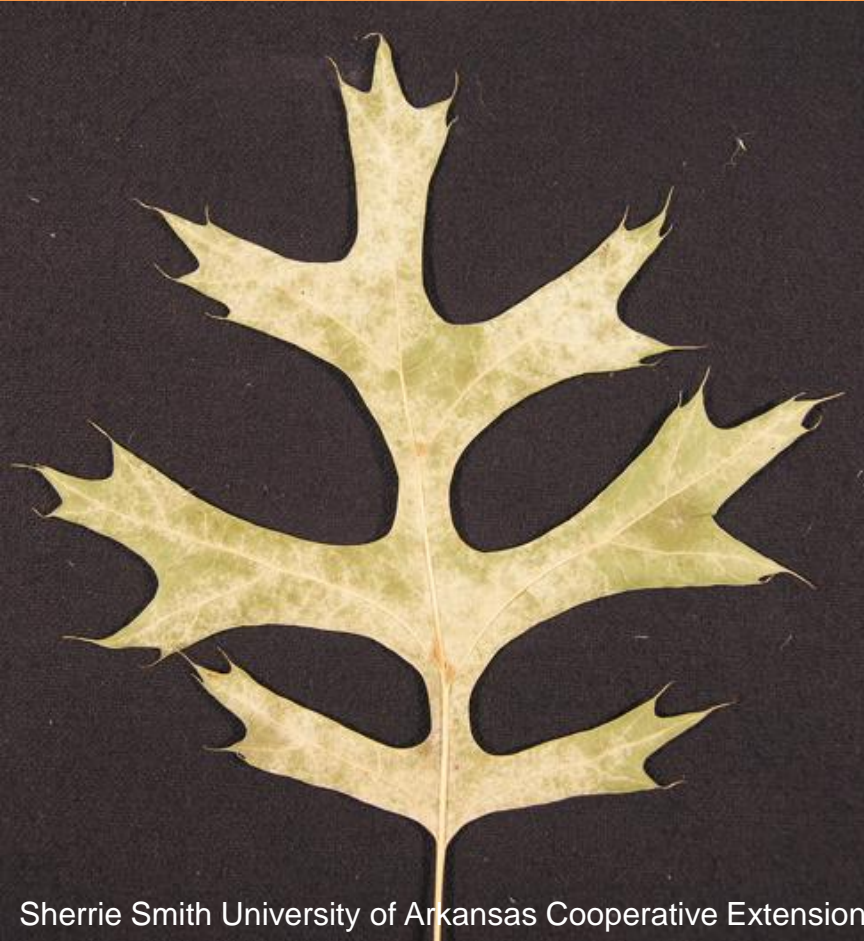
Joseph O'Brien, USDA Forest Service, Bugwood.org

# Control

- Clean up all fallen leaves and twigs.
- Maintain tree vigor with adequate water/fertilize per soil test
- Fungicides applied just before and at bud break
  - thiophanate-methyl
  - chlorothalonil
  - copper sulfate
  - mancozeb



# Oak Powdery mildew (*Microsphaera alphitoides*)



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Andrej Kunca, National Forest Centre - Slovakia, Bugwood.org

# Oak galls

**Oak Apple gall-*Amphibolips* spp.**



Steven Katovich, USDA Forest Service, Bugwood.org

**Oak Jumping gall-*Neuroterus saltatorius***



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**Oak Roly-Poly gall-*Andricus* spp.**



Mike Hamilton University of Arkansas Cooperative Extension

**Oak Vein gall-*Macrodiplosis quercusoruca***



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**Oak Horned gall-*Callirhytis cornigera***



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# Oak galls

**Oak gall-*Callirhytis* spp.**



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**Oak Fuzzy Bead gall- *Callirhytis furva***



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**Oak Gouty gall-*Callirhytis quercuspunctata***



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# Sycamore anthracnose





# Control

- Clean up all fallen leaves and twigs.
- Maintain tree vigor with adequate water/fertilize per soil test
- Fungicides applied just before and at bud break
  - thiophanate-methyl
  - chlorothalonil
  - copper sulfate
  - mancozeb

# Elm Black leaf spot (*Stegophora ulmea* (formerly *Gnomonia ulmea*))



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Paul Bachi, University of Kentucky Research & Education Center, Bugwood.org



# Control

- Clean up all fallen leaves and twigs.
- Maintain tree vigor with adequate water/fertilize per soil test
- Fungicides applied just before and at bud break
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# Mimosa wilt (*Fusarium oxysporum* f. sp.)



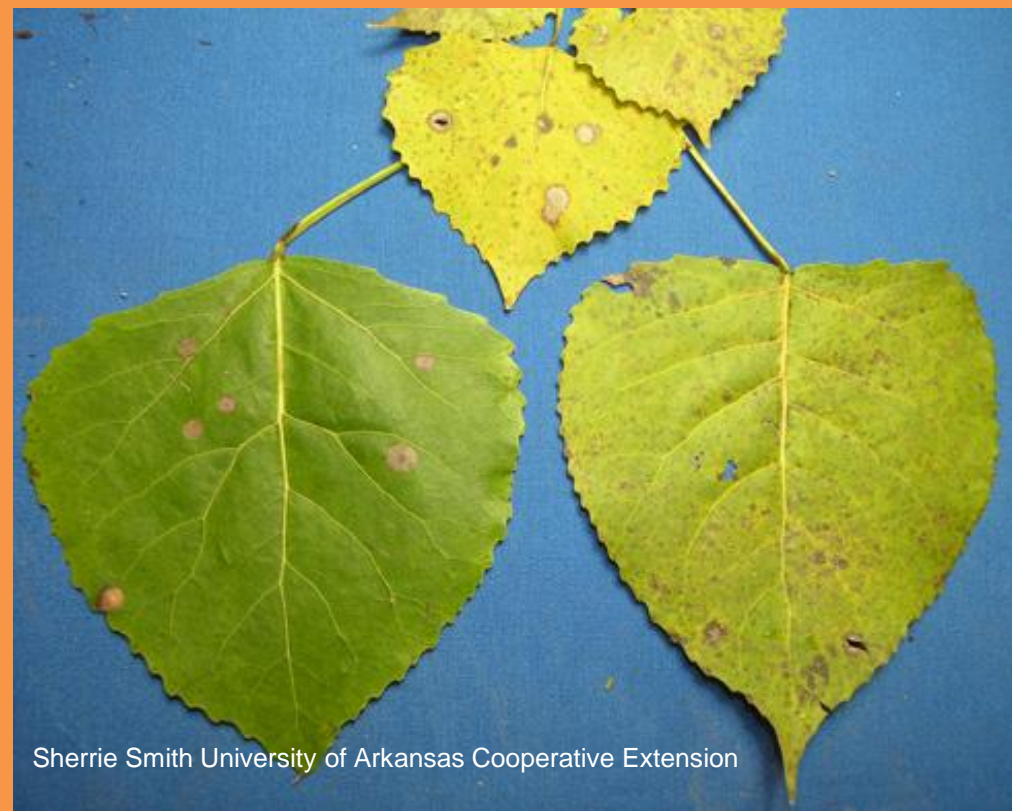


# Mimosa wilt (*Fusarium oxysporum* f. sp. *Perniciosum*)

- No controls
- Plant resistant cultivars  
"Charlotte" and "Tryon"



# Cottonwood Leaf spot (*Marssonina populi*)



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# Control

- Clean up all fallen leaves and twigs.
- Maintain tree vigor with adequate water/fertilize per soil test
- Fungicides applied just before and at bud break
  - thiophanate-methyl
  - chlorothalonil
  - copper sulfate
  - mancozeb

# Mulberry Popcorn disease (*Ciboria carunculoides*)

## Sanitation

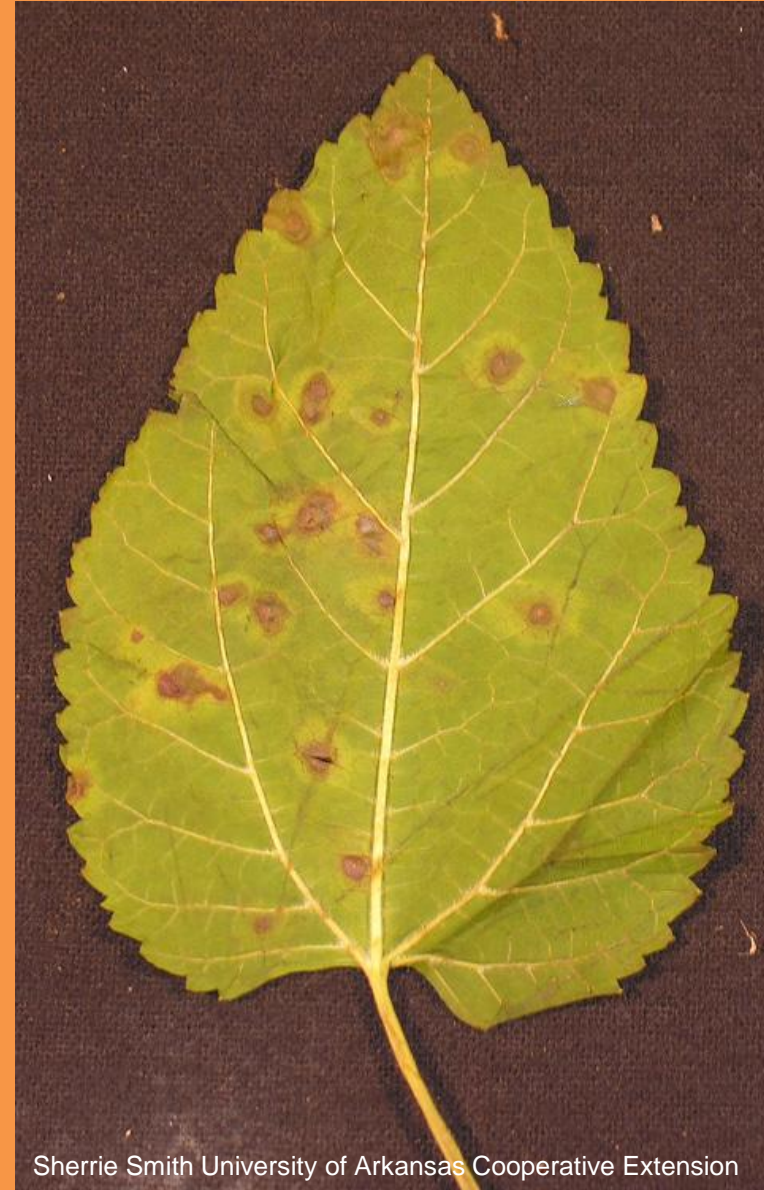


Vann



# Mulberry Leaf spot (*Cercospora moricola* and *C. Mori*)

- Sanitation
- Fungicides



# Mulberry scale insects



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# Blue Spruce Needle Cast



**Rhizosphere**

- ✓ **Fungicides, two sprays, 2-3 weeks apart: Daconil, Echo, Daconil Ultrex, Weatherstik, Kocide**
- ✓ **Moist well-drained soil.**
- ✓ **Proper fertilizer.**
- ✓ **Insect control.**



# Leyland cypress

Photo by Steve Nix



S. Vann





**Seiridium**

**Cypress Canker**



# Alternatives for Leyland Cypress

- **Arborvitae: “Green Giant”, “Emerald Green”**
- **Magnolia: “Alta”, “Edith Bogue”, “Bracken’s Brown Beauty”**
- **Holly: “Foster’s”, Savannah”, “Dragon Lady”, “Carolina Setinel”, “Nellie B. Stevens”**
- **Fragrant tea olive**

# Phomopsis Twig blight



Robert L. Anderson, USDA Forest Service, Bugwood.org



Bruce Watt, University of Maine, Bugwood.org



**Table 1. Relative resistance of several Juniperus selections to Phomopsis and Kabatina tip blight.**

Host	Disease Resistance Rating*		Host	Disease Resistance Rating*	
<i>Juniperus chinensis</i>	<i>Phomopsis</i>	<i>Kabatina</i>	<i>Juniperus scopulorum</i>	<i>Phomopsis</i>	<i>Kabatina</i>
Ames	L-M	o	Cologreen	?	L
Aureo-globosa	L	?	McFarland	?	L
Femina	L	?	Moffettii	L	M
Globasa	L	?	Silver Globe	?	L
Hetzii	L	o	Sutherland	?	L
Keteleeri	L	o			
Mas	L	o	<i>Juniperus communis</i>	<i>Phomopsis</i>	<i>Kabatina</i>
Mountbatten	L	o	Depressa	o	?
Perfecta	?	o	Oblonga pendula	o	?
Pfitzeriana	M	L			
Pfitzeriana Aurea	M	L	<i>Juniperus con!erta</i>	o	?
Pfitzeriana Compacta	L	?			
Pyramidalis	L	?	<i>Juniperus horizontalis</i>	<i>Phomopsis</i>	<i>Kabatina</i>
Robusta Green	o	o	Douglasii	L	?
Var. sargentii	L-M	?	Glenmore	L-M	?
Wintergreen	M	o	Procumbens	L	?
<i>Juniperus sabina</i>	<i>Phomopsis</i>	<i>Kabatina</i>	<i>Juniperus virginiana</i>	<i>Phomopsis</i>	<i>Kabatina</i>
Arcadia	L	?	Blue Mountain	?	o
Broadmoor	L	?	Burkii	?	L
Fastigiata	L	?	Cinerascens	L	?
			Emerald Sentinel	?	L
<i>Juniperus squamata</i>	<i>Phomopsis</i>	<i>Kabatina</i>	Globosa	L	?
Fargesii	o	?	Henryii	?	L
Meyeri	L	?	Manhattan Blue	?	L
			Peptans	L	?
			Tripartita	o	?

\* Rating of o = no disease, L = light disease, M = Moderate disease, ? = unknown. **Ohio State University Extension**

# Control Phomopsis and Kabatina

- Fungicides, thiophanate methyl
- (e.g. Cleary 3336) and mancozeb
- (e.g. Fore, Dithane, and Protect),
- are registered for control of both
- Phomopsis (spring) and Kabatina (fall) tip blights
- Follow label!!!



**Plant Health Clinic**  
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**<http://www.uaex.edu/farm-ranch/pest-management/plant-health-clinic/>**