

AN EVALUATION OF THE YIELD AND QUALITY OF SOME NIGERIAN CASSAVA VARIETIES AS AFFECTED BY AGE AND NITROGEN FERTILIZER APPLICATION

G.O. Obigbesan and A.A. Agboola*

SUMMARY

Dry matter and starch contents were highest fifteen months after planting, while cyanide titre tended to decrease with age. Fresh tuber yields ranged between 16-40 tons/ha over growth periods of 12-24 months. There were differences in response to N between cultivars tested. Increasing N fertilizer tended to increase the cyanide content of cultivar 53101 but lowered it in cultivar 60506. For industrial starch production harvesting during the period 12-15 months was optimum. Cultivars show differential physiological responses and generalizations for the species can be misleading.

RESUME

La teneur en matière sèche et en amidon atteignent leur niveau le plus élevé quinze mois après le semis, tandis que le titre de cyanure tend à décroître avec l'âge. Les rendements en tubercules fraîches se situent entre 16-40 tonnes à l'hectare sur une période de croissance de 12 à 24 mois. Les cultivars testés présentent des variations en réponse à N. L'accroissement de l'engrais azoté tend à augmenter la teneur en cyanure du cultivar 53101 et à décroître celle du cultivar 60506. Pour la production d'amidon industriel, le récolte entre 12 et 15 mois est optimale. Les cultivars présentent des réponses variables d'ordre physiologiques et toute tentative de généralisation de ces espèces peut induire en erreur.

RESUMEN

Los contenidos más altos de almidón y materia seca ocurrieron quince meses después de la siembra, en tanto que la concentración de cianidas tendió a decrecer con la edad. Los rendimientos de tubérculo fresco variaron entre 16-40 ton/ha en períodos de crecimiento de 12-24 meses. Hubo diferencias en respuesta a N en los cultivares probados. El incremento de fertilizante nitrogenado tendió a aumentar el contenido de cianida del cultivar 53101 y a bajarlo en el 60506. La cosecha durante el período de 12-15 meses fue óptima para la producción industrial de almidón. Los cultivares muestran repuestas fisiológicas diferentes por lo que hacer generalizaciones puede conducir a conclusiones erróneas.

INTRODUCTION

Nigeria contributed about 7.9% of recorded world cassava production in 1970 (15) ranking fourth after Zaire with 7.5 million tons. The national average yield of cassava is 8 tons/ha obtained from peasant farms where it is grown as a subsistence crop on poor soils at the end of a crop sequence. Peasant farmers do not harvest at any fixed stage of growth but at their convenience because the crop can remain in the field for more than 24 months without deterioration. Cassava has received little research attention in Nigeria, although mosaic virus disease is known to reduce cassava yields here by about 39% and by up to 43% in East Africa¹⁰.

Research on cassava in Nigeria began in 1932 when Faulkner studied the yield, disease resistance and general utility of local cultivars and introductions from the Gold Coast (Ghana), Sierra Leone and Trinidad.⁵ In 1954, cassava improvement was restarted at the Federal Department of Agricultural Research, Moor Plantation, Ibadan. The objectives were to select mosaic disease resistant strains with high root yields, high starch and protein content, but low in cyanide content. Not less than 40,000 cassava clones were assembled during the first three years of this programme. Selected and local cultivars were compared in zonal variety trials throughout the cassava growing areas of the country. As a result the cultivars 60444, 60447, 60506 and 53101 as well as the 'sweet' cassava cultivar 44086 received 'recommended' status.

All these cultivars are, nevertheless, susceptible to mosaic disease and are now regarded as low yielding⁷. These recommended cultivars are also mostly highly cyanogenic. Both IITA in Ibadan and CIAT in Colombia are now undertaking full-scale research on cassava to increase yields, evolve insect and mosaic disease resistance and reduce cyanide content. We decided to reassess those already widely distributed clones previously recommended as a background for assessing the merits of any new introductions.

*Department of Agronomy, University of Ibadan, Nigeria.