

Abstract

Drought stress is the major abiotic factor that limits cassava productivity in many agro-ecological regions of sub-saharan Africa. In this study, stay-green trait in two transgenic cassava genotypes (transformed with isopentenyl transferase (ipt) gene for improved drought tolerance) and six non-transgenic cassava genotypes were evaluated under green-house conditions. Leaf abscission (for leaf retention), elongation of the last internodes, photosynthetic rates, and stomatal conductance were determined in these cassava genotypes subjected to three levels of water stress treatments (0, 30, and 60 %) and a positive control or fully irrigated plants. Two non transgenic genotypes (98-0002 and 98-2226) and one transgenic line (529-48) that expressed relatively high level of stay green or leaf retention, also exhibited significantly higher photosynthetic rates, internode elongation and relatively low stomatal conductance compared to other genotypes. Non transgenic genotypes 91-02322 and TME-3 and transgenic line 529-28, expressed moderate levels of stay green and non transgenic genotype 95-0306 and wild type TMS 60444 (for the transgenic lines) were highly susceptible to the water stress treatments. The results reported here showed there was a positive correlation between leaf retention, photosynthetic rates, internode elongation and stomatal conductance.