

FOREWORD

Productivity of any area depends on the inter-play of factors relating to the plant and its environmental conditions. The plant-breeder can cause greater production for any given environment by breeding a suitable high yielding variety, but very frequently a change in the environment negatives his work. The change may occur in the atmospheric conditions, or, as is more usual, deterioration of soil conditions causes reduction in yield. Such deterioration is very frequently caused by bad land utilization due to inadequate knowledge and appreciation of the edaphic factors and their relation with climate and topography to agriculture.

During recent years many surveys have been carried out in the St. Augustine District surrounding the Imperial College of Tropical Agriculture, Trinidad, primarily to study peasant agriculture. An important conclusion of many investigators has been that the soils of the area are poor and are gradually deteriorating under intensive cropping. It is pointed out that investigation of the edaphic factors affecting the productivity of the land is urgently needed, to be followed by a vigorous extension campaign to bring the results to the notice of the farmers.

In this paper a preliminary investigation has been carried out to study one of the soil factors affecting the productivity of three of the soils in the St. Augustine District; the soil fertility or chemical nutrient supply factor. The results are very limited in scope due to the inadequacy of time available for the investigation, but it is hoped that they may be of some use to future workers who examine the problem more fully.

There are many ways of studying whether the nutrient elements absorbed by the plant from the medium in which it is growing, are adequate to its needs. The most direct way is by the application of additional amounts of nutrients to the crop in the field. Such field trials are, however, expensive both in time and money and other methods have been developed which do not have these disadvantages to such a degree. Analysis of the plant or the soil, pot culture techniques, etc. may be used, but such methods suffer from the disadvantage that the soil and plant are not studied in their natural environment, and sometimes completely misleading results can be obtained. The value of these methods lies in the fact that, in the majority of cases, they act as a useful guide in the lay-out of subsequent simple field trials. Ideally complementary use of all the methods is the best.

In the present investigation comparison is made between soil analysis and two pot culture methods for the assessment of fertility:-

1. The Mitscherlich Pot Test Method applied to two soils.
2. A factorial experiment in pots with three levels of four nutrients, applied to one soil.

A brief study is also made of the water relations in one of the soils.