

Abstract

The production of banana seedlings through tissue culture provides a reliable source of numerous, disease free, quality plantlets. However, the micropropagation process is faced with a number of challenges. In this study we are focusing on the improvement of survival and growth of the resultant plantlets during the acclimatization process. The viability of arbuscular mycorrhiza fungi (AMF) symbiont in the acclimatization process was assessed. Tissue culture bananas (Kienyeji, Kiganda and Ng'ombe local cultivars) were inoculated with single species AMF *Rhizophagus irregularis* and *Funneliformis mosseae* as well as commercial AMF Rhizatech. The survival rate was assessed and plant growth evaluated at a two week interval. Destructive harvesting was conducted followed by assessment of root, shoot and total biomass. The results demonstrated that Kiganda treated with *Rhizophagus irregularis* and *Funneliformis mosseae* recorded better survival rates compared to treatments with NPK fertilizer and commercial AMF (Rhizatech). Kienyeji cultivar however had a better survival rate when treated with commercial AMF (Rhizatech). Ng'ombe cultivar was very resilient having 100 % survival rate when treated with indigenous AMF, commercial AMF (Rhizatech) and NPK. There were significant differences in the shoot dry weight, root dry weight and biomass in the three banana cultivars. Kiganda and Kienyeji cultivars had the highest biomass when treated with *Funneliformis mosseae* of 0.52 g and 0.83 g respectively. The results in this study confirm that the use of AMF in the acclimatization process improves the overall seedling output of the micropropagation process during the nursery stage of production.