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2015

August 8, 2016

**Project Title:** Biology, Ecology and Management of Insect Pests of Peanut in the Southeast US

Fund No. 372712 (APPA-RIA03-PID 413 BID 1370)

Final Report:

The overarching objective of this project is to provide Southeastern peanut producers with best management practices for insect pest management (IPM). Regular, systematic scouting for insects does not occur on a large proportion of peanut acres. This can result in losses to growers when: 1. insecticides are applied when pests are not at economic thresholds or 2. no action is taken when pests are at economic thresholds. There were three objectives of this study: 1) investigate the biology and management of three cornered alfalfa hopper in peanut (conducted at UGA); 2) Development of a light trapping protocol and establishment of a burrower bug monitoring network in Georgia (conducted at UGA); 3) Compare two pest management regimes, an IPM-based regime and a "low tolerance" spray based insect management program and evaluate peanut cultivar response to insect damage. Only objective 3 was evaluated in Alabama.

To evaluate objective 3 small plot replicated peanut trials were planted at the Wiregrass Research and Experiment Station in Headland, AL in 2015. Four commercially available varieties, O6G, Tifguard, GA12Y, and GA13M were scouted weekly during the growing season, and insects were managed under three-IPM regimes: no insect management actions taken, a "low tolerance" plan based on a calendar-schedule regardless of infestation levels, and an IPM-based scenario where insects were managed only when levels reached the recommended treatment thresholds. In 2015, two calendar-based insecticide applications were made to the "low-tolerance" research plots, once in July and once in August. No insecticide applications were made to the IPM-based plots; three-cornered alfalfa hoppers and caterpillar pests were detected, but the numbers never reached the treatment threshold in any plot. No spider mites or lesser cornstalk borer were detected in this trial. Plots were harvested in September. Yields were measured from the center 2 rows of each plot, and peanuts were graded for quality. Data has been compiled and sent to the principle investigator at UGA. Due to the variability inherent in field research, funding to repeat this trial has been provided by National Peanut Board, is currently being repeated in 2016. At the end of 2016 all data will be compiled to compare the efficacy and economic return of IPM based and a "low tolerance" spray based insect management programs over a 2 year period, and results will be disseminated through oral presentations and a scientific publications.

## Peanut IPM Project Summary – FINAL for 2015

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2015

*Robert E. Ewing*  
**Project Title: Peanut Insect Management**

**Lead Persons:** Ayanava Majumdar, Kris Balkcom

**Extension agents with direct participation:** Rudy Yates, Brandon Dillard

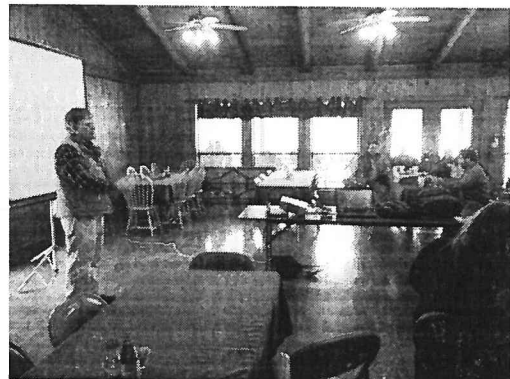
### IPM field demonstrations:

Peanut plots were established at the Wiregrass Research and Extension Center (Headland, AL) and Brewton Ag Research Unit (Brewton, AL) to test new insecticides/miticides. Caterpillar control products included two insect growth regulators for comparison (novaluron and diflubenzuron), two stomach poisons (flubendiamide and one insecticide premix with lambda cyhalothrin+chlorantraniliprole), and one biological insecticide (a more bioactive species of *Bacillus thuringiensis*). These products are more selective for pest management than conventional products that protect natural enemies. We also included two test plots for spider mite control. We monitored insect pests (6 species of major caterpillars) at 6 locations using sticky wing pheromone trap and co-developed a phone app (MyTraps) with Spensa Technologies to archive insect counts for sharing statewide with Regional Extension Agents, crop specialists, and crop advisors/industry.

Insect monitoring information indicated early activity of beet armyworm (9.8 moths per trap across locations) and soybean looper moths (8 moths per trap across locations) compared to fall armyworm and cabbage looper moths. Relative activity of corn earworm and tobacco budworm did not exceed 2 moths per trap across locations (lower detection levels compared to summer 2014). Lesser cornstalk borer moth numbers remained very high in traps in the major peanut production areas and producers/crop advisors were kept informed of potential risks via emails and phone calls.



Results from insecticide plots indicated prolonged (14-d) control of insect pests with new products such as flubendiamide and chlorantraniliprole. Two insect growth regulator insecticides (Dimilin and Diamond) provided long-term suppression of caterpillars with slightly better insect control with the Dimilin. Results indicate selective insecticides can be used in rotation with pyrethroids to avoid spider mite outbreaks during hot weather (July/August). The spider mite test was unsuccessful this year (even after multiple synthetic pyrethroid applications) due to frequent rainfall and reduced plant stress. This effort will continue in 2016 with peanuts grown under special conditions to increase spider mite populations and generate data in order to register miticides. We have submitted an IR-4 special registration request in conjunction with Mississippi State University to expand miticides labels.



### Educational efforts:

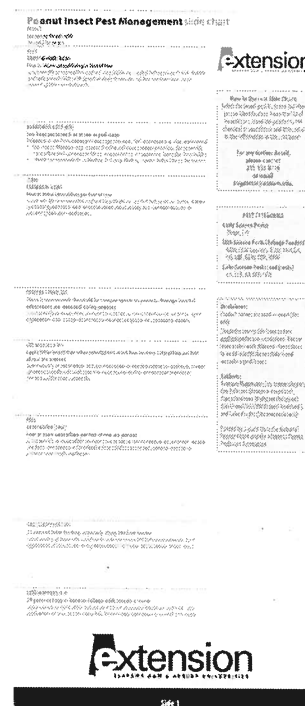
Information insect pest occurrence and control methods was shared with peanut producers in Alabama via new

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publications, indoor crop production meetings, and field events across Alabama. Nearly 400 producers, crop advisors, and industry representatives attended 9 indoor and 3 field events where IPM information was presented to the audience. Extension surveys were done at these training events to document behavior change and impacts.

**Publications:** The Alabama Peanut IPM Guide for Insect Control (<http://www.aces.edu/pubs/docs/I/IPM-0360/IPM-0360.pdf>) was updated with research-based information; this IPM information is now also available as a slide chart (pictured on right). Peanut IPM slide charts have been distributed to peanut producers, crop advisors, and pesticide dealers across the state as a critical resource. Pest management/outbreak information was also shared with producer through the Alabama IPM Communicator newsletter ([www.aces.edu/ipmcommunicator](http://www.aces.edu/ipmcommunicator)) and Facebook (<https://www.facebook.com/Alabama-Peanut-IPM-Program-166598770047038/>). About 8 articles or blogs used insect pest distribution maps based on trap catches (for example, <https://sites.aces.edu/group/commhort/blog/Lists/Posts/Post.aspx?ID=262>). These blogs and web-based resources have also become popular among other popular farm magazines such as the Peanut Grower magazine and AgFax that frequently link their articles to the Alabama Peanut IPM website ([www.aces.edu/peanutipm](http://www.aces.edu/peanutipm)). The IPM website gets about 2,500 hits over a year and Facebook page has 113 followers. Six PowerPoint presentations on Slideshare.net had 6,417 views and 170 downloads worldwide.



### IPM project outcomes and impacts (major trends):

- Surveys indicated that 88% respondents scout their peanut fields for insect pests and diseases on a regular basis (12% respondents indicated complete dependence on a crop advisor for pest management decisions). About 50% producers use the scouting practices recommended in the Alabama Peanut IPM Guide (IPM-0360) to increase profits.
- IPM newsletter was used by 22 to 24% respondents (mostly crop advisors) as a source of new information and made adjustments within the production season.
- About 67 to 70% respondents used the Alabama Peanut IPM Guide as a major reference publication.
- 90% respondents consulted a Regional Extension Agent with immediate benefit to their crop.
- 85% respondents were highly satisfied with the training events and nearly 100% support their continuation in 2016.
- Short term economic impact of IPM recommendations varied from \$5,000 to \$10,000 based on some case studies. Most benefit occurred due to reduction in the number of insecticide applications and immediate pest control resulting in higher crop yield. Peanut crop losses can be nearly 50% in an unfavorable year on dryland peanuts.

**Future work:** We will continue to focus on IPM demonstration plots and insect monitoring projects at Headland and Brewton due to strong support from producers and industry that utilize the results. We will continue to work with industry and other researchers to support miticides labels on peanuts.