ABSTRACT

Factors influencing the performance of planting material in *Dioscorea alata* L.and *Dioscorea cayenensis* Lam.

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The literature on the sprouting of yam setts was reviewed to emphasize the importance of the primary nodal complex (PNC) as the organ of renewed growth in yams. The PNC gives rise to roots, shoots and tubers of the new plant. In some species of yams, the PNC remains dormant as the yam head during storage of yam tuber and is formed *de novo* from the tuber germinating meristem during the germination of yam setts.

The effects of sett type (head, middle and tail) and sett weight (30g, 60g and 90g) methods of planting (direct planting and presprouting)and cultivation system (staking and mulching)on the sprouting and tuber yield of White Yam (*D. alata*) setts were studied. In addition, the sprouting of Yellow Yam (*D. cayenensis*) setts was evaluated based on maturity and storage of mother tubers, sett type, and sprouting media (fresh saw dust with pine, fresh saw dust without pine, partially decomposed pine bark and wood shavings). A preliminary study was also

done to select seasonal types of Yellow Yam on the basis of uniformity in sprouting.

With White Yam, the results indicated that head setts of the lower sett weight (30g and 60g) showed higher rates of sprouting than middle and tail setts of the same weight. However, all sett types gave similar sprouting percentage at the 90g sett weight. White Yam setts planted directly in the field showed delayed plant establishment when compared to transplanted setts. At three weeks after planting (WAP), presprouted setts attained 89 % plant establishment, whereas directly planted setts took 11 WAP to achieve similar plant establishment. Mulching resulted in higher percentage plant establishment than treatments without mulching in White Yam.

With Yellow Yam, seven seasonal types were selected on the basis of uniformity in sprouting. Based on the cropping system practiced, Yellow Yam showed a growth cycle ranging from 13 to 15 months. The sprouting percentage of setts derived from mother tubers harvested after 10 and 11 months of field growth, was more influenced by the age of the setts than by the duration of tuber storage time or sett nursery time. However, the sprouting percentage of setts taken from mother tubers harvested at 12 months after planting was

influenced more by the duration of tuber storage time before sett preparation than by that of sett nursery time. Implications are discussed.

There was a direct relationship between sett weight and percentage sprouting of Yellow yam setts. Although head setts were superior in sprouting compared with middle and tail setts, the differences diminished with time after planting. The results in this study also suggested that none of the media tested were better in terms of sprouting than the fresh saw dust with pine, which is normally used.

In general, it was observed that *D. alata* setts gave earlier and more uniform sprouting from lower sett weight than *D. cayenensis* setts.

With regards to tuber yield, the data revealed a positive relationship between sett weight and tuber yield for head and tail setts in White Yam. Mulching resulted in significantly higher tuber yield in White Yam than treatments without mulching.

It is concluded that small setts (preferably 90g) planted directly in the field, with mulching may be appropriate for the production of White Yam. As for Yellow Yam setts, the sprouting is influenced by a number of factors which include, sett weight, sett type and maturity of mother tubers.