I N T R O D U C T I O N

Rampersad (1963) in his study of the growth and structural change in the economy of Trinidad and Tobago 1951-1961 stated that "the most significant development in agriculture in the last decade has been the very pronounced increase in livestock and fishing production. This sub-sector registered very important advances and almost doubled its share of the value added in the agricultural sector". The main factor in this increase was poultry though beef increased by an average of 3.6% /annum from 1953-1961.

Nevertheless, Trinidad and Tobago is a large importer of livestock products such as frozen meat, meat products and dairy products and in 1960 imported approximately $11.5 million-worth of meat and meat preparations and approximately $9.0 million-worth of dairy products. This fact was commented on by Wilson (1960) who stressed the need for self-sufficiency in major foodstuffs and stated that there were approximately 100,000 acres of land in Trinidad and Tobago which could be used for beef and dairy production. With a cattle population at that time of 44,000 beasts and 5,000 sheep i.e. approximately 2 acres/beast of potential grassland, and a possible stocking rate of 1 beast/acre, this meant that theoretically the cattle population could be doubled. He also stated that there was great room for the improvement of the type of animal kept.

Wilson's views seem to be endorsed by the Government 5-Year Plan 1964-1968 which stated that "the aim over the plan period is, therefore to establish the basis for a productive small and medium farm system geared to produce increasing quantities of milk, eggs, poultry, green vegetables, root crops, pork and pulses for the local market and in some instances for export in processed form ....." As part of its programme Government stated that it planned, between 1964 and 1968, to distribute some 30,000 acres of Crown Lands to small farmers. This included the land settlement projects at Waller Field, Carlsen Field and Point Fortin where Government was to establish dairy farms and lease them to small farmers.

The desired increased production could only be obtained by the use of improved pasture grasses, and Pangola grass (Digitaria decumbens Stent) was found to be well suited for this purpose. The Pangola grass (hereafter referred to as Pangola) is in fact the only improved grazing grass recommended by Government and its establishment is subsidised to the extent of $50/acre fenced, $30 unfenced, and a maximum of 20 acres.

The Pangola has also been widely accepted by private enterprises in the country and the acreage planted has increased from 964 acres in 1960 to over 4,000 acres in 1966 (information sheet for F.A.O. Grassland meeting).

Despite the fact that the Pangola acreage was increasing and the grass was gaining in importance, very little critical work on its nutrition had been carried out under Trinidad conditions. Then in 1965, an experiment was set up, as an M.Sc. project by Davis and Tulloch-Reid to determine the response curves of Pangola to varying levels of N, P, K and Mg fertiliser on the River Estate Sandy loam soil of the University Experimental Station at Champs Fleurs. To obtain the response curves these workers proposed to hold three of the fertilisers at a basal level and vary the fourth. The levels of fertiliser application which they used were determined by a preliminary trial in which there was a "kill" of the grass at the highest level of N used.

This forms the background to this work, which was originally set up as a greenhouse parallel to the M.Sc. project of Davis and Tulloch-Reid to discover how closely the results correlated between greenhouse and field conditions.

It was decided to use levels in the greenhouse which were similar to those in the field, assuming that any fertiliser applied was uniformly distributed throughout the top 6 inches of soil/acre (2 million lb.) To ensure adequate mixing of the salts with the soil in the pots they were applied in solution form. An error in calculation of solution strength resulted in solutions which were ten times the concentration of those intended. This was not discovered at the beginning of the experiment, but when it was seen that the grass appeared to be growing normally, in spite of the high levels of fertiliser application, it was decided to continue the experiment