

Rootworm Population Dynamics and Management in Peanut: 2022

Mark R Abney

Department of Entomology, University of Georgia, Tifton Campus, 2360 Rainwater Rd, Tifton, GA 31794

Rootworms (southern corn rootworm (SCRW) and banded cucumber beetle (BCB)) have emerged as increasingly serious pests in irrigated peanuts in Georgia in recent years. Chlorpyrifos was the only registered insecticide with proven efficacy against these species in peanut, and tolerances were revoked for all food uses in early 2022. The UGA Peanut Entomology program has been working for several years to identify alternatives to chlorpyrifos. The purpose of this project was to improve our understanding of rootworm biology in Georgia peanut production systems with the ultimate goal of developing new and effect management tactics. The objectives of our research were: 1) to determine the distribution and relative abundance of the two species to determine if increased populations of banded cucumber beetle could be responsible for the observed increases in rootworm injury, 2) to assess the potential role of corn as a source of rootworm infestation in peanut, and 3) to quantify losses associated with rootworm feeding injury.

A large-scale, on-farm study was conducted in 2021 and 2022 predominantly in Terrell and Webster Counties to determine the relative abundance of the two rootworm species in peanut and to identify risk factors associated with rootworm injury. Adult beetle populations were monitored season long in more than 30 fields each year using yellow sticky traps and a food-based lure. Results clearly demonstrate that the banded cucumber beetle is the most abundant species often outnumbering southern corn rootworm by a factor of 9 to 1. Since there are no historical records of southern corn rootworm density in Georgia peanut, it is impossible to know whether BCB has displaced SCRW. Nevertheless, reports of rootworm injury in Georgia have increased in recent years, and our research suggests the damage was most likely caused by the non-native BCB. Both rootworm species have multiple generations per year, and studies examined the potential role of corn as a source of insects infesting peanut. The number of adult rootworm beetles and incidence of pod injury were higher in peanut fields adjacent to corn than in those where corn was not present. Within fields adjacent to corn, there was no significant effect of distance from corn on the number of beetles collected on sticky traps or the incidence of pod injury. These results suggest that corn may serve as a nursery for early season production of rootworm adults that later migrate to peanut. The effect of soil type on rootworm abundance and injury was examined, but insufficient replication of specific soil types precluded valid analysis.

A small plot research trial was conducted on the UGA SWREC in Plains, GA to determine the impact of rootworm feeding on peanut reproductive growth and ultimately on pod yield and quality. Pod samples were collected weekly from six plants in each plot. The two treatments included plots that were treated with an experimental insecticide to reduce rootworm injury and plots where no insecticide was used. All pods “match head” size and larger were removed, assessed for rootworm injury, dried, and weighed. Rootworm pressure was severe in the non-treated plots, and the incidence of injury was greater than 70% on most sample dates. The total number of pods was greater in non-treated plots than treated plots, but total pod weight was greater in the treated plots. This result indicates that peanut could compensate for injury by producing a greater number of pods. In the case of this trial however, heavy

sustained feeding pressure resulted in significant yield loss in the non-treated peanut. An additional year of study is planned to address this objective.

The experimental insecticide active ingredient isocycloseram developed by Syngenta Crop Protection has resulted in significant reduction in pod injury when applied in-furrow at plant. Research on rates and use patterns for this material continue. The US EPA is currently reviewing the registration package for isocycloseram, and a registration in late 2023 is possible. The availability of this product should have major benefit for growers with a history of rootworm injury to peanut.