

CASSAVA BREEDING AT I.I.T.A.*

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SUMMARY

The breeding objectives in the Root and Tuber Improvement Programme of the International Institute of Tropical Agriculture (IITA) were laid down. Basic considerations in cassava breeding were reviewed and discussed. The paper attempts to produce a cassava breeding system applicable on a world-wide basis and describes the present state and the future development of cassava breeding.

RESUME

Exposé des objectifs du Programme de Sélection et d'Amélioration des Plantes à Racine et à Tubercule à l'Institut International d'Agriculture Tropicale (IITA). Examen critique des problèmes fondamentaux de la sélection et de l'amélioration du manioc et tentative de formulation d'un système de sélection et d'amélioration du manioc ayant une application universelle. Présentation de la situation actuelle et des perspectives pour le développement de la sélection du manioc.

RESUMEN

Se establecieron los objetivos de hibridación del Programa de Mejoramiento de Raíces y Tubérculos del Instituto de Agricultura Tropical (IITA). Se discutieron las consideraciones básicas del mejoramiento genético en yuca. El reporte intenta producir un sistema de hibridación que sea aplicable sobre una amplia base mundial y describe el estado presente y el futuro desarrollo del mejoramiento genético de la yuca.

INTRODUCTION

Cassava is widely grown and used as a staple food in many parts of the tropics. World production amounts to about 100 million tons annually from 10 million hectares, of which Africa produces about 40 million tons from about 5 million hectares. In Africa, especially West Africa, cassava is the most popular of the root and tuber crops, and the trend in production shows a steady increase¹⁵.

Cassava is potentially able to produce more food calories per unit area than any other lowland crops grown in Nigeria, owing to its high yielding ability, adaptation to diverse climatic and cultural conditions and ability to survive the four to six month's dry season. It requires less management input than cereal crops. Both root and leaf are valuable as human food and livestock feed, the leaf protein is high in quantity and of good quality in some cultivars, and the root is widely used for industrial production of starch and alcohol.

I.I.T.A. began its Root and Tuber Improvement Programme in 1971, and this includes cassava, sweet potato, yam and cocoyam, all of which are important food crops in many parts of Africa. However, in view of cassava's potential and its economic importance within the lowland humid tropics more generally, priority is being given to this crop. The main aims are to improve yield both in quantity and quality and to breed for resistance to the two major diseases, bacterial blight and cassava mosaic. At present the average yield of cassava in Africa is low, being about 8 tons per hectare per year fresh weight, equivalent to a little less than 3 tons dry weight. The quality criteria are not well defined, but some definite improvements can be made in advance of this knowledge. Cassava mosaic disease is a serious problem in Africa, as it is also in India and Indonesia. Nearly all plants are infected, resulting in an average yield reduction of 50 per cent²³. Bacterial blight caused by *Xanthomonas manihotis* has recently been reported in Africa. In Nigeria³⁸ and Zaire³⁹ it causes severe tip die-back and defoliation, often resulting in the death of the plant. It is now thought that bacterial blight is potentially a more serious disease than cassava mosaic within the areas affected.

Although cassava is economically important in many other parts of the world, breeding for improvement in this crop has been given very little attention compared with many other crops. There is practically no information on the practical and fundamental approaches in breeding for the solution of many of the problems limiting or inhibiting the use of cassava. The breeding work during the period 1930 to 1950 in East Africa, West Africa, Brazil, Indonesia and Madagascar has for the most part not been sustained.

Our aim is to devise a breeding system that will be applicable on a world-wide basis and this paper describes the present state and future development of I.I.T.A.'s programme. We evaluate the possibility of in-

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