

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

Funding Year: 2014

Principal Investigator(s):

Mark R. Abney
Dept of Entomology
University of Georgia
2360 Rainwater Rd.
Tifton, GA 31793-5766
phone: (229) 386-3097
fax: (229) 386-3086
e-mail: mrabney@uga.edu

Timothy B. Brenneman
Department of Plant Pathology
University of Georgia
2360 Rainwater Rd.
Tifton, GA 31793-5766
Phone: (229) 386-3121
Email: arachis@uga.edu

Kris B. Balkcom
Agronomy & Soils Dept.
Auburn University
P.O. Box 217
Headland, AL 36345
phone: (334) 693-2010

Alana Jacobson
Auburn University
301 Funchess Hall,
Auburn, AL 36849
phone: 334-844-5011
e-mail: alj0043@auburn.edu

Cooperating personnel:

Nathan Smith, Extension Ag Economist, University of Georgia

Project Summary

Insects pose a serious economic threat to the peanut industry in Georgia. The project proposed here will address three distinct yet related areas of concern with the overarching objective of providing Southeastern peanut producers with best management practices for insect control. Regular, systematic scouting for insects does not occur on a large proportion of peanut acres in GA. 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. These studies will compare efficacy and economic returns of IPM/threshold based and “low tolerance” insect management approaches imposed over selected commercially available runner-type peanut cultivars. No valid economic thresholds currently exist for three cornered alfalfa hopper (TCAH) in peanut. One component of this work will focus on expanding knowledge of the biology and ecology of TCAH in peanut production systems. Efforts will center on defining the pest status of TCAH and ultimately on establishing economic thresholds. The burrower bug is a relatively new pest to Georgia, but it is capable of causing significant economic loss. While some risk factors associated with this pest have been identified, accurate predictions of damage risk are not currently possible. Because burrower bugs spend most of their lives below ground, they are not readily observed in the field, and populations are not easily monitored. Previous studies indicate that burrower bugs move at night and are attracted to light. This research will seek to determine the most effective light trap for monitoring burrower bug populations. Once a successful trap design is identified, a monitoring network will be established in cooperation with

county Extension agents to provide information about burrower bug populations in GA over time and perhaps provide growers with real time information about pest abundance and activity.

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

Objectives: 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 under the following circumstances: 1. insecticides are applied when pests are not at economic thresholds or 2. no action is taken when pests are at economic thresholds. There is also limited information about the response of commercially grown peanut cultivars to different insect species. 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.

Methods: To evaluate objective 3 small plot replicated peanut trials were planted at the Wiregrass Research and Experiment Station in Headland, AL in 2015 and 2016. Four commercially available varieties, 06G, Tifguard, GA12Y, and GA13M were scouted weekly during the growing season, and insects were managed under three-IPM regimes: 1) no insect management actions taken; 2) a “low tolerance” plan based on a calendar-schedule regardless of infestation levels; and 3) an IPM-based scenario where insects were managed only when levels reached the recommended treatment thresholds. In 2015 and 2016, 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. Plots were harvested in September each year; yields were measured from the center 2 rows of each plot, and peanuts were graded for quality.

Results and Discussion: Insects encountered while scouting plots through the growing season in 2015-16 included three-cornered alfalfa hoppers, velvet bean caterpillars, yellow striped armyworms, soybean loopers, corn earworm, and red necked peanut worms were detected in plots, but the numbers never reached the treatment threshold in any research plots under any of the three management scenarios. No spider mites or lesser cornstalk borer were detected in this trial.

A preliminary analysis of yield in 2015 and 2016 were conducted. The ‘IPM’ and ‘no insect management’ plots were combined for analysis since none of these plots were treated with an insecticide. This analysis showed that there are statistical differences in the yields harvested in 2015 with varieties GA-06G and GA12Y generally yielding more than GA13M and Tifguard varieties. In 2016 the plots that received two calendar-based insecticide sprays were numerically higher than the plots that did not receive an insecticide, however, these differences were not statistically different, probably due to a larger amount of variation among yield collected from different plots than what was observed in 2015 (see figures below). Data on insect counts, yield and peanut quality have been sent to the principle investigator at UGA for a more comprehensive analysis of insect numbers among varieties, yield, quality, and economics. The analysis will include results from 2015 and 2016 trials conducted in Georgia and Alabama, and results will be disseminated through oral presentations and a scientific publication.

