

A reliable and refined method for assessment of spotted wilt incidence in peanut producing counties in Georgia

Rajagopalbabu (Babu) Srinivasan and Mark Abney, Entomology Department, University of Georgia, Tifton, Georgia

Thrips-transmitted *Tomato spotted wilt virus* (TSWV), which causes spotted wilt disease, has continued to affect peanut production. This is especially true in the last few years; the incidence of spotted wilt has been on the rise. With the advent of new TSWV-resistant cultivars losses due to spotted wilt, through not severe as before, continue to occur. That said, the loss estimates are currently not based on a reliable science-based method that has been validated. In the 2015, at the Peanut Risk Index (peanut Rx) annual retreat, this issue was discussed, and a proposal was submitted to come up with a reliable method to assess spotted wilt incidences in multiple peanut producing counties. Also, sampling for spotted wilt detection was addressed in this proposal, the outcome of testing symptomatic leaves versus non-symptomatic leaves and leaf tissue versus root tissue was assessed by DAS-ELISA. Lastly, to address the concern of introduction of new tospoviruses such as *Groundnut ring spot virus* (GRSV) from Florida into Georgia, tissue samples with *Tospovirus* symptoms were tested for the presence of GRSV and TSWV.

A ten-county survey was initiated with the goal of randomly choosing at least five fields in each County. Six hundred-foot rows were selected in each field and spotted wilt incidence was assessed using the hit-stick method. Information was collected to assess the effects of confounding factors such as irrigated versus non-irrigated, single row versus twin rows, cultivars, insecticides, and planting dates. The results revealed that the incidence of spotted wilt ranged from 0 to 40% across the survey landscape with 8% being the average incidence. The effect of this incidence was not correlated to yield loss; another proposal was submitted to correlate such incidences to actual yield loss in 2017. The effects of confounding factors discussed above will be discussed during the Peanut Commission Research presentation.

Subsamples from the foliar samples collected were evaluated by DAS-ELISA to confirm TSWV infection. Almost all symptomatic samples tested positive for TSWV. However, there is evidence for cross-reaction between *Tospovirus* species. Some of these samples were also tested by RT-PCR using specific TSWV primers and they tested positive for TSWV. Further, foliar samples were sent to Agdia and tested with generic *Tospovirus* primers, cloning and sequencing of the amplicons revealed that they were 98-99% similar to known TSWV capsid gene sequences. These results reiterate that GRSV may not be present in Georgia as of fall 2016. Testing will continue in 2017 to assess whether we have GRSV infections in peanut in Georgia. ELISA testing conducted to assess TSWV accumulation in peanut tissue types indicated that there were no major differences between symptomatic versus non-symptomatic leaflets as well as between leaf and root tissue. These results suggest that testing of foliar tissue should be reliable enough to identify TSWV infection in peanut.