Invasive, Emerging and Common Diseases Caused by *Phytophthora* and Others

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Causes of Plant Problems Per 100 Samples



Topics

Canker diseases of trees

- Phytophthora diseases, including SOD and the like
- > Bacterial bleeding canker
- > Cytospora canker disease
- > Bacterial wetwood (slime flux)
- Leaf rust, leaf blight, and leaf spot
- > Grapevine bacterial leaf scorch Pierce's disease
- Potential pathway for disease introduction
- > IPM strategies





Phytophthora

- Trees
- Shrubs
- Crops
- Vegetables



- Stem rot (canker)
- Leaf blight
- Fruit rot
- Dieback
- Collar rot
- Crown rot
- Root rot

Drawings from APSnet and Wikipedia

Sudden Oak Death

A Phytophthora Bleeding Canker Disease







Host Range: 46 natural hosts 90 associated hosts

Bleeding canker on lower trunk

Sudden Oak Death on Coast live oak





Phytophthora cactorum

Sap oozing symptom

Maple Bleeding Canker



Maple / Phytophthora disease



Bacterial Infection

Maple Bleeding Canker





Birch Bacterial Infection



Maple Phytophthora



European Beech Bleeding canker

Predisposition by stresses
Infection by pathogens
Chronic decline or acute death



Stem Canker

Quaking aspen/ Cytospora canker Mountain ash / Cytospora canker

Signs of Cytospora Canker



Cytospora Canker on Maple



Cytospora Canker on Cottonwood

Canker Symptoms





Peach canker in a narrow-angled crotch. Gummy exudate is present.

Gum exuding

Staining



Callus













Cottonwood in Las Vegas

Elm tree in Reno

Wetwood and soft wood rot disease



Cottonwood Rust



Cedar-hawthorn rust



Service berry broom rust



Rust Diseases



http://www.for.gov.bc.ca/hfp/publications/00198/Venturia.htm

Aspen and poplar shoot blight, *Venturia* populina



http://www.forestryimages.org/browse/detail.cfm?imgnum=5379672

shepherd's crook leaf and shoot blight *Venturia tremulae* Aderh.

Fire Blight-Like Symptom

Leaf and Shoot Blight on Poplar



Elytroderma blight on Jeffrey pine

Screwbean Mesquite Dieback Caused by *Phleospora prosopidis*



Pierce's Disease on Grape



Immature death of plants

Sign of Pathogen

Phytophthora Blight of Pumpkin



Azalea Infected by Phtytophthora Disease

Photos by Shouhua Wang

Canker Symptom on Stem

Immunostrip Test









Intergrated Pest Mangement (IPM)

- Early detection and monitoring
- Identification of pests or disease causing agents
- Understand the biology of pests (life cycle)
- Use one or more of following management strategies
 - Preventive measures
 - Cultural control
 - Physical or mechanical control
 - Biological control
 - Chemical control

Build a system to achieve long-term effectiveness.

Chemical Control

- Diagnose the problem before treatment
- Differentiate abiotic disorders and infectious diseases
- > Know four major pathogen groups and insect pests
- > Use non-chemical approaches first
- > Use chemical control as the last resort
- Select right timing for chemical control

Pesticide Type	Pest Controlled
Insecticide	Insect
Herbicide	Weed
Fungicide	Fungi
Bactericide	Bacteria
Nematicide	Nematodes
Acaricide	Mites
Rodenticide	Rodents
Molluscide	Snails
Algacide	Algae
Defoliant	Leaves

Pesticide Types and Targets



Timing for Fungal Disease Control

Courtesy of R. Hoenisch



Disease Cycle and Chemical Control Points

Courtesy of R. Hoenisch

Need Help in Plant Diseases and Other Disorder?

Call: 775-353-3765 Email: <u>shwang@agri.nv.gov</u> Website: <u>http://agri.nv.gov/Plant/Plant_Pathology/Plant_Pathology_Home/</u>

