Biology and Management of Peanut Burrower Bug in Georgia

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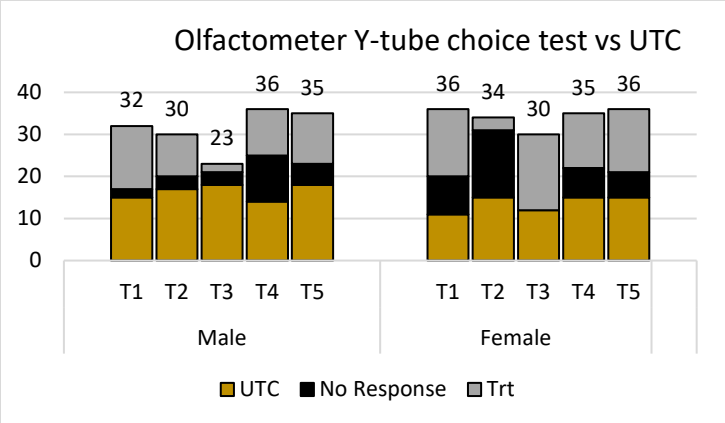
The peanut burrower bug (PBB), *Pangaeus bilineatus*, continues to cause losses to Georgia's peanut industry on an annual basis. This ongoing research addresses the need for effective, sustainable management tactics for burrower bug and seeks to improve understanding of the pest's biology in peanut production systems. The specific objectives of this project were: to determine the effect of pod development stage on PBB feeding; assess the biological activity of putative PBB pheromone compounds; and, evaluate PBB response to different wavelengths of light and monitor burrower bug population dynamics with UGA Extension agent maintained light trap network.

Research to assess the effect of pos development stage to PBB feeding is ongoing. Several challenges have slowed the collection of meaning data including producing adequate numbers of pods on peanuts grown in the greenhouse. We continue to refine our methods and will continue to work toward our project object in 2022.

A putative, male-derived pheromone was isolated from PBB in Dr. Aijun Zhang's USDA chemical ecology lab as part of a collaborative project funded by USDA NIFA. Field testing of several formulations of the compound was conducted over the past several years in Georgia peanut fields, but none of the tested products resulted in trap captures greater than untreated traps. As part of this GPC funded project, a "Y" tube olfactometer was built and used to assess the biological activity of five different formulations of the presumed pheromone in the Peanut Entomology laboratory at UGA in 2021. Virgin males and females were placed individually in the olfactometer in a darkened room. Zero-grade compressed air was passed through a charcoal filter and humidifier and either into one arm of the olfactometer as untreated air (UTC) or over a rubber septum impregnated with the experimental compound (T1-T5) and into the other arm of the apparatus. Insects were placed in the stem of the Y-tube and given 5 minutes to choose between the pheromone compound or the untreated check. Movement into either arm of the Y tube constituted a decision, and time required for each insect to make a choice was recorded. An average of 31 individual insects was tested for each sex by pheromone compound treatment. Overall, males appeared to avoid the experimental compounds with 69% choosing either the untreated tube or making no choice. One treatment (experimental compound "T3") resulted in 78% of males moving toward the untreated option. Females were largely unaffected by the experimental compounds with 38% selecting the treatment and 39% selecting the untreated option across all experiments. The notable exception was that 60% of females tested selected experimental treatment



"T3". We are continuing to work with Dr. Zhang's research group at USDA to better understand the chemical ecology of PBB and ultimately use this knowledge to develop management tools that could range from monitoring methods to mating disruption.

The occurrence of burrower bug 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. The burrower bug light trap monitoring network was in place 2021, but agent interest and participation continued to decline. The light trap network will be discontinued for 2022, but research will continue to develop a more efficient and cost-effective light trap. Part of that work will include testing different wavelengths of light for relative attractiveness to the insect.