RESPONSE OF TARO, *COLOCASIA ESCULENTA* (L) Schott TO WATER MANAGEMENT PLOT PREPARATION AND POPULATION

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SUMMARY

Greenhouse and field experiments showed that when nutrients were not limiting, taro corm yields increased significantly in flooded but not puddled culture in comparison with non-flooded soil conditions. Differences in yield were attributable to higher suckering capacity and restricted capacity for root penetration in dry soil. Yield per hectare increased significantly with increasing populations. Ridging might be of some advantage in mechanized harvesting of taro, but did not significantly effect yield.

RESUME

Des essais menés en serres et aux champs révèlent que lorsque les éléments nutritifs ne sont pas défaillants, le rendement des tiges bulbleuses du taro accroît sensiblement en culture submergée mais non de mise en boue par rapport aux conditions de sol non submergé. Les écarts de rendement sont imputables à une plus grande capacité de production de surgeons et à une capacité limitée de pénétration des racines en sol sec. Plus la densité est grande, plus on enregistre de facon sensible un accroissement du rendement à l'hectare. La culture en buttes pourrait être avantageuse pour la récolte mécanisée du taro, mais elles n'ont pas d'effet sensible sur le rendement.

RESUMEN

Experimentos de invernadero y de campo mostraron que cuando los nutrientes no son limitantes, los rendimientos de cormo de malanga se incrementaron significativamente en un cultivo inundado sin formar encharcamientos, en comparación con uno en el que el suelo no se inundó. Las diferencias en rendimiento fueron atribuíbles a una capacidad más alta de ahijamiento en un caso y a la capacidad de penetración de la raíces que se vió restringida en el caso del suelo seco. El incremento en rendimiento, aumentó significativamente cuando la población aumentó. El alomado puede ser de alguna ventaja en la cosecha mecánica de la malnga sin embargo, no afectó significativamente el rendimiento.

INTRODUCTION

In Hawaii, taro is grown as a commercial crop under flooded puddled soil conditions.[15] The taro industry in Hawaii has been declining mainly due to lack of mechanization and hence lack of attraction to younger farmers.[1,15] The production of taro is too small to justify high expenditure on developing and producing equipment specifically for this crop. Adjustment of the techniques for taro may enable equipment designed for other crops to be successfully employed. Such equipment as seedling transplanters and potato diggers could be used if a firm enough land surface for their movement could be obtained. A change from flooded puddled soil (as practised in Hawaii) to 'dry land' culture was suggested[10]. This study was undertaken to determine the effects of some cultural adjustments on taro. Enyi[8] obtained higher yields under ridged culture of *Xanthosoma* sp. in dry land rainfed conditions in Nigeria and ridging would be likely to make harvesting easier even if it gave no direct income yield.

The degree to which vegetative development (or top growth) is related to root (or tuber) growth in root crops are of importance in overall yield. Milthorpe[13] discussed the relationship of top to root growth for sugarbeet and illustrated the concurrent growth of roots and tops in which neither dominated at any time. In *Solanum* and sweet potatoes however, top growth dominated at early phases of development while root growth dominated at later phases. Several studies relating leaf area of *Xanthosoma* to corm yield have been conducted[8,9,12], but there have been relatively few such studies for taro[16]. As we have reported elsewhere[11,12], total leaf area of taro at 3, 5 and 10 months of age can be correlated linearly with corm yields, but the highest correlation coefficients of leaf area and corm yields for 5 and 10 months measurements were 0.56 and 0.54 respectively. The 5th month is the period of maximum leaf growth and 3rd and 10th months represent periods of rapid development and senescence respectively.

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