EFFECT OF TUNNEL SCREEN ON RATE OF SWEETPOTATO VINE MULTIPLICATION FOR INCREASED FOOD PRODUCTION AND INCOME.

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Introduction

Sweetpotato produces more food energy per unit area and unit time than any other major food crop. However, sweetpotato has problem with the survivability and availability of planting materials. Most farmers are losing 4-6 weeks of the growing period at the beginning of the rainy season as 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, thereby limiting sweetpotato production areas.

Objective:

The objective of this study was to assess the effect of tunnel screen on vine multiplication rate of “Apomuden” and “Ogyefo” varieties.

Material and Methods:

Vine cuttings of “Apomuden”, (orange flesh) and “Ogyefo”, (white flesh) sweetpotato varieties were nursed on a raised bed plots of 2m² during 2012 rainy season. Initial basal compost fertiliser comprising 1:3:1 in volume of rice husk, false yam (*Icacina senegalense*) leaves and cow dung was applied at 20t/ha before planting. Four (4) node vine cuttings of each variety were planted at 0.10 x 0.20m distance, at a population of 50,000 plants/ha, in a split plot arranged in a randomised complete block design and 3 replications at SARI’s experimental fields (Plate 1a & 1b)., The beds were covered with 0.5m high tunnel screen, with opened beds as the control plots. Vines were harvested at 6, 11 and 16 WAP. Data was collected at each harvest on plant establishment, vine length, leaf area, number of shoots, and the number of cuttings produced. Ammonium sulphate was applied at 2t/ha (400g/2m^2) after each vine harvest. Data was analysed using GenStat discovery Edition 4.

Plate 1a. **Tunnel covered beds of Sweetpotato**

Plate 1b. **Harvested sweetpotato vine field**

Results

The results of the study showed significant differences ($p \leq 0.05$) in the 2 varieties with respect to vine length, average number of cuttings/plant and the total number of vine cuttings recorded under the tunnel screen cover compared to the opened bed plots. “Apomuden” recorded the highest average vine length of 81.6 and 59.6cm under tunnel cover and opened beds at 6 WAP, 65.2 and 64.6 cm at 11WAP, and 81.3 and 65.7 cm at 16 WAP, respectively. (**Fig 1**).

On the contrary “Apomuden” produced higher vine cuttings on the opened beds than the tunnel covered beds (**Fig. 3**), with “Ogyefo” recording the highest overall average cuttings of 421 plantable vines and “Apomuden” recording an average of 408 plantable vines per 2m^2 area. However, the difference in number of transplantable vine cutting yield was not statistically significant.

Results cont’d

Figure 1. Vine length of "Apomuden" at different harvest.

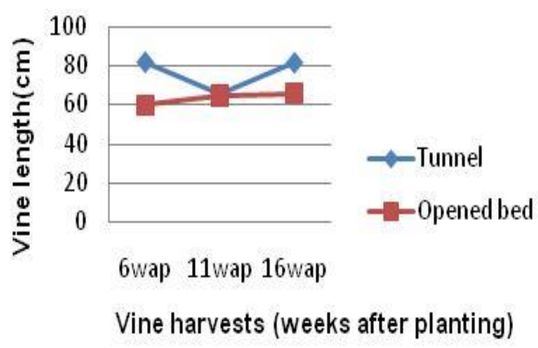


Figure 2. Vine length of "Ogyefo" at different harvest

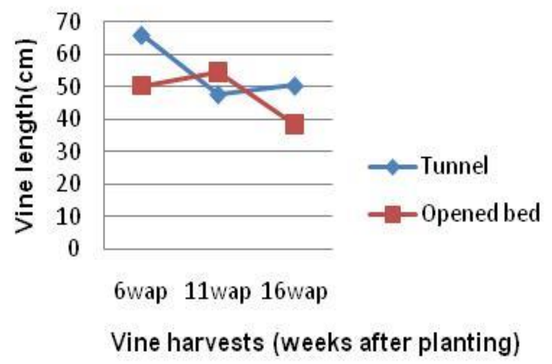


Figure 3. Number of vine cuttings by "Apomuden" at different harvests

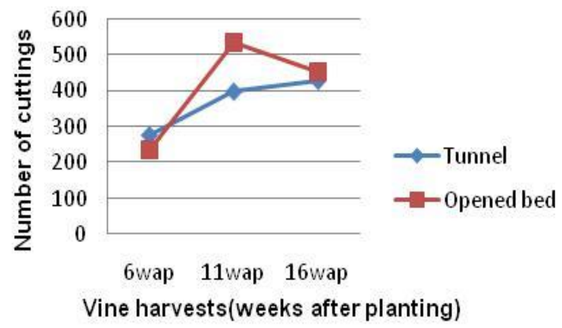
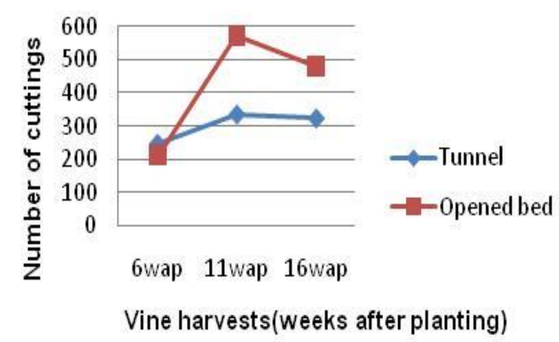


Figure 4. Number of vine cuttings by "Ogyefo" at different harvests



Discussion and Conclusions:

The longer vines recorded, from which the lower number of cuttings were recorded were obtained under tunnel covered bed conditions. These may be attributed to a lower water loss through transpiration, as a positive water balancing factor necessary for cell growth (Xu *et al.* 1994). This, however, did not translate into higher number of cuttings, reducing the number of cuttings obtained for the 4 node length as transplantable vines than on the opened bed conditions.

The higher vine lengths recorded under tunnel covered bed for sweetpotato varieties produced longer internodes and less number of four (4) node plantable cuttings.

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