

SAES-422 Multistate Research Activity Accomplishments Report

Project No. and Title: [S1049](#) Integrated Management of Pecan Arthropod Pests in the Southern U.S.
Period Covered: 10-2014 to 09-2015
Date of Report: 11-Jun-2015
Annual Meeting Dates: 10-Feb-2015

Participants

- Donn Johnson (UA, Chair), dtjohnso@uark.edu; 479.575.2501
- Russ Mizell (UFL, Vice Chair), rfmizell@ufl.edu
- Jackie Lee (OSU, Secretary), jackie.lee@okstate.edu; 479.530.8163
- Ted Cottrell (USDA-ARS), Ted.Cottrell@ARS.USDA.GOV; 478.956.6448
- Jim Dutcher (UGA), dutch88@uga.edu; 229.386.3567
- Tiffany Johnson (NMSU), shimsham@nmsu.edu, 575.551.6955
- Bill Reid (KSU), wreid@ksu.edu; 620.597.2972
- David Shapiro-Ilan (USDA-ARS, Vice Chair), david.shapiro@ars.usda.gov; 478.956.6444
- Louis Leige- (Brazil)
- Charles Graham- LSU-cjgraham@agcenter.lsu.edu, 318-347-8301
- Clarence Watson (UA, Administrative advisor), cwatson1@uark.edu; 479.575.8703

Brief Summary of Minutes of Annual Meeting

Opening Comments:

Selection of 2016 Meeting Site: In February, the membership was canvassed and it was agreed that the S-1049 Pecan meeting will occur in Las Cruces, NM in 2016. Tiffany Johnson and Brad Lewis will serve as the local arrangement chairs.

Election of new project leaders for 2016: Russ Mizell will be Chair, Jackie Lee will be Vice-Chair and Charles Graham will be the Secretary.

Administrative Advisor Comments: Clarence Watson

Project update due in 30 September 2015. Get draft to Clarence asap because it must go through two stages of review. Reviews have been taking 1-2months. May would be a good time to have the draft completed. Can do a no cost 1 year extension, if needed.

Passage of farm bill provides SCRI and OREI initiatives, which would be good sources of funding for pecans.

Discussion of a possible SCRI proposal:

Pecan IPM pipe used as an outlet for tech transfer. Put together a full scale tech transfer program that can be accessed through the pipe.

Advisory grower committee to access the pipe.

Advances based on degree day models.

Are PNC adults moving out mid-season?

Use group objectives for SCRI grant.

Mike Smith had planning grant.

Objective 1: Improved Monitoring and Forecasting Methods for Field Populations of Pecan Arthropods

Delineate pest zones across the pecan belt.

Developing pest maps (risk maps).

Include soil type data.

Hickory shuckworm damage correlate to trap catches.

Talk about chestnuts in Turkey.

Objective 2: Improved Control Systems for Pecan Arthropod Pest

Objective 3: Integrate Pecan Arthropod Pest Control Methods with Pecan Production Methods

Objective 4: Outreach

Discussion of Accomplishments by Objective:

Objective 1: Improved Monitoring and Forecasting Methods for Field Populations of Pecan Arthropods

Potential for drones (OSU)

PNC, no damage in Georgia (UGA)

Stinkbug damage counts taken from bottom will result in overestimation, may be able to concentrate sprays on bottom canopy. Looked at blacklight, yellow pyramid, and water sprays to take counts. Yellow trap did a good job and trap catch was relatable to punctures and damage. 3-4 in yellow trap would be 1% damage in the tree. When does kernel spot develop? Brian did cage study. (UARK)

Light trap for shuckworm monitoring works better than pheromone.

Objective 2: Improved Control Systems for Pecan Arthropod Pest

Good control of prionus with pheromone confusion, soil applications worked well. Cheap - pyrethroid or Lorsban. Intrepid Edge not good for casebearer. Sevanto being looked at. (UGA)

Pecan weevil, large plots, 2 trt one with and without pest mgmt., then small plots to refine methods. 1.5 acres per rep. Trt for weevil have ground app of nematode and fungus. 3 grandivo foliar apps, 1 microbial ground app. Found significant less infestation in trt program vs. control.

Grandevo did very well against weevil, about the same as Carbaryl.

Tested Beauvaria survival with different soils. Found an antibiotic property with soil associated with pupal cells. Bacteria was found associated with this and trying to see if can reproduce this antibiotic effect in soil. (USDA-ARS)

ProGibb evaluated for black aphid control. No results yet. No effect on yellow or black margined aphids. Looking at increasing ProGibb rate as season progresses. Does the density of stomata play a role in black aphid infestation? (USAD-ARS)

Did PNC work at LSU ag center, but no PNC population. (LSU)

Stem phylloxera come out early, leaf phylloxera later when leaf unfurls.

Obscure scale - oils worked well (Assail).

Objective 3: Integrate Pecan Arthropod Pest Control Methods with Pecan Production Methods

Looked at clover and Beauvaria populations, found groundcover enhanced this, will look at different clovers. (USDA-ARS)

Clovers are high users of potassium and phosphorus. (KSU)

Crete myrtle planted as a bank plant to build up natural enemies. (USDA-ARS)

Should we combine Objectives 3 and 4 in the future?

Greg Colsun (UGA) is a potential agricultural economist to work on this effort.

Objective 4: Develop real-time Decision Aids for Delivery on the Internet.

KSU (Bill Reid) hosts Northern pecan blog (<http://northernpecans.blogspot.com/>) – add pictures with short descriptions, update twice a week, growers feed information to blog, lot of hits to blog (8,000 hits/month, cost \$2/month). (KSU)

UGA (Jim Dutcher) - Information on Bugwood (<http://www.bugwood.org/>). (UGA)

TAMU (Bill Ree) uses email transfer of information.

LSU (Mike Hall) – uses email transfer of information.

Discussion on need for plant pathologist in fruit and nuts

OSU submits to electronic newsletter to agents called Pest e-Alerts; OK Pecan Grower Newsletter.

Pecan IPM pipe. Marvin Harris (TAMU) trying to push bud break model No bud break in pecan so would have to define it, and also there is a huge variation among varieties. (When catkins fall off of trees, casebearer will be entering about 3d later) sepals straight up when time for PNC

Predictor must integrate with damage. Must be careful. Must have better recommendations. Stress it is a decision making window.

Link to other websites and info from the pipe
Grower advisory committee to look at pipe to help us make it more user friendly

Developing real-time decision aids: Scab or Weevil.
Weevil will need soil data and weather data. Will only work if do not have irrigation.
Not sure if weevils have degree day model? May use energy stores then come out.

Want to develop a weevil risk map.

Rewrite for project

Objective 1. Improved monitoring and forecasting methods for geographically distinct populations of pecan Arthropods. Stress regional differences.

Objective 2 (Combine Objective 2&3). Improve control of integrated systems

Bring in biocontrol in justification

Objective 3. Develop multi-media technology transfer to improve profitability and sustainability.

Grant proposal topics

Sustainable Systems, ipm research

All pests

Monitoring prediction (shuckworm, weevil)

Horticultural-cover crops

Insecticides-fungi

Regional diff

Outputs

Geographic models

Phenology based

HSW lure

PW prediction

Pest management strategic plan (bring in stakeholders to develop)

Survey

Alternate bearing PW and PNC

Scab models

Tech transfer-IPM Pipe customize by subregion

Must have advisory committee** must have this info, NASS data**

Econ/Sociology

Impact

Pre and post china sustainability profit outlook

Homeowner, commercial, and organic

Cooperators: Ft. Valley State, Clyde Boca (plant pathologist, ARS), Greg Colsen

Economist UGA

Plant pathologist on advisory committee

Old Business - None

New Old Business -None

Adjourn 6pm

Impacts

Publications

Dutcher, J. D. 2014. Results of 2013 trials of chemical controls. Pecan Grower Magazine Winter Issue. Georgia Pecan Grower's Association 25(3): 44-51.

Dutcher, J., B. Ree, S. Carlson, and B. Bactawar. 2014. *Prionus* root borers in pecan orchards. Pecan South 47(1):13-25.

Dutcher, J. 2015. Fan trap collects aphids and beneficial insects in large pecan trees. Pecan Grower Magazine. Winter Issue. Georgia Pecan Grower's Association 26(3): (submitted 1/5/15).

Shapiro-Ilan, D.I., Mizell, R.F. 2015. An insect pupal cell with antimicrobial properties that suppress an entomopathogenic fungus. Journal of Invertebrate Pathology 124, 114–116.

Shapiro-Ilan, D.I., Bock, C.H., Hotchkiss, M.W. 2014. Suppression of pecan and peach pathogens on different substrates using *Xenorhabdus bovienii* and *Photorhabdus luminescens*. Biological Control 77, 1–6.

Shapiro-Ilan, D. I., and I. Brown. 2013. Earthworms as phoretic hosts for *Steinernema carpocapsae* and *Beauveria bassiana*: Implications for enhanced biological control. Biological Control. 66, 41-48.

Shapiro-Ilan, D.I., T.E. Cottrell, M.A. Jackson and B.W. Wood. 2013. Control of key pecan insect pests using biorational pesticides. Journal of Economic Entomology 106: 257-266.

Shapiro-Ilan, D. I., W. A. Gardner, L. Wells, T. E. Cottrell, R. W. Behle, and B. W. Wood. Effects of entomopathogenic fungus species, and impact of fertilizers, on biological control of pecan weevil (Coleoptera: Curculionidae). 2013. Environmental Entomology 42, 253-261.