

A STUDY ON GROWTH AND YIELD OF DIOSCOREA  
WITH MINI TUBER MULTIPLICATION TECHNIQUE

By

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Thesis

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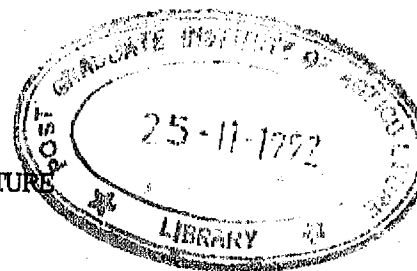
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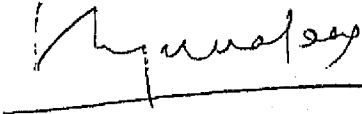
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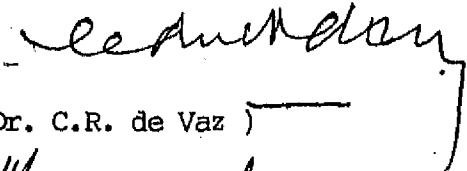


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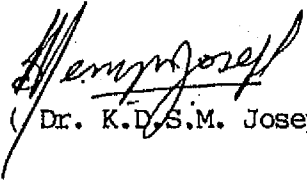
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## ABSTRACT

Dioscorea is a tuber crop grown in many parts of the tropics. Its propagation by tuber pieces is the common method among the Sri Lankan farmers. Small (mini) tubers can be used as planting material, which are not suitable for consumption. Series of field experiments were conducted during 1987-1990 at the University Experimental Station, Dodangolla, to study the yield variation of Dioscorea yams due to size of the mini tubers as planting material.

In experiment I, five different groups of mini tubers weighing 200-300g, 300-400g, 400-500g, 500-600g, 600-700g, and 10 different cultivars, and in experiment II four different groups weighing 100-200g, 200-300g, 300-400g, 400-500g and 10 different cultivars, were studied. Mini tuber groups were obtained from previous seasons harvest. The time taken for sprouting of mini tubers in different weight groups significantly influenced the final tuber yield. The heavy tuber groups sprouted early had a sprouting percentage of 15.0 and 12.3 at 4 WAP in experiment I and II respectively. The sets had taken a total period of 9-12 weeks for maximum sprouting. The highest yields were obtained from the 300-400g weight

group in both experiments and the lowest from tubers weighing 200-300g in experiment I and 100-200g in experiment II. The highest multiplication ratio was obtained in 200-300g weight group in experiment I and 100-200g group in experiment II, but 300-400 g group was relatively higher compared with other groups in both experiments.

The cultivars showed a significant variation on growth parameters and yield. Hingurala had more vines and branches/plant, low vine length/plant (2.9 and 3.6 m), and low yields (18.6 and 18.7 mt/ha) in experiment I and II respectively. Angiliala had more vines and branches/plant and long vine lengths (4.7 and 4.8 m), and higher yields (26 and 28 mt/ha) respectively. Kombuwalli and Angiliala had more leaves (409 and 484 leaves/plant), and Thambala, Iniala had less leaves/plant (206 and 190 leaves/plant) in experiment I, at the maximum leaves/plant stage, but the leaves/plant varied with season. When leaves/plant, leaf size, and the vines/plant increased the bulking rate and the tuber dry weight also increased until the crop reached maturity at 7 months after planting (MAP). Nigerian and Ratala had high bulking rate and high tuber weights (33.7 and 40.7 mt/ha).

Total drymatter production of Angiliala (9.47 and 12.05 mt/ha) and Ratala (9.45 and 11.10 mt/ha) were significantly high in experiment I and II respectively. Mother tuber weights decreased with time in all cultivars. Harvest index increased upto 5 MAP in all cultivars and then at a reduced rate. Ratala and Nigerian gave higher yields during the experimental season. Kombuwalli, Rajala and Angiliala also gave a comparatively high yields during the early period of growth. Iniala and Hingurala had low yields in both seasons.

This study, conducted over 3 years had clearly illustrated that 300-400 g weight planting material is capable of producing a comparative higher yield under farmers condition in the mid country region. Among the Dioscorea alata cultivars, Ratala and Nigerian showed high potential in this location. Therefore, these cultivars may produce better yields in similar location in mid country intermediate zone of Sri lanka.

Key words: *Dioscorea* spp., Minitubers, Cultivars, Planting material size, Tuber yield.

