THE MINERAL COMPOSITION OF THE
ROBUSTA BANANA PLANT
IV. THE APPLICATION OF FERTILIZERS
FOR HIGH YIELDS
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SUMMARY

Mineral composition of the Robusta banana plant at different stages of
growth is used to compute fertilizer requirements for high yields (50 tonnes
per ha) on nutritionally poor sites. Emphasis is laid on the difference in
fertilizer requirement between the first and subsequent years. A fertilizer
composition of 9:9:35 was found suitable for all stages of the banana field
but the amount required decreased from the first year to each subsequent
year by 87 per cent. Magnesium and calcium requirements, even in deficient
soils, are small.

Consequences in respect of pruning, choice of planting material and timing
of fertilizer application are discussed.

Calculated fertilizer requirements are compared with those derived from
field fertilizer trials.

INTRODUCTION

In this paper we shall discuss some practical consequences of the
conclusions reached in Parts I, II and III \textsuperscript{8,9,10} of the series and in
particular try to develop a scheme for the efficient application of
fertilizers to Robusta bananas growing on soils of only moderate
nutrient status, which would promote high yields with fertilizer
economy.

Comparison of the total uptake figures (Part III) at the harvesting
stage shows that high yields in Grenada are associated with much
higher contents of major nutrients, especially potassium, than the
moderate yields from other sites. As there was no indication of any
great degree of luxury consumption in the Grenada bananas, the nutrient content of these plants can be used to give an estimate of fertilizer requirements for a highly productive field.

In the Windward Islands Robusta bananas are often planted at a density of 2,500 per ha on soils with only small supplies of nitrogen, phosphorus and potassium. It is most convenient to consider the development of a newly planted banana field and to examine the nutritional implications. However, if the target yield is an average of 50 tonnes bananas per ha per year, in practice, the first year yield would be below average and the second year yield above.

**Calculation of the Nutrient Requirements**

a) $N, P, K, Ca$ and $Mg$ requirements for the first year

Planting material, taken from a field of average production, is assumed to be 'bullheads', i.e. corms of plants which have fruited already, to which about one metre of old pseudostem is attached. Mean contents of major nutrients in the appropriate parts of harvested plants from Trinidad, Cul-de-Sac, Roseau, WinBAN and St. Vincent (Part III) were used to estimate nutrient contents in the planting material. The amount of pseudostem and internal fruit stalk attached were taken to be one quarter of the total and the corm contents were reduced by one quarter to allow for normal paring operations* to remove borers (*Cosmopolites sordidus*) and nematodes. This gave mean nutrient contents in the planting material of $6.8 \text{ g N}$, $1.2 \text{ g P}$, $20.4 \text{ g K}$, $9.1 \text{ g Ca}$ and $14.2 \text{ g Mg}$.

In a field planted at low elevation where it is possible to obtain a crop within the first twelve months, at the end of the first year there would be two types of stool.

Type a: from which the plant crop bunch had been harvested (probably just before the end of the crop year). These would have a follower which would ultimately produce the second crop (the first ratoon) which on average would be six to seven months old and most likely at the large stage (Part I). There would also be a second ratoon at the sucker stage.

Type b: from which the plant crop bunch has not yet been harvested. In view of the extraordinary variability of banana plant

* In banana planting it is common practice to peel off discoloured and rotting superficial corm material, with a sharp knife.