

## **Spatial and Temporal Spread of Tomato Spotted Wilt Orthotospovirus (TSWV) in Two Runner Type TSWV-Resistant Peanut Cultivars**

**P-C. LAI\***, R. SRINIVASAN, Department of Entomology, The University of Georgia, Griffin, GA 30223-1797; and M.R. ABNEY, Department of Entomology, The University of Georgia, Tifton, GA 31793-0748.

Tomato spotted wilt orthotospovirus (TSWV) is a thrips-transmitted virus that causes spotted wilt disease in peanut, which is a major yield-limiting factor in peanut production in the southeastern United States. The relevance of primary and secondary spread of TSWV to peanut yield loss of TSWV-resistant cultivars was not completely understood. Replicated field experiments were conducted to characterize temporal and spatial TSWV spread in two runner type peanut cultivars with field resistance to TSWV (Georgia Green and Georgia-06G), monitor in-field thrips activity, and determine the relationship between the onset of symptom expression, symptom severity, and yield. TSWV incidence progressed continuously throughout the growing season, while thrips activity above the peanut canopy peaked only once at/before 49 days after planting (DAP). Temporal TSWV spread was best fitted by the monomolecular model and the Gompertz model when the overall incidence was low to moderate (<50%) and high (>50%), respectively. Based on the binary power law and SADIE analysis, aggregation was found and often occurred in mid- to late season, and spatiotemporal association was found as TSWV progressed throughout the season. Results of TSWV spread suggested substantial secondary spread even when using TSWV-resistant cultivars. TSWV reduced yield by 0-99.65% depending on time of symptom expression. Early-season infection had more severe symptoms and less yield when compared with late-season infection. Significant yield losses caused by TSWV were observed in plants expressing symptoms before 77 DAP. Early- and late- season infection caused 80% and 25% yield reduction, respectively. Yield reduction following TSWV infection was higher in Georgia Green than Georgia-06G, although the incidence and symptom severity were mostly not different between the two cultivars. Overall, our results suggested that secondary spread contributing to mid-to late-season infection, while early-season infection accounted for most of the yield loss.