Farmers' participatory selection for early bulking cassava genotypes in semi-arid Eastern Kenya

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Abstract

Cassava is an important food security crop in semi-arid, Eastern Kenya, but production is constrained by planting late bulking landraces. Therefore, farmer participatory variety selection was initiated with the aim of identifying early bulking varieties with preferred root qualities. Four popular local varieties were crossed with six early-bulking varieties selected from IITA germplasm in a North Carolina II mating scheme. The resultant 225 cloned F1 progenies were evaluated for early bulking in a 15 x 15 simple lattice design with two replications at KARI-Kiboko farm in Eastern Kenya. Sixty-five farmers participated in the selection of early bulking genotypes with preferred root qualities during the second and third harvests at 7 and 8 months after planting. At 7 months, there was a significant variation among genotypes for root bulking, cyanide content, dry matter content, harvest index and root number. Farmers subjected all the genotypes to a preference test and selected 30 genotypes (13%), which combined early-bulking and high root quality. A selection index based on farmers’ ranking of agronomic traits was then imposed on the selected 30 genotypes to identify those that were superior in both agronomic and end-user traits for possible release and advancement. The selected genotypes were all significantly superior to the parents. The top 10 genotypes displayed above average performance for all agronomic traits. Involving farmers in selection helped to identify early bulking genotypes with end-user root qualities that could/should ultimately accelerate their adoption.