AUBURN UNIVERSITY- FOREST HEALTH COOPERATIVE

FY 2017 PROPOSED WORK PLAN

As presented to the Forest Health Cooperative Advisory Committee

Dr. Lori G Eckhardt - Director

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AUBURN UNIVERSITY - FOREST HEALTH COOPERATIVE

FY 2017 WORK PLAN

GOAL A: RESEARCH

Objective 1. Identify research projects

Proposed FY2016:

1. Quantifying the impact of root disease on the function of a tree - NIFA-AFRI for travel, supplies, graduate students and post-doc $497,691 – *Reviewed as high priority with good reviews for 2015 submission. Wanted more preliminary data, asked to resubmit July 2016.*
2. Novel analytical tools for the selection of superior loblolly pine genotypes for improved plant health, fuels, and chemicals – NIFA-AFRI for travel, supplies, graduate students and post-doc $494,377 – *Reviewed as high priority with good reviews in 2015. Wanted more preliminary data, asked to resubmit July 2016.*
3. Ecology of siricids and fungal associates in southeastern pine forests: potential for biological control and competition – APHIS for travel, supplies and graduate student $99,493 - *Decision pending dependent upon continuation of funds*
4. A *Hylastes* species-*Leptographium* species mutualism and *Pinus palustris* restoration – DoD (3 years) $211,404 - *Decision pending dependent upon continuation of funds*
5. Exploring soil microbial communities as mediators of complex threats to southern conifers – Agriculture and Food Research Initiative Competitive Grant (3 years) $497,000 - W*ill resubmit July with modifications if suitable RFP released*
6. Sudden Oak Death (*Phytophthora ramorum*) Detection Survey (Stream Sampling) in AL and MS – FHM, USFS for all travel, supplies and laboratory technician $36,000 – *Will submit March 2017*

Newly Funded FY2016:

1. Sudden Oak Death (*Phytophthora ramorum*) Detection Survey (Stream Sampling) in AL and MS – FHM, USFS for all travel, supplies and laboratory technician $34,000.
2. Collaboration between SFWS and FABI – University of Pretoria South Africa to work on *Pinus* related diseases and molecular aspects. $5,000 per participant (3 years)
3. Wood chemistry and disease resistance – SFWS and Forest Products Development Center (to get additional preliminary data for larger grant) $5,000
4. Ecology of siricids and fungal associates in southeastern pine forests: potential for biological control and competition – SFWS and FABI $20,000

Funded FY2015:

1. Sudden Oak Death (*Phytophthora ramorum*) Detection Survey (Stream Sampling) in AL and MS – FHM, USFS for all travel, supplies and laboratory technician $36,000.
2. Collaboration between SFWS and FABI – University of Pretoria South Africa to work on *Pinus* related diseases and molecular aspects. $5,000 per participant (3 years)
3. Wood chemistry and disease resistance – SFWS and Forest Products Development Center (to get additional preliminary data for larger grant) $5,000
4. Ecology of siricids and fungal associates in southeastern pine forests: potential for biological control and competition – SFWS and FABI $20,000

Funded FY2014:

1. Seedling production and forest health in the Southeastern United States – NSF-CAFS - $300,000.
2. Rapid assessment tools for the genetic improvement of forest products and bioenergy – HATCH for travel, supplies and graduate student $50,000.
3. Sudden Oak Death (*Phytophthora ramorum*) Detection Survey (Stream Sampling) in AL and MS – FHM, USFS for all travel, supplies and laboratory technician $36,000
4. Testing of a rapid PCR Screening test for the presence of *Fusarium circinatum*, the causal agent of pitch canker on pine planting material – FHM for supplies, travel and postdoc - $150,000

Funded FY2013:

1. Identification of Climate Effects on Microbial Symbionts of Longleaf Pine – ERDC-CERL in collaboration with CERL personnel (Ryan Busby) and University of Mississippi for all travel and supplies - $50,000
2. Interactions of future climate change scenarios of elevated tropospheric ozone and decreasing rainfall amounts with loblolly pine decline – HATCH for all travel, supplies and graduate student - $49,986.
3. Sudden Oak Death (*Phytophthora ramorum*) Detection Survey (Stream Sampling) in AL and MS – FHM, USFS for all travel, supplies and laboratory technician $36,000.
4. Field evaluation of a controlled vapor delivery method in an integrated pest management system for citrus and loblolly pine – AU-IGP in collaboration with AU Chemical Engineering for all travel, supplies and student worker - $97,000
5. Root disease model to determine how pine decline and annosum root rot interact – SFWS for travel, supplies, graduate student stipend - $64,000
6. Mycorrhizal fungal colonization and disease resistance – SFWS and University of Mississippi for all travel, supplies and graduate student stipend - $25,000
7. Wood chemistry and disease resistance – SFWS and Forest Products Development Center (to get preliminary data for larger grant) $5,000

8. Collaboration between SFWS and FABI – University of Pretoria South Africa to work on *Pinus* related diseases and molecular aspects. $5,000 per participant (3 years)

Funded FY2012:

1. Hylastes population dynamics and forest health evaluation in association with thinning and fertilization on new RW19 in Louisiana – Funding through FHP and FHC
2. Delineating loblolly pine decline in the Southeast using FHM/FIA data – submitted to FHM, USFS for all travel and supplies associated with the project $35,000 – (Funded Year 2 for $17,000)
3. Sudden Oak Death (*Phytophthora ramorum*) Detection Survey (Stream Sampling) in AL and MS – FHM, USFS for all travel, supplies and laboratory technician $47,000
4. Mature root inoculation of families from screening study found in the LGEPop study in GA and FL (Study 3 of the Resistance of *Pinus taeda* families under artificial inoculations with native and non-native *Leptographium* species involved in premature mortality under different nutritional regimes project) – SFWS and Forest Health Cooperative.

Objective 2. Recruit graduate students

No current openings.

Objective 3. Initiate and continue research projects: Determine location, cooperators, and set up research plots dependent upon projects chosen by the membership.

Quantifying the impact of pine decline in the southeastern United States

1. 1. Rayonier offered land base. Plots installed. For this upcoming year we will continue to regularly collect data from the site which includes weather, soil, physiological and insect data.
2. Two essential pilot studies focused on the fungal inoculation technique and its impact on tree physiology will be completed and data analyzed prior to mass tree inoculation at the study site in 2017.
3. Tree inoculations at the study site are scheduled to be occur in 2017 using both the technique and information acquired during the pilot studies.

Ecology of siricids and fungal associates in southeastern pine forests: potential for biological control and competition.

1. An additional trapping season in plots near Auburn will be conducted to obtain live wasp, fungi, and nematode specimens, scheduled for October- December 2016. A seedling inoculation trial to determine how *Amylostereum* spp. fungi affects water uptake in pines will be performed, scheduled for November 2016. A plate study assessing competition between *Leptographium terebrantis* and *Amylostereum* spp. will be conducted in October 2016. Data analyzed and manuscripts written.

Response of different mature loblolly pine families to *Leptographium terebrantis* and *Grosmannia huntii.*

1. Data analysis will be completed summer 2015 and spring 2016. Research report/manuscript will be prepared.

Virulence of *Leptographium terebrantis* and *Grosmannia huntii* on loblolly pine families under drought stress.

1. ***Accomplishments:*** Data analysis will be completed and the research report/manuscript will be prepared.

Resistance of *Pinus taeda* families under artificial inoculations with native and non-native *Leptographium* species involved in premature mortality.

1. Families for FY17 screening will be grown by Rayonier.

2. Families for FY18 will be determined and a growing location needs to be found (Rayonier grew FY11, FY12 and FY17 seedlings; Plum Creek grew FY13 and FY16 seedlings; Arborgen grew FY14 seedlings; Weyerhaeuser growing FY15).

Hylastes population dynamics and forest health evaluation in association with thinning and fertilization.

1. Plots and insect traps installed on the RW19 study in FL (Rayonier and Plum Creek). Pre-treatment data collected and being analyzed. Post data collection analyzed. Crown rating, resin and root sampling to take place July 2016. Research report will be completed December 2016.

Forest health evaluation of stand health in association with biomass removal and standard silvicultural practices between two land managers.

1. Collections complete. Data being analyzed. Research report being completed.

Mature root inoculation of families from screening study found in the LGEPop study in GA and FL (Study 3 of the Resistance of *Pinus taeda* families under artificial inoculations with native and non-native *Leptographium* species involved in premature mortality under different nutritional regimes project).

1. Families chosen for FY16 screening will be checked against LGEPop study to determine if there are more inoculations to take place summer 2016.

Identification of cogongrass effects on microbial symbionts and physiological vigor of loblolly pine.

1. Project complete. Working on manuscripts for publication.

Blue-stain fungi associated with wild pigs causing rooting damage in longleaf and loblolly pine stands.

2. Working on manuscripts for publication.

Wood chemistry and disease resistance.

1. Plum Creek site (near Nahunta, GA) and Rayonier site (near Yulee, FL) has been harvested and trees are being processed for NIR. Data being analyzed

Mycorrhizal fungal colonization and disease resistance.

1. Analyzing data (Ole Miss).

GOAL B: TECHNOLOGY TRANSFER

Objective 1. Serve as a clearinghouse of information related to forest health issues.

Maintain and Update Forest Health Cooperative Web Site

The Forest Health Cooperative Staff will continue to update the Forest Health Cooperative website for use by Forest Health Cooperative Members. (Eckhardt)

Leveraging Forest Health Cooperative Data

The Forest Health Cooperative staff will continue to stress the importance of the Cooperative membership and when possible, leverage Cooperative information for grant proposals. (Staff)

Objective 2. Efficiently and regularly transfer the results of cooperative research to the membership.

Research Reports (Staff)

We plan on producing Research Reports and Technical Notes in FY17.

Newsletters

Newsletter distribution will be planned for March (Spring) 2017. Members are encouraged to submit articles.

Objective 3. Provide a limited consultancy function to the membership in the area of forest health.

Individual and Organized Contacts

An on-going activity and is handled as individual situations and cases arise. (Eckhardt/Bauman)

Short Courses

The Forest Health Cooperative will offer a Forest Health Short Course in Auburn for member personnel in July 2017. We need a minimum of 20 attendees and will survey the membership in January 2017 for interest.

GOAL C: COOP DEVELOPMENT

Objective 1. Provide for the continual relevancy and efficiency of the Cooperative research and technology transfer programs.

Advisory Committee Meeting

The FY18 Advisory Committee Meeting will be held on June 21-22, 2017. A 2 day meeting will be planned. If there are any meetings that conflict with this time frame, let us know and we can try and accommodate Advisory Members. (Eckhardt/Bowersock)

Forest Health Cooperative Membership

The Forest Health Cooperative staff should make an effort to recruit new members. (Staff)

Update the Cooperative Membership Directory

An on-going activity with an updated directory distributed annually. (Bowersock)

Objective 2. Increase the visibility and effectiveness of the Cooperative as a source of information on issues related to forest health.

Presentations at Meetings

Forest Health Cooperative staff will continue to be encouraged to participate as a speaker or attendee in regional and national meetings. (Staff)

Publications

Forest Health Cooperative staff are encouraged to publish research results in scientific journals. (Staff)

Extramural Funding of Forest Health Cooperative Projects

Forest Health Cooperative staff will continue to be encouraged to locate and generate extramural funding opportunities directly related forest health.

Interaction with other Research Cooperatives

The Forest Health Cooperative staff will make efforts to interact, attend, work with other regional and national forest research Cooperatives in an attempt to broaden and strengthen research ties that can benefit forest health.