

A reliable method to assess spotted wilt incidence and its contribution to yield loss in peanut production

R. Srinivasan¹, M. Abney², Department of Entomology, University of Georgia, ¹Griffin Campus, ²Tifton Campus

Dr. Scott Monfort, Crop and Soil Sciences, University of Georgia, Tifton Campus

Spotted wilt disease caused by *Tomato spotted wilt virus* remains a major concern. Off late, TSWV incidences have fluctuated from year to year with some years being worse than the others. However, prior to us undertaking this effort, no science-based survey was adopted to gauge average spotted wilt incidence across the state, and what the impact of spotted wilt is in terms of yield loss. Before this effort, spotted wilt estimations were not assessed based on science-based surveys, and loss estimates were based on cultivars grown years ago. As a part of our effort, we came up with a science-based sampling survey. Wherein, we sampled six hundred-foot rows in randomly picked fields for spotted wilt incidence using one-foot hit sticks. At every location, GPS coordinates were collected, information on irrigation status, row patterns, and tillage were collected. With the help of County Extension agents' insecticide use details and yield estimates were obtained. These details were then assessed to identify average spotted wilt incidence across the state and whether any of the cultural practices had a significant effect on yields. Thirty fields in six counties viz., Baker, Brooks, Cook, Calhoun, Dougherty, Early, and Lowndes were randomly survey and evaluated for spotted wilt. The incidence of spotted wilt ranged from 0 to 9.5% in 2017. The 9.5% incidence was an anomaly and was only found in one field in Lowndes County. The average incidence was quite low in 2017 (2.26%). With this level of incidence, not many statistically significant differences were observed between cultural practices. Irrigated fields in general had reduced incidence than non-irrigated fields, and spotted wilt incidence was slightly higher with twin row plots than single row plots. As previously mentioned, none of these differences were statistically significant. Yield losses due to spotted wilt are yet to be ascertained if they indeed did occur.

The newly-released cultivars or third-generation cultivars seem to be less symptomatic when compared with cultivars grown in the 1990s. It is also not clear if there is an increased incidence of asymptomatic infections in the field in some of these newer cultivars, and if those asymptomatic infections have any impact on yields. Since all evaluations in 2017 were conducted based on visual symptoms, the impact of asymptomatic infections could not be evaluated in much detail in 2017. Those evaluations will be conducted in 2018 using serological and molecular detection tools and tagging individual plants.

Plant samples with spotted wilt associated symptoms were collected from each sampling site and taken to the vector biology laboratory in Tifton and tested. All the samples tested were positive for TSWV and did not indicate the presence of other tospoviruses such as *Groundnut ring spot virus* (GRSV) and *Tomato chlorotic spot virus* (TCSV). Both GRSV and TCSV have been found in Florida, but not yet in Georgia. Both GRSV and TCSV are serious concerns to peanut production, since it's not clear if resistance to TSWV would hold up against other tospoviruses besides TSWV. We will continue monitoring the peanut crop in 2018 for GRSV and TCSV in Georgia.