Field Studies of Environmental Effects on Growth and Yield of Cassava

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ABSTRACT

An understanding of the growth responses of cassava to environmental factors such as temperature, photoperiod, incident radiation, and available soil moisture is central to studies of crop adaptation. Field experiments, using the Australian standard cultivar (MAUS7), were conducted to investigate the effects of these factors.

Growth analysis experiments in north (17°S) and south (27°S) Queensland using a range of planting times, irrigation levels, and densities for crops grown to age 24 months with adequate nutrition were employed. The sequential harvests enabled calculation of crop growth rate and the partitioning of this growth to leaf, stem, and storage root. These data will be used to examine the relationships among the growth variables and the environmental factors. In this paper a summary of the results is presented, and the major implications for cassava production in northern Australia are discussed.

Studies with Cassava Planting Material

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ABSTRACT

Relationships between the length, quality, planting angle, and population density of cassava stem cutting and subsequent growth and tuber yield were studied in the field in southeast Queensland. Changing orientation from vertical to oblique to horizontal did not significantly affect yield for 40-cm stem cuttings, but resulted in a small yield reduction for 20-cm cuttings. The use of light thin cuttings from upper parts of the plant reduced yield slightly when compared to heavy thick cuttings from basal parts of the plant.

In another experiment, cutting length and plant population density were varied in an attempt to manipulate stem number per plant and the uniformity of stem distribution per unit area, and to examine the effects of such changes on crop growth and yield. At a given plant density, smaller planting pieces resulted in smaller stem numbers per plant, a small reduction in total biological yield, but an increase in distribution of assimilate to roots. It is concluded that yield is relatively independent of planting techniques, and small stem cuttings can be used if there is a need to conserve planting material.