Abstract

Experiments to determine the effect of the three viruses most common on Kenyan sweet potato varieties were carried out at the University of Nairobi Kabete farm. The sweet potato varieties were Bungoma, Kemb 10 and Ex-Shimba hills which were either virus-free or infected with *Sweet potato feathery mottle virus* (SPFMV), *Sweet potato mild mottle virus* (SPMMV), *Sweet potato chlorotic stunt virus* (SPCSV) or a combination of SPFMV and SPCSV. Canopy photosynthetically active radiation (PAR) interception and the relative chlorophyll content of the plants were determined. At harvest, marketable tuber yield, harvest index (HI), leaf area index (LAI) and specific leaf weight (SLW) were measured. Infection with single viruses caused no or mild symptoms and had no significant effect on chlorophyll content of leaves of any variety. Dual infection with SPFMV and SPCSV resulted in severe symptoms characteristic of sweet potato virus disease complex (SPVD) and significantly reduced chlorophyll content. Only SPCSV and SPCSV + SPFMV reduced PAR interception, the latter combination especially. Generally, infection with single viruses increased the SLW but a decrease occurred in plants dually infected with SPFMV and SPCSV. Whereas SPVD significantly reduced the harvest index (78%) and tuber yield (98%) in the three varieties, infection with single viruses caused a reduction only in the varieties Bungoma and Kemb 10. SPVD reduced yield through reducing leaf chlorophyll content, PAR interception, LAI and HI. The single virus infections possibly reduced assimilate translocation from leaves to tubers as is inferred from high SLW. Effects of viruses on physiological processes and yield are discussed.