AUBURN UNIVERSITY- FOREST HEALTH COOPERATIVE

FY 2021 PROPOSED WORK PLAN

As presented to the Forest Health Cooperative Advisory Committee

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FY 2021 WORK PLAN

GOAL A: RESEARCH

Objective 1. Identify research projects

Proposed FY2021:

1. Identifying volatile chemicals of *Amylostereum areolatum* and ophiostomatoid fungi to develop of highly novel lures for monitoring and evaluating *Sirex noctilio* populations in the United States – USFS-STDP for travel, supplies, and graduate student $120,000 – *Submitted*
2. Pine needle mortality – USFS-STDP for travel and supplies – *Submitted. Will also submit if suitable RFP is released to* NIFA-AFRI or APHIS.
3. 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. More preliminary data acquired by the Forest Products Development Center.* W*ill resubmit with modifications when a suitable RFP is released.*
4. 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*
5. A *Hylastes* species-*Leptographium* species mutualism and *Pinus palustris* restoration – DoD (3 years) $211,404 - *Decision pending dependent upon continuation of funds*
6. 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 with modifications when a suitable RFP is released*
7. 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 2021*

Newly Funded FY2020:

1. Sudden Oak Death (*Phytophthora ramorum*) Detection Survey (Stream Sampling) in AL and MS – FHM, USFS for all travel, supplies and laboratory technician $42,000
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. Wood chemistry and disease resistance – SFWS and Forest Products Development Center (to get additional preliminary data for larger grant) $5,000

Newly Funded FY2019:

1. Sudden Oak Death (*Phytophthora ramorum*) Detection Survey (Stream Sampling) in AL and MS – FHM, USFS for all travel, supplies and laboratory technician $42,000
2. Identification and quantification of volatile chemicals emitted by *Amylostereum areolatum* and ophiostomatoid species to develop highly novel lures for monitoring and evaluating Sirex populations in the United States - AU-IGP and SFWS in collaboration with University of Alberta (Edmonton) $30,000
3. Collaboration between SFWS and FABI – University of Pretoria South Africa to work on *Pinus* related diseases and molecular aspects. $5,000 per participant
4. Pine needle mortality – SFWS for travel, supplies and stipend ($25,000); Regions for stipend ($10,000) *Still looking for 1.5 years stipend and molecular costs ($40,000)*
5. Two Undergraduate Research Fellowships, Jace McCauley (sawflies) $10,000 and Alec Welham (continuation of wild pig project in conjunction with wildlife) $15,000, SFWS and AU Undergraduate Research Office. REU summer student, Diana Zurillo $30,000. (*These grants were submitted directly and won by the students. This covers their cost and labor on their projects. Both Jace and Alec have been undergraduate workers for the coop for 2+ years. Diana is from Puerto Rico and found out about our work via the REU program here at Auburn.*)

Objective 2. Recruit graduate students

1. Currently there are no openings for a graduate student in the Coop.

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. Continue to analyze data and work on manuscript and research reports.
    a. Ahl, J.B., Eckhardt, L. G. (Submitted) Identifying fungal spores on the pine bark beetle with hyperspectral interferometry. Microscope Research and Technique – Under Review
    b. Mensah, J. K., Sayer, M. A. S., Nadel, R. L., Matusick, G., & Eckhardt, L. G. (In preparation) *Leptographium terebrantis* inoculation and associated crown symptoms and tree mortality in Pinus taeda
    c. Mensah, J. K., Sayer, M. A. S., Nadel, R. L., Matusick, G., & Eckhardt, L. G. (In preparation) Effect of *Leptographium terebrantis* and drought on

foliage, new root dynamics and stemwood growth in plantation *Pinus taeda* L.

d. Mensah, J. K., Sayer, M. A. S., Nadel, R. L., Matusick, G., & Eckhardt, L. G. (In preparation) Foliar nutrients response of *Pinus taeda* L. to *Leptographium terebrantis* infection.
e. Mensah, J. K., Sayer, M. A. S., Nadel, R. L., Matusick, G., & Eckhardt, L. G. (In preparation) Effect of *L. terebrantis* on the production of defensive chemical compounds.

Characterization of pine needle mortality and associated fungal pathogens.

1. Continue to collect samples from sites across AL and GA as well as other southeastern states. Culture samples and extract DNA, confirm with sequencing.
2. Complete extension publication with ACES and write manuscripts.

Identifying volatile chemicals of ophiostomatoid fungi to develop of highly novel lures for monitoring and evaluating bark beetle populations in the United States.

1. Complete chamber runs and extractions; analysis samples on GCMS; analysis GCMS output for novel chemical compounds

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

1. Manuscript "*Deladenus* species associated with native siricid woodwastps in Alabama" submitted – working on revisions.
2. Manuscript "Effect of growth rate on *Amylostereum* spp. Fungus by terpenes" to be submitted – working on revisions.

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

1. Manuscript "Growth rate of soil fungi *in vitro* is influenced by common rhizosphere interactions" to be submitted – working on revisions.

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

1. Manuscript "Two new ophiostomatoid fungi found in association with soil on wild pig snouts trapped at Fort Benning Georgia" to be submitted – working on revisions.

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. (Ciaramitaro)

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 FY21.

Newsletters

Newsletter distribution will be planned for Spring 2021. 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)

Short Courses

The Forest Health Cooperative will offer a Forest Health Short Course in Auburn for member personnel in July 2021. We need a minimum of 20 attendees and will survey the membership in January 2021 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 FY22 Advisory Committee Meeting will be held on June 23-24, 2020. 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.