

Abstract

Sweet Potato (*Ipomoea batatas* [L.] has increasing potential as a food security crop in Kenya. However, its production is relatively low compared to its potential production attributed to drought conditions alongside use of local landrace cultivars that are quite low yielding. A study was conducted at Meru University in 2020-2021 to assess the performance of selected improved sweet potato lines under varied watering regimes. Two selected sweet potato varieties were used; Naspot 13 and Margarete and a farmer-preferred variety, kemb-10. The varieties were subjected to three different watering regimes (i) Continuous water deficit 30 DAE (ii) Continuous water deficit 60 DAE and (iii) well-watered to maturity. A randomized complete block design in a split plot, with water treatment as the main plot and varieties as subplot with 3 replicates was used. There was no significant interaction between varieties and water regimes. Watering regimes significantly ($p \leq 0.05$) affected vegetative growth and yield. Plants under continuous water deficit from 30 DAE had significantly lower vine length, number of branches and leaves. Under continuous water deficit from 60DAE, plants experienced significant reduction in vine length, number of leaves and branches compared to control plants. However, this reduction was less compared to 30DAE. Margerete had significantly lower vine length, number of branches and leaves (41.01% 11.2% and 44.3%) respectively. Kemb 10 had a significantly higher tuber diameter and tuber length, 101% and 91.05% respectively. The vegetative growth and yield of Naspot 3 was comparable to Kemb 10. Naspot had 89.4% increases in number of tubers. It's concluded that varieties tested responded similarly to water deficit, with larger vegetative and yield reductions at 30DAE. Based on findings, planting earlier is recommendable for crop establishment to escape water stress whereas Naspot 13 is more suitable for the area considering its higher growth and yield.