

## Biology and Management of Peanut Burrower Bug in Georgia

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The peanut burrower bug (PBB), *Pangaeus bilineatus*, represents a significant threat to Georgia's peanut industry. 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: Evaluate commercially available runner-type peanut varieties for resistance to burrower bug feeding damage; determine when peanut pods/seed are most susceptible to PBB feeding injury; and, monitor burrower bug population dynamics with UGA Extension agent maintained light trap network.

Only one insecticide is currently available for PBB management in peanut, and additional tactics like host plant resistance (HPR) are needed. Prior to 2016 nothing was known about inherent host plant resistance to burrower bug in commercially available peanut cultivars. In five site-years of on-farm research from 2016 to 2019, GA-12Y had the least injury numerically in 2 of 5 trials and had less injury than GA-06G in all five trials. Unfortunately, PBB infestations were not severe enough in any of the trials to provide an conclusive screen. An effort to understand potential mechanisms of HPR was undertaken in 2019, and results of laboratory experiments showed that the force required to penetrate peanut shells varies by cultivar and could contribute to PBB susceptibility. Planting less susceptible cultivars in high risk PBB fields should lower the occurrence of economically important levels of injury. Two field trials were conducted in Brooks County, GA in 2020 to examine the effect of cultivar on the incidence of feeding injury by PBB. The trials were arranged in a randomized complete block design with cultivar as the experimental factor. One location was destroyed by wild hogs shortly after planting and was no longer suitable for study. Burrower bug populations were monitored at the remaining location with pitfall traps placed in each plot and a single light trap at the field margin. A random pod sample was collected from the harvested peanuts in each plot. Peanuts were shelled, blanched, and seed were individually examined for the presence of PBB feeding injury. There were no differences between treatments again in 2020, but for the first time GA-12Y had numerically higher PBB injury than GA-06G. Future research will focus on developing a lab/greenhouse based screening protocol.

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 continued in 2020, though participation by agents was limited by COVID-19. The data collected during this project have provided valuable insight into the population biology of the insect. Specimens

collected from light traps in 2020 were also used for new research seeking to use molecular tools to identify the PBB host range.

Work is underway in the greenhouse to evaluate the effect of peanut pod maturity on PBB feeding. This

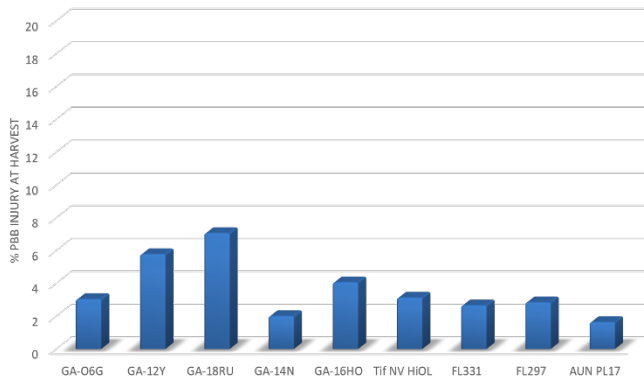


Figure 1. Mean percent peanut burrower bug feeding injury to peanut by cultivar in an on-farm replicated trial in Brooks County, GA 2020.

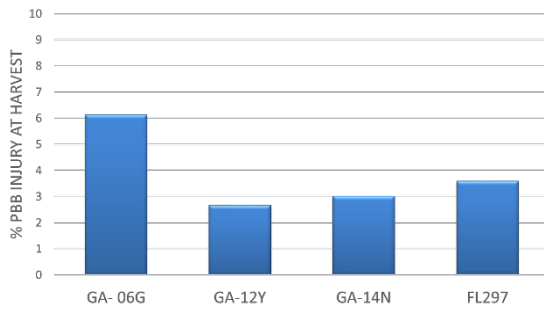


Figure 3. Mean percent peanut burrower bug feeding injury to peanut by cultivar averaged over 6 replicated on-farm trials in Brooks County, GA from 2016-2020.

research was delayed due to demolition and reconstruction of the UGA Peanut Entomology greenhouse in 2020. The facility reopened for occupancy in December 2020. Pods of different maturity will be exposed to PBB to determine feeding preferences in a choice test. We also plan to cage bugs on pods of known age for a specific time and then track the development of the pods and the expression of injury.

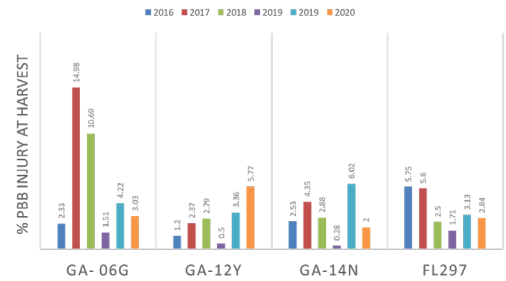


Figure 2. Mean percent peanut burrower bug feeding injury to peanut by cultivar in 6 replicated on-farm trials in Brooks County, GA from 2016-2020.

#### Burrower Bug Light Trap Capture by County

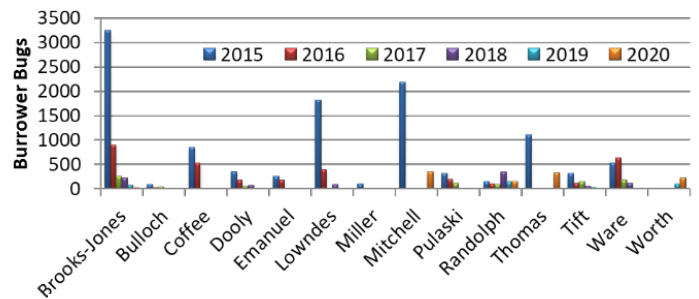


Figure 4. Total peanut burrower bug adults captured in light traps from 2015 to 2020 by location.