

Gauging spotted wilt incidence and its contribution to yield loss in peanut production

Pin-Chu Lai¹, Mark Abney², Rajagopalbabu Srinivasan¹

¹Department of Entomology, University of Georgia, Griffin, GA 30223

²Department of Entomology, University of Georgia, Tifton, GA 30215

Spotted wilt disease incidence and losses to the disease have steadily increased since 2012 in GA. More importantly, the actual economic impact of spotted wilt disease on peanut yield is unknown. Current spotted wilt disease loss estimates in peanut are inferences based on limited field studies with anecdotal assessments of disease incidence. The current research was conducted to study the epidemiology of spotted wilt disease in modern peanut cultivars tackling both temporal and spatial aspects of disease development, and to further elaborate on the disease impact on peanut yield. Field experiments were conducted at the Lang farm at the UGA experimental station in Tifton, and at Attapulcus, GA. Peanut cultivars Georgia Green and Georgia 06G were planted on 24 April 2019 in a randomized complete block design experiment with 4 replications. The experiment relied on natural virus pressure. Spotted wilt diseased plants were identified by visual diagnosis of symptoms (confirmed later by serological testing), and the experimental fields were scouted for new symptomatic plants in a 2-week interval throughout the growing season. Tobacco thrips abundance was monitored using yellow sticky card traps. Initial disease severity ratings of individual plants were taken while the diseased plants were flagged, and final disease severity ratings of all symptomatic plants were obtained right before harvest. Symptomatic plants along with asymptomatic plants were harvested manually. Dry plant biomass, pod production and marketable kernel yield were compared between symptomatic and asymptomatic plants. Overall, the final disease incidence reached around 55% for both cultivars in 2019. New spotted wilt incidence of ~ 15% of total plants, which occurred at 76 days after planting (DAP), was the highest throughout the season. Thrips abundance was higher in the early season and steeply dropped after 48 DAP. Both initial and final disease severity ratings were significantly higher in plants, which were infected before 76 DAP. Symptomatic plants that were found before 76 DAP had significantly lower dry biomass, pod production in numbers, and marketable kernel yield in weights compared to asymptomatic plants. Significant negative correlations were found between disease severity ratings and peanut yield. Overall, reduction in yield due to spotted wilt disease was higher in cv. Georgia Green than in cv. Georgia 06G.