INTRODUCTION

This investigation constitutes an initial part of a much wider survey of the soils of Trinidad and Tobago which, it is intended, will cover some fifty soil types in the two islands. This in turn is only part of a survey that will take in all the former British West Indies.

The long-term function of the survey is to provide the essential information on which advice can be based as to the suitability of land for various cropping practices and the fertiliser treatment to which each is best likely to respond.

An appraisal of soil fertility can be made from direct chemical analysis of the soil or by bioassay, that is, by measuring how well plants grow on it with and without added nutrients. The second method, when carried out in the field, gives the most realistic results. The first method tends to be empirical and to give results not always related to plant growth. This is largely due to the difficulty of isolating that portion of the total soil nutrients that is available to the plant. For each element many analytical techniques are in use, many of them attempting to simulate that process of plants taking up minerals, the ability of which constitutes availability, by various extraction processes. It is desirable to determine which of these gives the best correlation to the actual performance of plants in field experiments.

However, field experiments are expensive and for this reason resort is made to pot experiments. These are further removed from commercial cropping practices than field experiments, but they can still serve to give an initial assessment of the value (i.e. the indication they give of real nutrient availability) of the different chemical techniques.

These considerations have led to the present position as regards soil survey and evaluation work in the British Caribbean (including the now independent states of Trinidad and Tobago, and Jamaica) today. A soils survey of central Trinidad was carried out by Chenery between 1936 and 1947. In 1963 the Land Capability Survey started an investigation that is to cover the whole of Trinidad and Tobago and is to include both

a soil survey and an assessment of land capability. A soils survey in the islands of Grenada, Jamaica and St. Vincent and also British Guiana was started in 1947 by the Regional Research Centre and is now nearing completion (9). It is based primarily on profile morphology, including factors of the soil profile likely to affect plant growth, e.g., drainage, permeability, root room, stoniness, shallowness of soil, slope of site, and also climatic conditions.

As this investigation nears completion attention is being directed to fertiliser trials. These, for the reasons outlined above, are based initially on pot experiments in conjunction with soil chemical analysis. The pot experiments have the function firstly, of exposing the very poor soils entirely unsuited to agriculture and thus eliminating them from the more costly field trials; secondly, giving an assessment of the response of the remaining soils to fertiliser treatment; and finally, enabling a preliminary selection to be made of the chemical methods of soil analysis giving reasonable correlation with plant growth. The remaining soils are then put down to field trials against which the selected chemical soil analyses are tested. It will be appreciated that the chemical techniques giving the best results on say, volcanic soils, may not be that which does so on alluvial soils.

The state reached so far is that of a preliminary evaluation of a number of techniques for soil analysis for nitrogen, phosphorus and potassium, including their comparison with pot experiments. Already a field trial has been started using Pangola Grass on River Estate Loam, Trinidad, while in the Windward Islands banana has been used as a test crop in a number of fertiliser field trials (10).

This D.T.A. report describes a pot experiment using maize as an indicator plant to investigate the fertility of ten Trinidad soils and their responses to fertiliser treatment. As the experimental work for this project neared completion, samples of a further twenty (20) soils were being prepared for a similar pot trial. When sufficient soils have been covered in this way the results will be applied to those of chemical methods already being tried on these soils for selection of those most applicable as outlined above.