

ABSTRACT

Detection and Diversity of Select Sweet Potato Viruses in Two Caribbean Countries, Jamaica and Trinidad and Tobago

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Within CARICOM, sweet potato is used to ensure food security, prioritized for utilization in production and processing for value addition. Jamaica is one of the larger sweet potato producers in CARICOM while Trinidad frequently imports the tuber. Prior research in 2006 on sweet potato viruses in Jamaica indicated predominantly asymptomatic plants (99.7%) with positive viral incidence (2 – 78%). Trinidad has had no publication on viral diseases of sweet potato, but has a history of whitefly transmitted geminiviruses. This study expands on the 2006 Jamaican survey, identifying the spectrum of sweet potato viruses in both Jamaica and Trinidad, while examining weeds functioning as virus reservoirs in Jamaica. Serological (NCM-ELISA) and molecular diagnostics (PCR, Deep Sequencing, RCA) determined eleven viruses: *Cucumber mosaic virus* (CMV); *Sweet potato C-6 virus* (SPC6V); *Sweet potato collusive virus* (SPCV); *Sweet potato chlorotic fleck virus* (SPCFV); *Sweet potato chlorotic stunt virus* (SPCSV); *Sweet potato feather mottle virus* (SPFMV); *Sweet potato latent virus* (SPLV); *Sweet potato mild mottle virus* (SPMMV); *Sweet potato mild speckling virus* (SPMSV); *Sweet potato virus G* (SPVG); and Sweepoviruses were present with co-infections akin to the camote kulot disease and a predominant occurrence of sweepoviruses in Jamaica. Trinidad also has sweepoviruses present in their crop. Common symptoms observed in samples of both countries included yellowing, vein banding and leaf deformation, yet only samples in Trinidad had the upward leaf curling associated with sweepoviruses. Sweepovirus strains affecting both countries diverge into mutually exclusive groupings. Sweepoviruses shared 80 - 95% coat protein homology among crops and weeds from Agro Parks in Jamaica, and genebanks in both countries across a range of cultivars, including the recently introduced Beauregard.

Keywords: sweet potato; viruses; NCM-ELISA; deep sequencing; RCA; SPLCV-JAM; sweepovirus; Caribbean; Jamaica; Trinidad and Tobago.