

1. ABSTRACT

The experiments were conducted on latosolic soils in Grenada. The Mirabeau trial - five densities in factorial combination with three fertilizer rates - was to investigate effects of planting density on growth habit, length of cropping cycle, yield, nutrient uptake, soil moisture, weed growth, fruit quality and intensity of Sigatoka infection in 'Robusta' bananas; and to obtain a parameter for predicting bunch weight at harvest.

In the Boulogne experiment three planting arrays along with three commercial spacings were compared.

Economics of production in relation to density and fertilizer treatments were also studied.

The results indicated that density effects were greater in the ratoon than in the plant crop. High density plantings gave yield advantage only in the first crop year, and reducing high density for ratoon crops had no serious effects on acreage yields. However, number of hands, bunch weight and sucker production were reduced and cropping cycle lengthened. Fruit pulp tended to be softer, soil moisture depletion greater, and Sigatoka infection higher at high than at low densities. Allowing two instead of one fruiting plant per mat improved bunch production efficiency, but not annual yields.

High levels of fertilization gave large bunches, very high yields, increased sucker production and shortened fruiting period. Relative to crop yield, fertilizer rate was of greater importance than planting density. Acreage production was not affected by planting array.

The economics of production revealed that low density plantings with high rates of fertilization gave highest returns when cropping for periods longer than a year. Using the girth parameter, a single regression equation for predicting bunch weight seems feasible only in the plant crop fertilized at high rates over a wide range of density.

I am indebted to the West India Sugar Growers' Association, Trinidad, for the facilities afforded me for conducting these studies.

I am also indebted to the following:

Mr. H. S. Rameshwar, Sugar Agronomist, Department of Agriculture, Trinidad and Mr. Percy Campbell, Manager of Redbank Estate, Trinidad, for providing the experimental sites;

Mr. Joseph Sany and Mr. James Knight of ICRISAT Research Centre for the valuable assistance with the running of the mill;

Dr. J. S. Sanyal, ICRISAT Research Centre for analyzing the plant tissue samples;

Mr. J. Sanyal, Head of the Central Analytical Laboratory, National Institute of Science, University of the West Indies, for carrying out the soil analyses; and

Mr. S. Sanyal, Director, West India College, Trinidad, for the reproduction of foreign scientific papers.

Finally, I wish to express gratitude to all others who have in various ways assisted in this work.