Prevalence of peanut viruses in addition to tomato spotted wilt virus (TSWV) and their impact on TSWV resistance in peanut

Rajagopalbabu Srinivasan & Vamsi Reddy Department of Entomology, University of Georgia, 1109 Experiment Street, Redding Building, Griffin, GA 30223-1797.
Mark Abney, Department of Entomology, University of Georgia, 2360 Rainwater Road, Tifton, GA 31793.

In an effort to understand thrips and virus ecology better, we have been sequencing viromes from peanut, weeds, and thrips with an ultimate goal of establishing a transmission network. In the process, virome analyses of peanut samples were collected in 2024 and 2025 from 13 locations spanning six counties in South Georgia *viz*., Tift, Irwin, Ben Hill, Turner, Colquitt and Worth. Virome analyses of peanut identified viruses including an *Orthotospovirus* (tomato spotted wilt virus, TSWV), potyvirues (peanut mottle virus, PMoV and bean common mosaic virus, BCMoV), a *Crinivirus* (Cucurbit chlorotic yellows virus, CCYV), and an unnamed *Polerovirus*. Some of these viruses have been reported in peanut in Georgia before, but some are new and have never been documented in Georgia. This indicated that other vectors besides thrips such as aphids and the sweetpotato whitefly could be involved as well in transmitting viruses to peanut. While some viruses could be seed transmitted as well.

With these many viruses present in peanut in Georgia, it is likely that there could be multiple viruses (mixed infection) simultaneously infecting peanut. A small sub-sample of field-collected peanut foliar samples were examined for mixed infection. Among the 20 samples, 14 samples (70%) were positive for mixed infection with TSWV and none was documented with single infection of TSWV. In other words, TSWV infection in peanut always was accompanied by another virus infection. This analysis included only a small subset of samples; nevertheless, if the trend were to persist, this could have serious implications for influencing host resistance against TSWV. Viruses are often known to synergize when they are present in mixed infection, and such a synergistic effect could lead to resistance breakdown or increased susceptibility in cultivars that are currently considered TSWV-resistant. Synergistic effects also could lead to increased symptom expression in infected plants (increased symptom severity), and such an impact could translate to increased yield loss.

Our laboratory is currently involved in examining physiological responses following mixed infection such as symptom severity and virus accumulation levels. Transmission and back transmission experiments are currently ongoing to validate whether peanut is indeed an inoculum source and a vector reservoir for some of the newly identified viruses and their prospective vectors, respectively. Mixed infection greenhouse experiments will be undertaken following the completion of the above-stated objective. In addition, stored field samples (2025) and freshly collected field samples (2026) will be evaluated for mixed infection of TSWV with other viruses.