11. Growth, yield and quality of selected sweet potato (*Ipomoea batatas [L.] Lam.*), lines under varying nutrient management levels

Alexander Ngugi Penina[1] *, Peter Masinde[1], Eric Mworia[1]
[1]Department of Agriculture, Meru University of Science and Technology
*Corresponding author email: peninahngugi91@gmail.com

Subtheme: Agriculture - Sustainable Agro-ecological practices for climate resilience

Abstract

Sweet potato (*Ipomoea batatas [L.]* has increasing potential as a food security crop in Kenya. However, its' production is comparatively low compared to its potential production which is attributed to drought conditions and low soil fertility conditions alongside use of local landrace cultivars that are low yielding. This study was conducted at Meru University of Science and Technology to assess the performance of selected improved sweet potato lines under varying nutrient management conditions. Three sweet potato varieties were used; CIP 106988.1 (Naspot13) and CIP 112286.1(Margarette), and a farmer-preferred variety Kemb-10 and three NPK (17:17:17) levels: 0, 120 and 240kg NPK ha-1. A randomized complete block design in a split plot with 3 replicates was used; varieties on the main plot and NPK levels as the subplots. Data collected was subjected to analysis of variance (ANOVA) using SAS software, and means separated using the least significance difference test ($P \leq 0.05$).There was no significant ($P > 0.05$) interaction between NPK levels with the varieties. However, NPK levels significantly (<0.001) affected vine length, number of leaves and tuber yield. Sweet potato growth parameters (vine length, number of branches, number of leaves) and tuber yields (tuber length, tuber circumference, number of tubers and tuber fresh weight were significantly affected by different NPK levels applied. Application at 240 kg NPK ha-1 produced the highest vegetative growth and tuber yields. As the NPK rates were increased from 0 kg NPK ha-1, through 120kg NPK ha-1 to 240 kg NPK ha-1both vegetative and tuber yields escalated. Naspot 13 and kemb 10 varieties performed well across the treatments as compared to Margarette hence these varieties could possess other superior attributes other than just the NPK treatments. Based on findings, NPK nutrients supply is fundamental to the crop. It is recommendable that farmers incorporate inorganic fertilizers in sweet potato farming for enhanced production..

Keywords: *Vine length, Number of leaves, Fresh tuber weight, Number of tubers, tuber circumference, NPK levels*