Introduction

Sweetpotato serves as human food, animal feed and industrial raw material in the production of sugar syrups, ethanol and flour for confectionaries. It produces more food energy per unit area and unit time than any other major food crop and has higher protein, vitamin and mineral contents compared to cassava. However, sweetpotato has a class of need and this is the survivability and availability of planting materials. It is harvested after a period of about 4-5 months and planting materials must be available for the next growing season, which can be 5-7 months later, especially in those sub-Saharan African regions with extended drought period. Most farmers are losing 4-6 weeks of the growing period at the beginning of the rainy season while they re-establish sufficient vine production for planting, obtaining initial limited planting material from residual plants, re-sprouting roots, or secondary growth of harvested fields, limiting sweetpotato production areas.

Objective:
The objective of is to assess the effect of tunnel screen on vine multiplication rate of Apomuden and Ogyefo varieties.

Material and Methods:

An orange flesh ("Apomuden"), and a white flesh ("Ogyefo") sweetpotato vines were nursed under a white screen tunnel cover bed plots, in a randomised complete block design and split-split plot experiment, with 3 replications in SARI's experimental fields (Plate 1a & 1b). The trial was planted during the 2012 rainy season, on a 1 metre wide and 2 metre long raised bed plots covered with a 0.5m high tunnel screen, with open bed as the "control" plots. Four (4) node vine cuttings were planted on each bed plot at 0.10 x 0.20 m planting distance, at plant population of 50,000 cuttings/ha. A basal compost fertiliser was applied to each plot at a rate of 20 tonnes per hectare, with Nitrogen fertiliser applied at 2 t/ha (400g/2m²) as topdressing after each harvest of vines to boost regeneration. The compost was prepared at 1:2:1 in volume of rice husk, false yam (Icacinia senegalenise) weed and cow dung. The first vine cutting was harvested at 6 WAP and subsequently at 11 and 16 weeks after planting for second and third harvests, respectively. Data was collected at each harvest on Plant establishment, Vine length, Leaf area, Number of shoots, and the Number of cuttings produced. Data was analysed using GenStat software to separate the means.

Results

The results obtained from the 3 harvests of sweetpotato vines showed significant differences (p≤0.05) in vine length, average number of plantable cuttings per plant and the total number of plantable vine cuttings by the 2 varieties evaluated under a tunnel screen cover compared to the opened bed plots. The tunnel cover recorded a RH and Temperature of 70.1% and 33.4°C, while the open bed environment recorded a RH of 48.7% and Temperature of 36.1°C “Apomuden” recorded the highest average vine lengths of 81.6 and 59.6cm under tunnel cover and on opened beds at 6 WAP, 65.2 and 64.6 cm the harvest at 11WAP, and 81.3 and 65.7 cm long at 16 WAP, respectively. On the contrary, the opened bed or “control” bed produced higher vine cuttings than the tunnel covered beds, with “Ogyefo” recording the highest average cuttings of 421 plantable vines and “Apomuden” recording an average of 408 plantable vines per 2m² area. However, the difference in number of transplantable vine cutting yield was not statistically significant.

Discussion:

The length of vines recorded, from which the cuttings were obtained, showed significant differences (p≤0.05) among the varieties and under tunnel covered bed and the control conditions. Apomuden recorded significantly higher vine length (76cm) in the tunnel covered beds compared to the control (63.3cm). Similarly, Ogyefo recorded higher vine length (55.6cm) in the tunnel covered beds than on the opened beds (47cm). Earlier studies also demonstrated that plants may form a bigger assimilation surface when the shading is stronger (Siwek & Libik 1996). This may be connected with a lower water loss due to transpiration as a positive water balance factor necessary for cell growth (Xu et al. 1994). The higher vine lengths of the sweetpotato varieties in the tunnel cover however, did not translate into higher number of cuttings, reducing the number of cuttings obtained for the 4 node as transplantable vines than on the opened bed conditions.

Conclusions

Transplantable cuttings on opened beds for “Apomuden” and “Ogyefo” were higher compared to under tunnel cover at 6, 11 and 16 WAP, respectively; contrary to the highest vine lengths recorded under tunnel cover condition. The higher vine lengths recorded under tunnel covered bed for sweetpotato varieties produced longer internodes and less number of four (4) node plantable cuttings.

Bibliography


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