

The Reliability of DAS-ELISA for Detecting Tomato Spotted Wilt Orthospovirus in Leaf and Root Tissue from Symptomatic and Asymptomatic Peanut Plants

P.-C. LAI, G.D. BUNTIN, R. SRINIVASAN, Department of Entomology, The University of Georgia, Griffin, GA 30223, S. BAG, Department of Plant Pathology, The University of Georgia, Tifton, GA 31793 AND **M.R. ABNEY***, Department of Entomology, The University of Georgia, Tifton, GA 31793

Thrips-transmitted tomato spotted wilt orthospovirus (TSWV) causes spotted wilt disease in peanut. Double antibody sandwich enzyme-linked immunosorbent assay (DAS-ELISA) is commonly used to detect TSWV. Previous studies detected higher rates of TSWV infection in peanut root tissue than leaf tissue using DAS-ELISA and suggested that root tissue might be a better sink for TSWV than leaf tissue. Nevertheless, the mechanism(s) responsible for higher TSWV detection rates in root tissue than leaf tissue in these studies remains unknown. Asymptomatic TSWV infection has been documented in peanut, and it is not clear if TSWV detection in asymptomatic plants is affected by the type of tissue tested. To address these questions, TSWV detection using DAS-ELISA in leaf and root tissue from symptomatic and asymptomatic plants was cross-validated with reverse transcription polymerase chain reaction (RT-PCR) and quantitative RT-PCR (qRT-PCR). TSWV was also quantitated by qRT-PCR in leaf and root tissue. TSWV was detected by DAS-ELISA, RT-PCR, and qRT-PCR at similar rates in leaf and root tissue from symptomatic plants and in leaf tissue from asymptomatic plants. However, TSWV was detected at a significantly higher rate in root tissue from asymptomatic plants using DAS-ELISA compared to RT-PCR and qRT-PCR. This indicates that using DAS-ELISA for TSWV detection in root tissue from asymptomatic plants can result in overestimation of TSWV infection. Leaf tissue had higher TSWV loads than root tissue from symptomatic plants, while TSWV loads in leaf and root tissue from asymptomatic plants did not differ and were low relative to symptomatic plants. These findings suggest that leaf tissue is a better choice than root tissue for TSWV detection in peanut using DAS-ELISA.