Invasive and Emerging Diseases of Landscape Trees

Extension
UtahStateUniversity

Marion Murray
Extension IPM Program

NOT PRESENT IN UTAH

- Bacterial scorch
- Pine wilt

PRESENT IN UTAH

- Phytophthora crown and trunk diseases
- Thousand cankers
- Other foliar diseases

Bacterial Scorch

Bacterial Scorch

Xylella fastidiosa

Wide host range

Not yet identified in northern Utah

- Occurs on chitalpa in southern Utah

Spread by spittlebugs, leafhoppers, treehoppers (exact species unknown)

leaf drop and refoliation

thin crown

dieback, decline

symptoms reappear each year after initial infection

Bacterial Scorch Management

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Prune out symptomatic branches and dead wood

Trunk injections of oxytetracycline (antibiotic)

- delay symptom expression
- not a cure
- re-applied annually

Replacement

- tulip-poplar, linden, katsura, zelkova, ash, catalpa, Turkish filbert

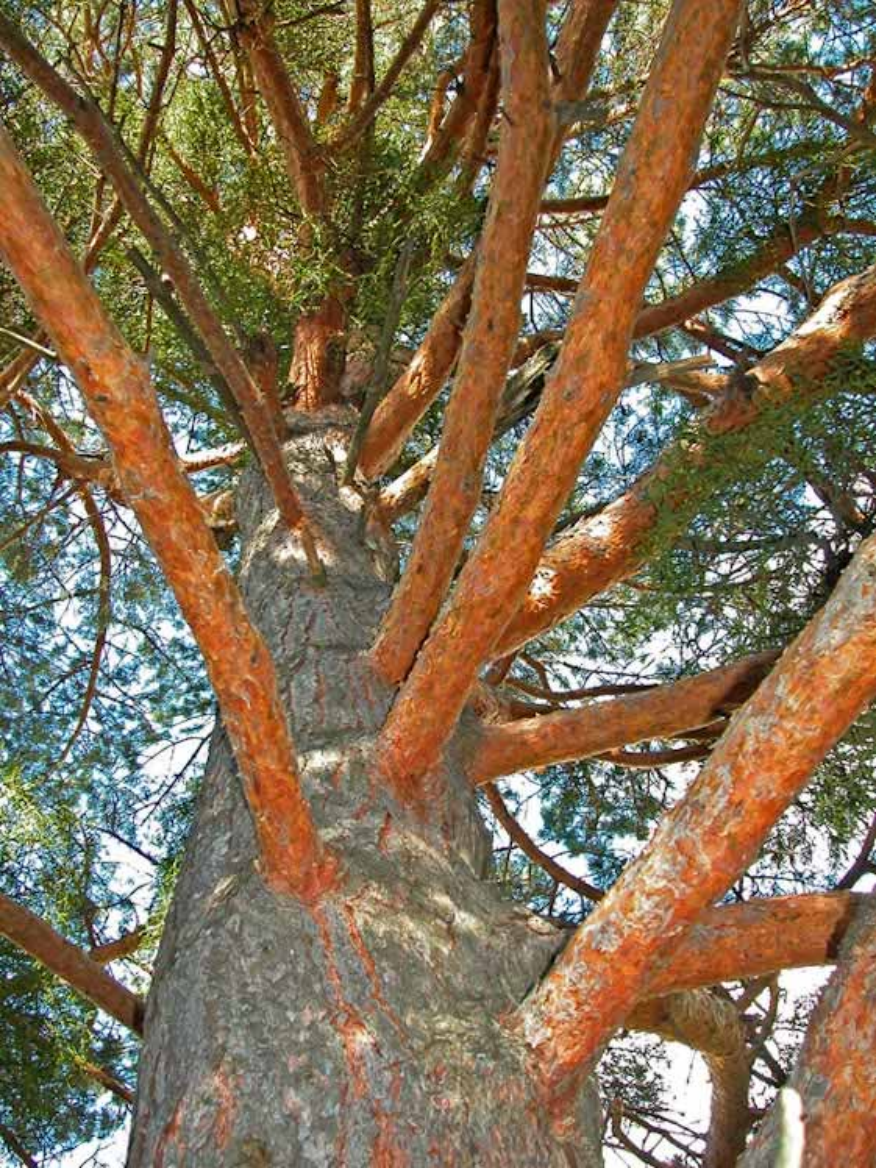
Pine Wilt

Caused by pine-wood nematode (*Bursaphelenchus*) vectored by pine sawyer beetles (*Monochamus* sp.)

Native to North America

Spreading to non-native hosts

Affected trees wilt, turn brown, and die in as little as 3 weeks.



Scotch Pine (*Pinus sylvestris*)

Austrian Pine (*P. nigra*)

Mugo Pine (*P. mugo*)

5-needled pines moderately susceptible

Native western pines resistant

White-spotted pine sawyer

Pine Wilt Management

Early tree removal

Do not keep firewood from infected trees

Chip or burn

Abamectin injections (by a professional) as preventive against pine sawyer

Emerging Diseases Present in Utah

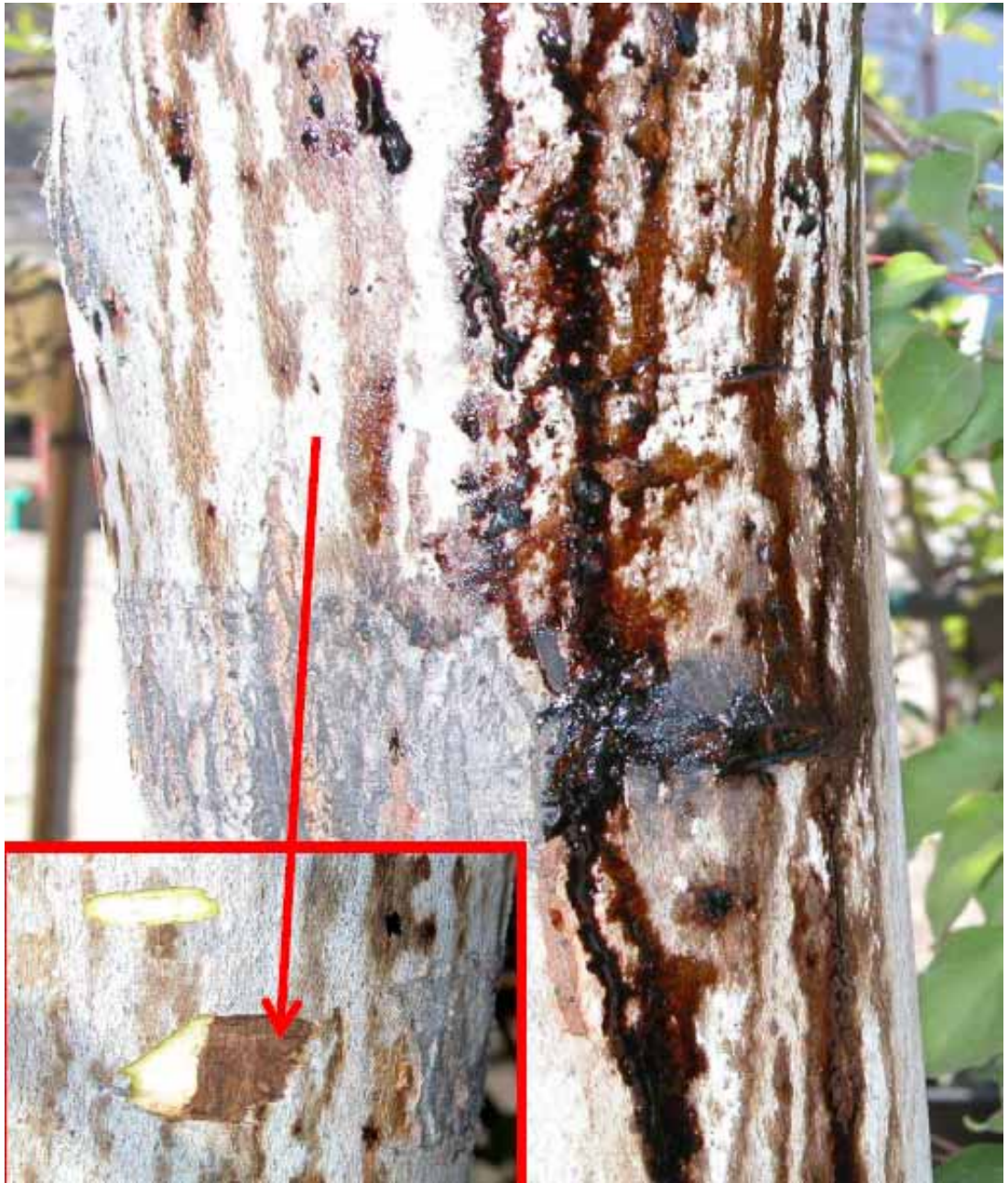
Phytophthora Crown Rot

fye-TOF-thor-ah

maple, sycamore, ornamental cherry, ornamental pear, fruit trees, sumac, willow, juniper, yew, arborvitae

thin crown
yellow leaves
late leaf emergence in spring
early fall color

Phytophthora Bleeding Canker



Birch

Bacterial canker
Cytospora canker
Phytophthora bleeding canker

Phytophthora Management

Monitoring

- wilting, off-color foliage
- late leaf expansion or early fall color
- trunk cankers

Cultural

- avoid saturation of roots and trunk
- reduce compaction; add organic amendments
- replace dead tree with resistant species
  - honeylocust, ginkgo, river birch, sweetgum, dawn redwood, magnolia

Phytophthora Management

Excise trunk canker

Chemical

Ridomil as soil drench

Phosphonates as foliar spray

Phosphite, Agri-Fos (salts of phosphorous acid)

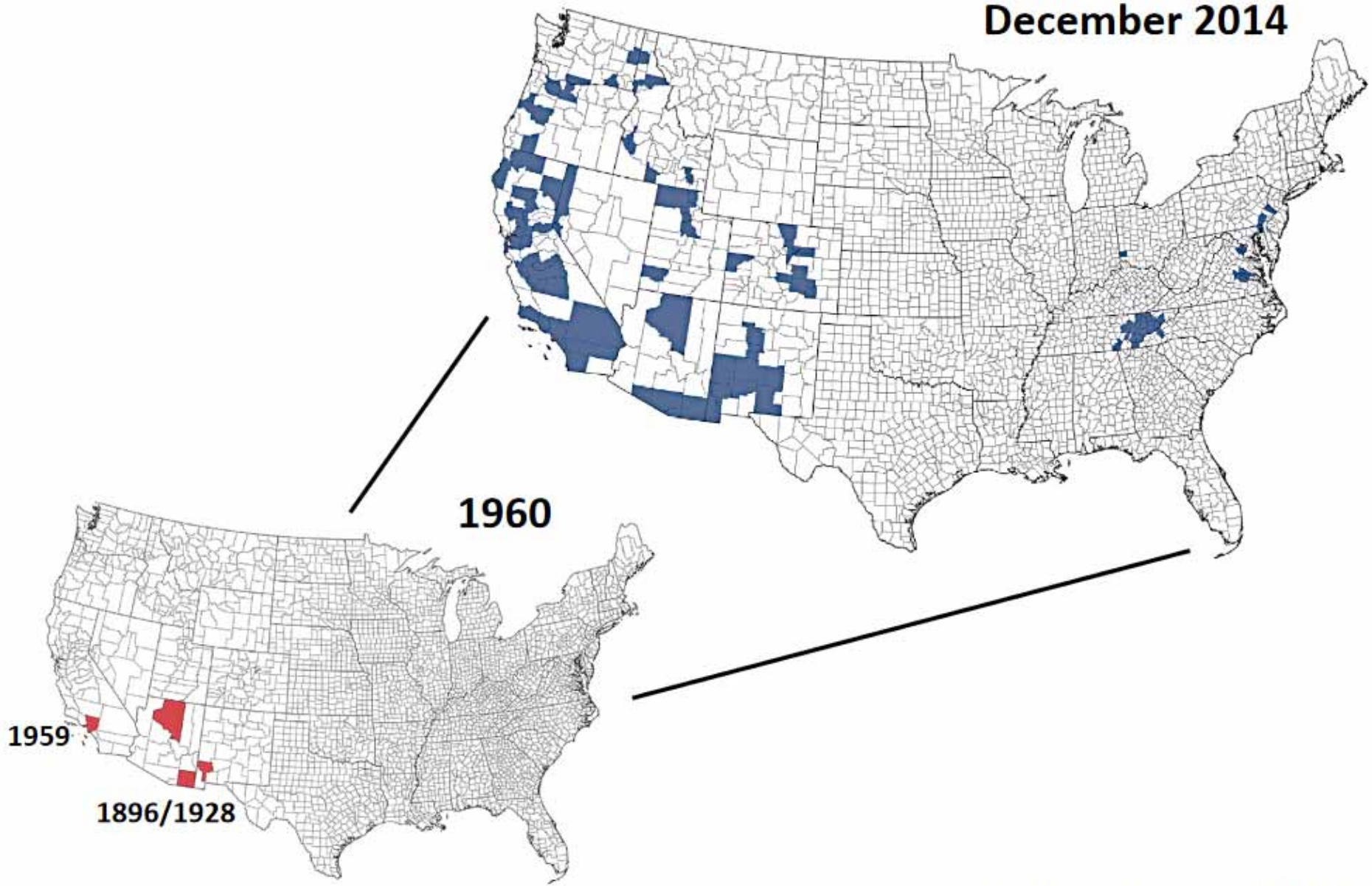
Aliette (aluminum-tris)

Agri-Fos as trunk spray (plus Pentra-Bark) on bleeding cankers

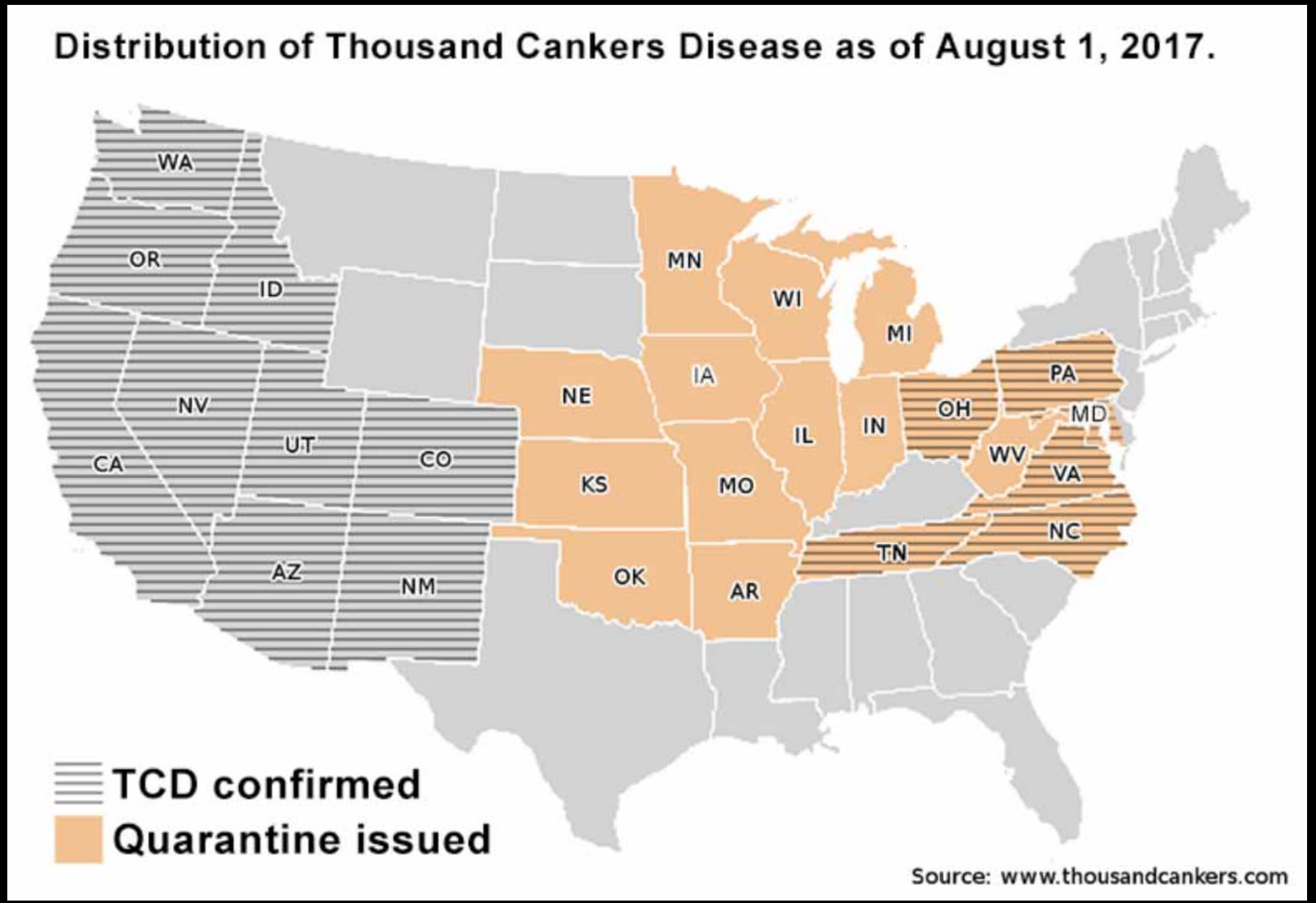
Thousand Cankers of Walnut

- Fungal disease (*Geosmithia*) vectored by walnut twig beetle
- Arizona walnut is native host
  - theorized that beetles moved to black and other walnut species

WTB distribution in the USA



from Rugman-Jones et al. (2015) PLoS ONE 10(2):e0118264


Distribution of Thousand Cankers Disease as of August 1, 2017.
WA
OR
ID
NV
CA
UT
CO
AZ
NM
MN
WI
MI
IA
NE
IL
IN
OH
PA
MD
WV
VA
KS
MO
NC
TN
OK
AR
TCD confirmed
Quarantine issued
Source: www.thousandcankers.com

walnut twig beetle


cankers

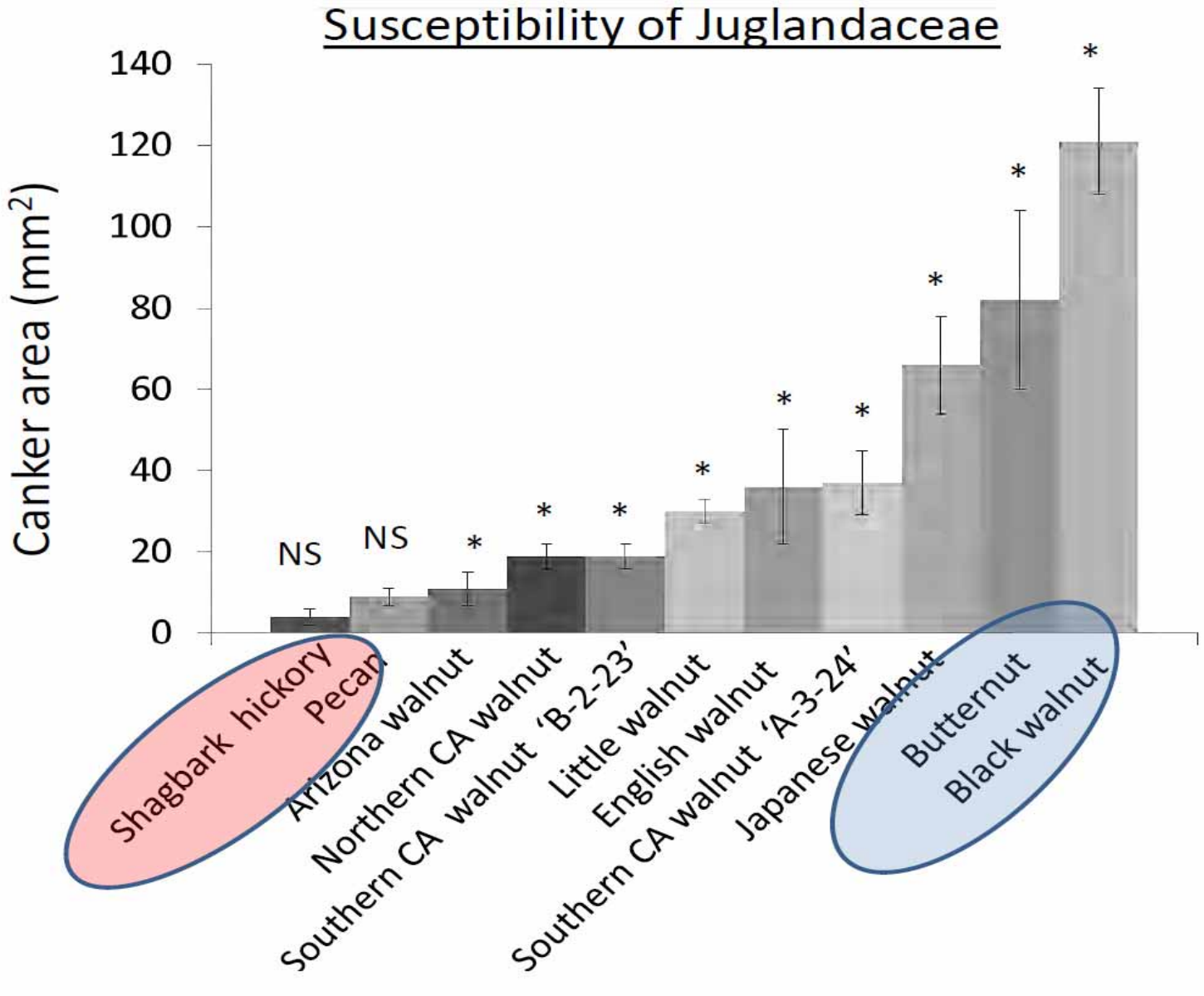


Susceptible:

- Black walnut
- Butternut
- Japanese walnut
- Persian/English walnut
- Texas (Little) walnut (*Juglans microcarpa*)
- Wingnut (*Pterocarya* spp.)

Not Susceptible:

- Pecan
- Hickory



Curtis Utley, et al. 2013. Susceptibility of Walnut and Hickory Species to *Geosmithia morbida* Plant Disease 97:5, 601-607


AMERICA

Thousand Cankers Management

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Prevention of spread:

- remove infected trees
- do not move untreated walnut lumber
- chip wood to prevent beetle spread

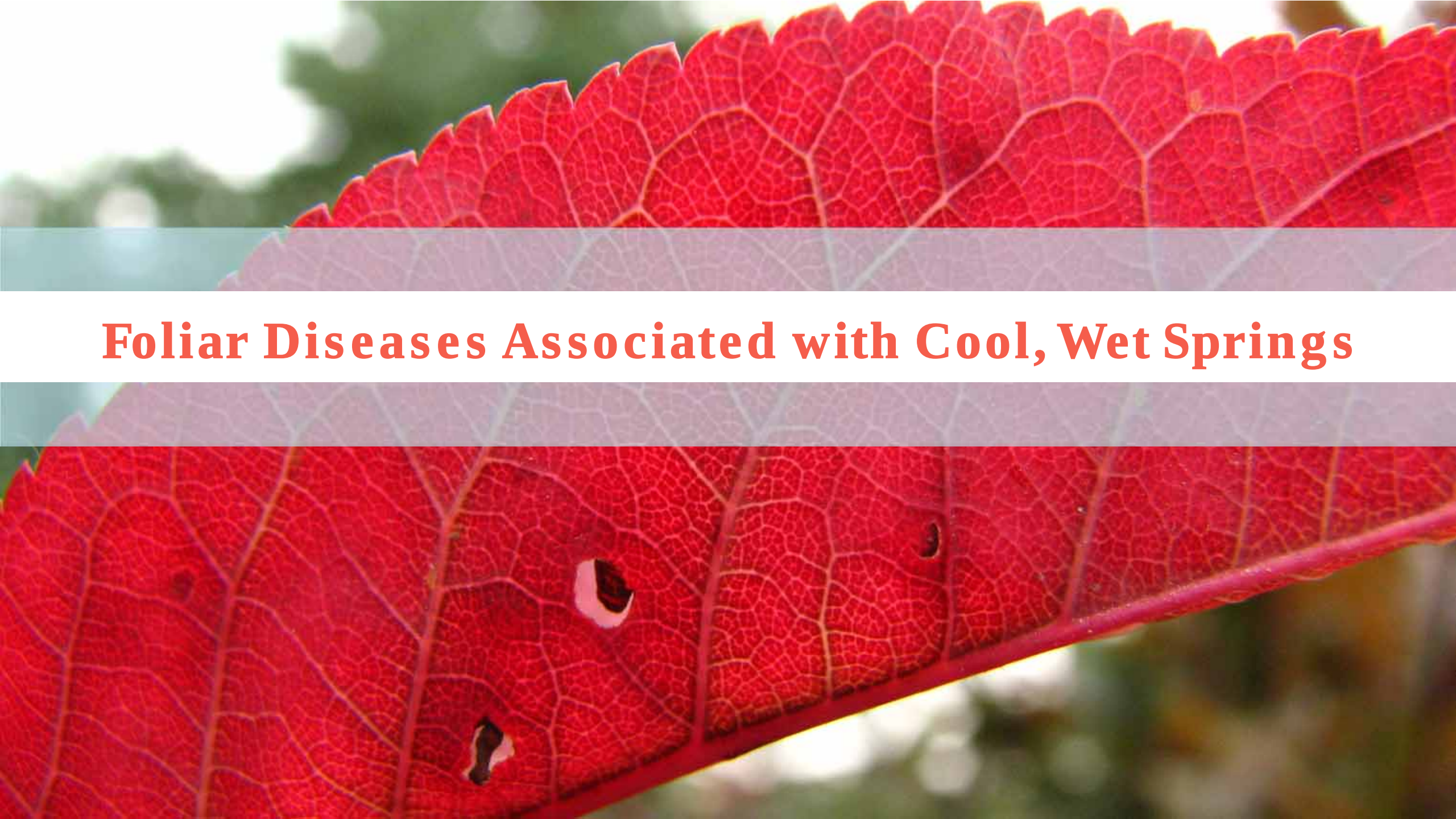
Injection of emamectin benzoate and propiconazole (several brands of both)

Trunk sprays not effective

Washington black walnut orchard

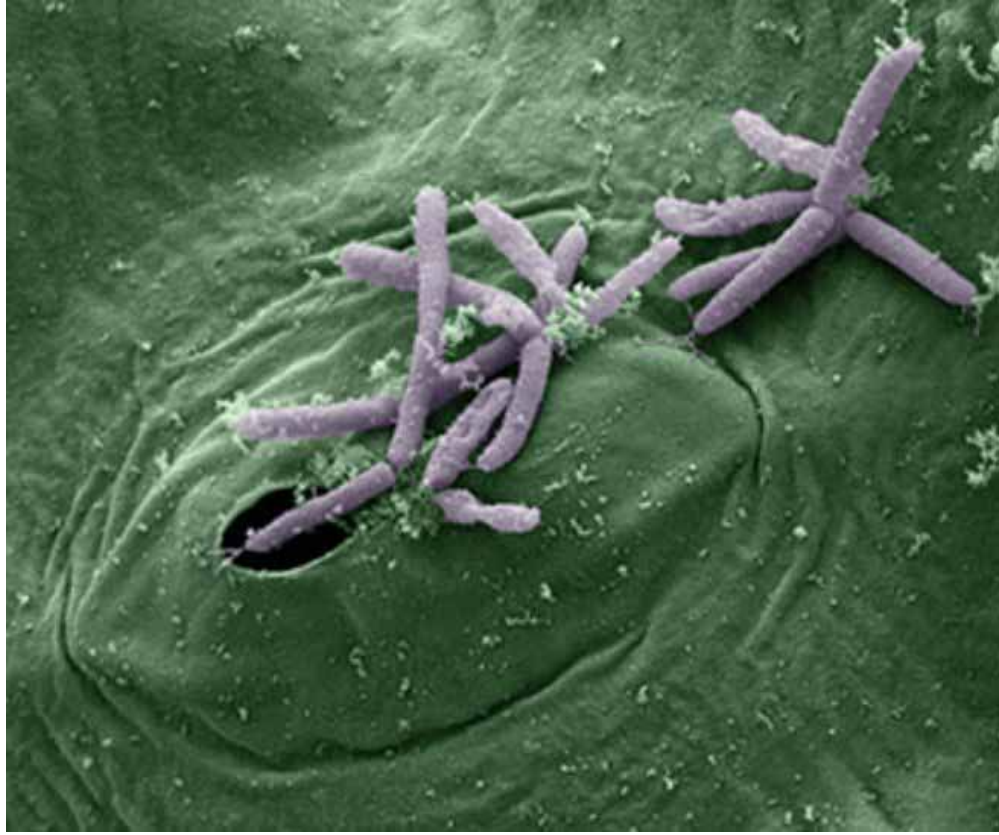
Single or double rate of emamectin benzoate (Tree-age G4) was more effective than when combined with propiconazole (Propizol)

Found phytotoxicity with Propizol use



Foliar Diseases Associated with Cool, Wet Springs

Bacterial Blight



Pseudomonas syringae

- survives as epiphyte on plant and other surfaces

hundreds of woody hosts

- maple, dogwood, filbert, magnolia, lilac, ornamental pear, aspen, serviceberry, ornamental cherry, linden

shoot and flower blight






Management of Bacterial Blight

Cultural

plants growing in nutrient-poor soils more susceptible

other diseases such as powdery mildew increase susceptibility

fall/winter pruning can increase susceptibility (cold injury)

prune out infections on a sunny day

Chemical

copper just before budbreak in spring

Aspen Leaf Spot

Marssonina populi

aspen, cottonwood, poplars

- brown to black irregular spots on leaves
- defoliation of terminal foliage
- dieback

Aspen Leaf Spot Management

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Cultural

- Rake and remove/compost fallen leaves and twigs
- Thin dense trees or clumps
- Prevent irrigation from wetting foliage

Chemical

- Bud break, and repeat 1 to 2 times, spaced 2 weeks apart
  - chlorothalonil
  - Dexter Max (mancozeb+azoxystrobin)
  - Heritage (azoxystrobin)

  - Serenade (Bacillus)
  - copper

Anthracnose

Several fungal species

sycamore

oak, maple, ash, elm

irregular blotchy lesions on leaves

Anthracnose Management

Monitoring

watch for small, water soaked lesions on upper surface of leaves

look for small cankers on sycamore

Cultural

prune out infections

prevent irrigation wetting on foliage

Anthracnose Management

Chemical

Foliar application at bud break and repeat 2 wk later

- Abound (azoxystrobin)
- chlorothalonil
- propiconazole – many brands
- Armada, Strike, Trigo (trifloxystrobin)
- Organic - Serenade

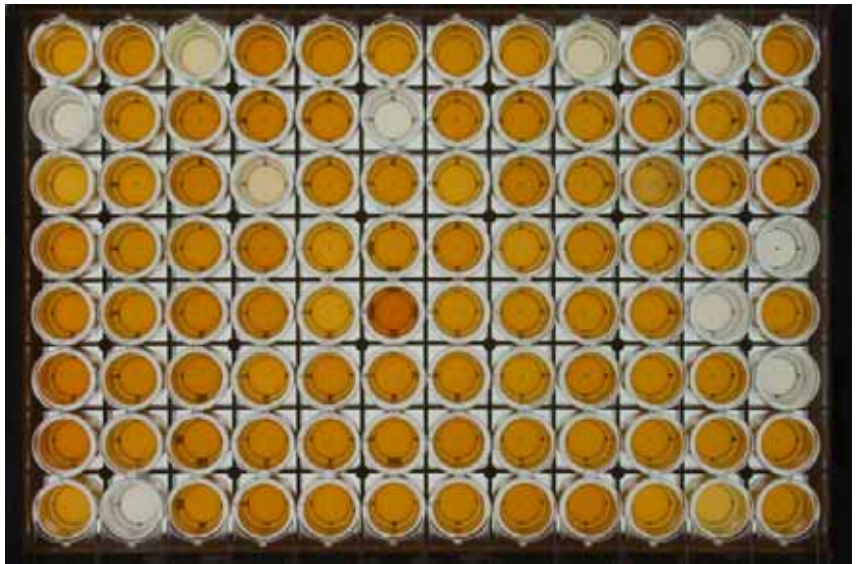
Injections can last 2 yr

- Arbotect (thiabendazole hypophosphite)
- Propizol (propiconazole)
- ArbiFos (phosphorus acid)

Unsure of Identification?

Send samples to your county Extension office, or to the Utah Plant Pest Diagnostic Lab (UPPDL) in Logan:

utahpests.usu.edu/uppdl



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