

ABSTRACT

ACKNOWLEDGEMENTS

Crop performance in a local cassava cultivar, Maracas Blackstick (MBS) and an introduced cultivar (MCol 22) was evaluated in terms of cultivar response to plant density, nitrogen fertilizer application, daylength and hormone treatments in two greenhouse and four field trials.

Growth analysis including use of the concepts of surplus assimilate and efficiency of storage root (tuber) production (ESRP) was employed in explaining crop performance.

Marked differences between the cultivars in plant stature, shoot growth, tuber yield, yield components, dry matter distribution patterns as well as in indices of growth and crop performance (LAI, NAR, TBR (tuber bulking rate), SBR (stem bulking rate), surplus assimilate, ESRP) were observed.

MCol 22 was the higher yielding cultivar, and high plant density led to increased yield. Yield response to combined GA_3 and SADH application depended on cultivar and density; GA_3 /SADH treatment led to increased tuber yield at low plant density in MBS but not in MCol 22, with low yield resulting from such treatment. GA_3 treatment resulted in marked negative yield responses at different plant densities in each cultivar.

Nitrogen fertilizer application led to increased yield on a poor soil type, Cunupia silty clay. However, highest yield on this soil was only 25% of that obtained on a good soil, River Estate loam.

Surplus assimilate and ESRP values measured early in the growth cycle were significantly correlated with final tuber yield. These growth indices are therefore suggested as possible selection tools for use in genetic improvement of cassava.

Recommendations for the cultivation of both cultivars studied, and suggestions for further work are outlined.