

Effect of modified spacing arrangements, fertilizer use and legume intercrop on prevalence of cassava brown streak disease in Western Kenya

Abstract

Cassava is an important food security crop in Western and Coastal counties of Kenya. As a food security crop, it is continuously cultivated with minimal inputs. Its production is constrained by factors like declining soil fertility, poor agronomic practices, pests and diseases. Cassava brown streak disease (CBSD) is a viral infection attacking the cassava crop causing yield losses of up to 100%. The current study was intended to determine the effect of planting technologies on the prevalence of CBSD in two agro-ecological zones of Western Kenya: lower midland (LM1) and upper midland (UM1). Various spacing arrangements, four fertilizer regimes, legume intercrop and improved cassava cultivars were tested in a randomised complete block design (RCBD) with each site as a replicate. Data was collected on pathogen population and disease incidences and severity, and cassava and legumes yields. Results showed no effect of modified spacing and legume intercrop on CBSD incidence. However, incidences varied by cassava cultivar (9 to 59%) and fertilizer application (3 to 41%). Low CBSD incidences (3 to 16%) were observed over time in management strategies involving fertilizer NPK 17:17:17 suggesting that vigour enhancement may have contributed to low CBSD incidences. Low incidence of CBSD on improved cultivars indicates that CBSD can be mitigated through crop improvement technologies such as breeding for resistance to diseases. Intercropping cassava with beans and modification of spacing did not demonstrate an effect on CBSD incidence. However, 2 m x 0.5 m spacing arrangement can compensate for rising land pressure in Western Kenya and areas facing similar problem.

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