

A B S T R A C T

A study of the effects of sett characteristics and spacing on growth, development and yield of yams was made. The relevant literature was examined and discussed in relation to the potato.

Four experiments were carried out. In the first experiment the tubers of two varieties of *D. alata* - White Lisbon and Oriental - were examined for nutrient gradients. It was found that the concentration of dry matter, N, P, Ca and Mg decrease while K increases from the head to tail end.

In the second experiment the effect of a range of sett types of *D. alata*, *D. esculenta* and *D. trifida* on emergence, stem development and yield were studied. Differences in emergence and stem growth were observed and discussed in relation to physiological maturity of setts. The results indicated that the variance in tuber number and tuber weight were affected by sett characteristics. Contrary to current views aerial tubers yield well.

In the third experiment the effect of sett weight, sett type and spacing on growth and yield of White Lisbon yam were examined using growth analysis methods. Phases in the growth and development of the tuber were identified and discussed. Yield increased with increasing sett weight and head setts appeared to be better planting material than middle setts. Physiological and agronomic implications were discussed.

In the final experiment the effect of sett size on early growth and yield in White Lisbon yam was studied in more detail. Growth analysis methods were also employed. The contribution of the sett to early growth was discussed. Leaf area and yield were more closely related to the size of the primary nodal complex than sett weight.