

Development of a Cost Effective Light Trap for Peanut Burrower Bug Detection in Georgia

Mark R. Abney¹, Glen Rains¹, Gary Hawkins², D. Scott Carlson³, and Edward Beasley⁴

¹ Department of Entomology, University of Georgia, Tifton Campus

² Department of Crop and Soil Sciences, University of Georgia, Athens

³ UGA Extension, Tift County, GA

⁴ UGA Extension, Berrien County, GA

The peanut burrower bug, *Pangaeus bilineatus*, represents a significant threat to Georgia's peanut industry. The occurrence of this pest is sporadic in nature, and there are currently no effective area wide monitoring or field level scouting methods. Because burrower bugs are cryptic, spending most of their lives in the soil, and because populations and damage potential varies significantly from year to year, monitoring populations for pest management decision making and biological studies is difficult. Previous research in Texas and more recently in Georgia in 2014 showed that burrower bugs can be collected in light traps during night time mating or migration flights. Commercial, off the shelf insect light traps are expensive, bulky, and require considerable customization before they can be used for burrower bug collection. The cost for a trap and the required additional materials (battery, solar panel, switches, etc.) totals over \$500 per unit. This makes large scale use of light traps for population studies cost prohibitive. The goal of the work proposed here is to design an easily portable, effective light trap that costs less than \$100.00 per unit to build. Research will also be conducted to gather information that will be used to optimize light trap efficiency; burrower bug night-time flight activity and effects of soil moisture and temperature on flight activity will be studied. A low-cost, effective light trap will facilitate future studies (such as long term population monitoring and determining environmental factors that affect population size and behavior) that are essential for understanding burrower bug pest potential and developing management tactics. Light traps may also prove important for pest monitoring and management decision making at the field level.

Prototype light traps were designed and built and placed in a commercial peanut field in Tift County, GA. A peanut burrower bug population was confirmed to be present at the study site with the use of a large commercial light trap. Eight prototypes were constructed for testing. Units were equipped with solar chargers and were designed to turn on at dusk and off at dawn. A small plastic specimen cup served as the reservoir for collected insects. Traps were fitted with one of two LED light sources emitting either white or UV light. Traps were placed in the field in August and were arranged in a single line across the field with 50 ft separating adjacent traps. No burrower bugs were collected in any of the traps. Over the duration of the experiment the study site received frequent evening thunderstorms that reduce burrower bug flight activity. Capture data from our larger trapping study also showed that flight activity is significantly lower in August than in June. We will test the current trap design again in 2016 during the peak insect flight period in June and also consider alternative designs with larger trap openings.