

MORPHOLOGICAL DIFFERENCES AMONG SUSCEPTIBLE AND RESISTANT SWEETPOTATO VARIETIES

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Physical, chemical and physiological properties of the plant leaves and stems play an important protective role against pathogens. Morphological, anatomical and serological studies were conducted on sweet potato varieties to determine the role of the traits in relation to sweet potato response to viral diseases incidence described, especially the sweet potato virus disease (SPVD). The morphological characteristics included petiole and internode length and pubescence. Anatomical attributes of nine sweet potato varieties were studied using light microscopy. Serological tests were conducted on sweet potato leaves with nitrocellulose membranes enzyme-linked immunosorbent assays (NCM-ELISA) to test for presence of viruses that commonly infect sweet potato in Kenya. There were significant differences ($P < 0.05$) among the sweetpotato varieties for the traits measured. The sweet potato varieties which were tolerant SPVD had longer internodes and petioles, thicker leaf and stem cuticles and low hair density on leaves and stems compared to the susceptible varieties. The sweetpotato virus titres were high in the most susceptible varieties (Jewel, Mugande) compared to the resistant (Jonathan, Zapallo) out of the samples tested. The sweetpotato mild mottle virus (SPMMV), sweetpotato chlorotic stunt virus (SPCSV), sweetpotato feathery mottle virus (SPFMV) and the sweetpotato chlorotic stunt virus (SPCFV) were on average 22%, 36%, 32% and 11%, respectively among the 20 varieties. Sweet potato morphology can form a basis for rapid assessment of SPVD tolerance among varieties. The multiple infections involved SPCSV and this was common in most of the diseased plants hence the importance of targeting resistance to SPCSV through crop improvement programs.

Key words: Cuticle, hairiness, Host plant resistance, sweetpotato virus disease