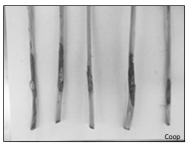
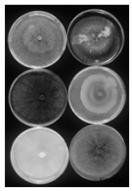
Forest Health Coop Diagnostic Laboratory Services

Dalton Smith, Sarah Peaden and Dr. Lori Eckhardt

Forest Health Coop Diagnostic Laboratory Services - Overview

- History
- Services Provided to Members
- Recent Updates
- Field Consulting
- Laboratory Sample Analysis
- Results

History

- Forest Health Cooperative began in 2008
- To bring together parties interested in maintaining forest health, productivity, and sustainability
- Membership for those managing for or purchasing forest products, wildlife and endangered species
- Address important and current forest health issues with real world management as a focus

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Member Services

Full Membership – $10,000
Associate Membership – $5,000
Maintaining Membership – $2,500
Sustaining Membership – $500

PRODUCTS/SERVICES	FULL	ASSOCIATE	MAINTAINING	SUSTAINING
Members Only Web Access	X	X	X	X
Newsletter	X	X	X	X
Members Only Workshops	X	X	X	X
Priority Email and Telephone Consulting	X	X	X	X
Technical Reports	X	X	X	
Research Reports	X	X	X	
1 Day of Field Consulting for each $4,000 Membership Contribution (additional days at $1,000/day)	X	X		
3 Laboratory Sample Analysis for Disease or Insect Diagnosis per year for each $2,000 Membership Contribution (additional analysis at $100/sample)	X	X	X	
Participation at Annual Meeting	X	X	X	X
Studies established of Members Land	X	On Request	On Request	On Request
Study Establishment Assistance	X	On Request	On Request	On Request
Vote on Research Trials	X			
Vote on Budget and Policy Issues	X			

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Member Services

- One day of field consulting for each $5000 of membership contribution
  - Additional consulting/non-member consulting for a service charge of $1000 per consultation
- Three laboratory sample analyses for each $2000 of membership contribution
  - Additional samples/non-member samples for $100 per sample

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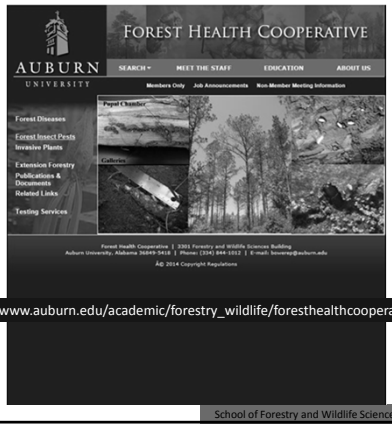

http://www.auburn.edu/academic/forestry_wildlife/foresthealthcooperative/

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Diagnostics Clinic

- Sample collection and submission guide
  - Provide an instruction set for collecting “good” samples for laboratory analysis
- Tree Diagnostics Form
  - Provide a detailed sample/site history to aid in diagnosis accuracy
- Members only page – Diagnostics Clinic
- Database – Currently in process

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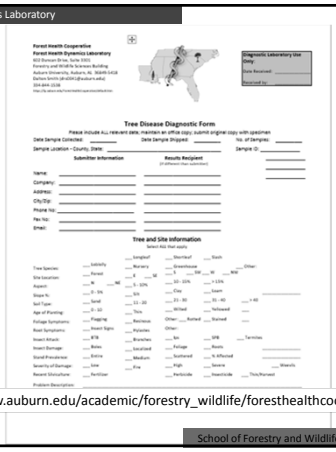
Forest Health Cooperative
Forest Health Dynamics Laboratory
Tree Disease Diagnostic Form
Tree and Site Information

http://www.auburn.edu/academic/forestry_wildlife/foresthealthcooperative/

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Field Consulting

- Travel to member’s location
- Provide onsite diagnostic information
- Collect samples for laboratory analysis

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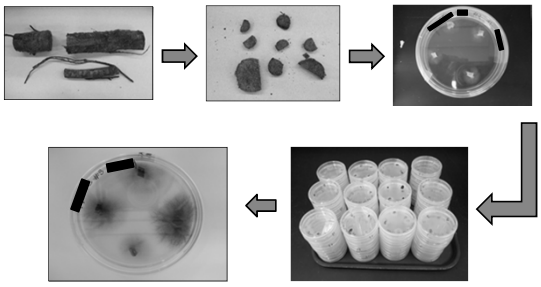
Laboratory Sample Analysis



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Results

- Results available after a minimum of twenty-one days after sample is received
- Results letter sent to member with description and relevant species information

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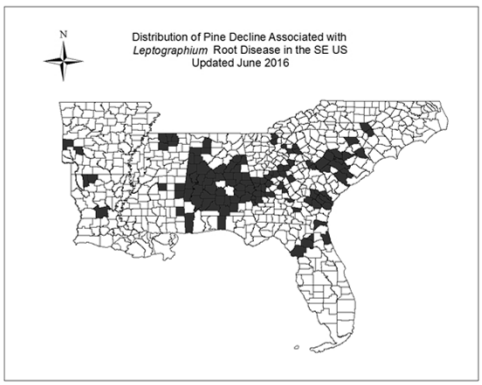

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SOD: *Phytophthora ramorum* Early Detection Program

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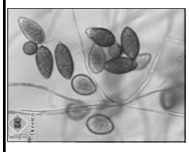
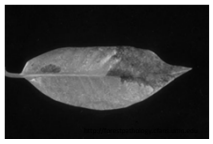
Dr. Lori Eckhardt, Dr. Ryan Nadel, Dalton Smith and Sarah Peaden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Phytophthora ramorum Early Detection Program - Overview

- Background of the pathogen/disease
- Scope and scale of the problem
- Purpose of the program
- Field sampling
- Laboratory process

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Sudden Oak Death

- First reported 1995 coastal region of central California with *Phytophthora ramorum* positively linked to the disease in 2001
- Fungus-like water mold (Oomycete)
- Spreads aerially and aquatically
- Pathogen has a wide host range
- Three expressions of the disease

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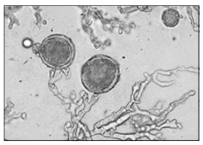
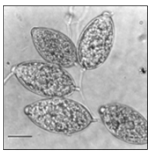
Phytophthora ramorum

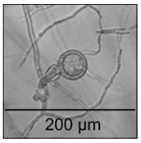


Chlamydospores



Sporangia

Oospore



Source: Steve Oak - USDA Forest Service Forest Health Protection

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Phytophthora ramorum Hosts

- Abies (fir)
- Acer (maple)
- Aesculus (buckeye)
- Arctostaphylos (kinnikinick)
- Calycanthus (sweet bush)
- Castanea (chestnut)
- Corylus (hazelnut)
- Euonymus
- Fagus (beech)
- Fraxinus (ash)
- Gaultheria (teaberry)
- Kalmia (mountain laurel)
- Hamamelis (witch hazel)
- Leucothoe (doghobble)
- Lonicera (honeysuckle)
- Magnolia
- Maianthemum (false Solomon's seal)
- Pieris (fetterbush)
- Prunus (cherry)
- Quercus (oak)
- Rhamnus (buckthorn)
- Rhododendron
- Rubus (salmonberry, blackberry)
- Salix (willow)
- Toxicodendron (poison oak, ivy)
- Vaccinium (huckleberry, blueberry)
- Viburnum (arrowwood)

Source: Steve Oak - USDA Forest Service FHP

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Phytophthora ramorum symptoms

Source: Steve Oak - USDA Forest Service FHP

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Coastal/Western US

- Fourteen coastal counties in CA
- Curry County in OR
- Hundreds of thousands of tanoaks, coast live oak, and California black oaks killed

Source: Steve Oak - USDA Forest Service FHP

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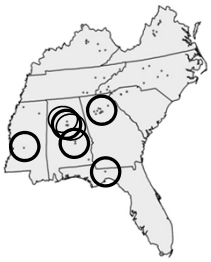
Southeastern US



- March 2004 infected Camellias shipped from southern California wholesale nursery throughout the US and Canada
- Additional shipments of infected material have occurred
- *Phytophthora ramorum* detected outside nurseries in four states

Source: Steve Oak - USDA Forest Service FHP

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Risk To Our Forests

- *Phytophthora ramorum* persists in infected nurseries even after eradication measures.
- Inoculum is leaving infected nurseries via waste water
- A pathway from the water into terrestrial ecosystems is plausible
- Southeastern US climate is at least seasonally suitable for infection
- Eastern woody plants are susceptible

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Program Purpose

- The purpose of the survey program is the early detection of *Phytophthora ramorum* in forest vegetation before infection centers become fully established and more difficult to eradicate
- Detection and monitoring of *Phytophthora ramorum* outside of nurseries which have tested positive for infected nursery stock

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Field Sampling

- Six sampling periods spread across the cooler spring and fall months
- 15-22 °C (59-71.6 °F)
- Bottle of Bait method

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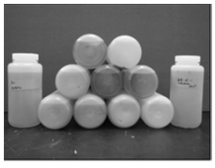
Field Sampling



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Results

- 7 Alabama sites, 5 positive in the past. 2 confirmed in 2013; 2 confirmed positives for spring 2014 and 2015 and 1 new positive
- 6 Mississippi sites, 1 positive in the past, confirmed in 2013
- All sites negative for fall 2014 and 2015 sampling
- Awaiting results for spring 2016 sampling

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Acknowledgements

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