Nonchemical-based Sprays for Triggering Host Resistance: A New Strategy to Manage Spotted Wilt Virus

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Double-stranded (ds) RNA molecules that are homologous to mRNA, induce the endogenous RNA silencing or RNA interference (RNAi) mechanism, thus providing a rapid means of depletion of the mRNA via a sequence-specific degradation in the eukaryotic cell. RNAi plays a pivotal role in plant defense against subcellular pathogens. RNAi has been thoroughly exploited against plant viruses in different crops. Previous studies have shown that exogenous application of dsRNA molecules produced by *in-vitro* or *in-vivo* expression systems targeting the viral silencing suppressor sequences conferred resistance against the cognate plant viruses. The present strategy is to target the *Tomato spotted wilt orthotospovirus* (TSWV) which is having significant yield losses in the southern United States including Georgia. The disease has been managed with the implementation of integrated disease management strategies, still, there is a significant increase in yield loss in the last few years. The current project aims to minimize the TSWV disease incidence in peanut by exploiting novel RNAi technology. In the present work, an approach based in-vitro transcription was exploited for the production of TSWV genes derived dsRNA molecules. The exogenous application of dsRNAs onto the experimental host as *Nicotiana tabacum* and its role in triggering RNAi induced resistance against TSWV is being investigated.