

INTRODUCTION

Maize (*Zea Mays* L.) the most productive of all cereal crops, exists only under cultivation. It is probably of American origin, but has become very widely distributed. The United States of America dominates world production, accounting for 56% (9) of world total in 1953. Other important producing countries include Argentina, the Balkan States, Brazil, Indo-China, Western Europe and South Africa. In Mexico and much of Latin America, and in many countries of Asia and Africa, maize is a subsistence crop. In North Africa (2), it occupies nearly one-third of the total cultivated area and in many other parts of Africa such as Southern Rhodesia and South Africa, it is the principal crop.

The bulk of the world maize crop is used as a livestock feed, both plants and grains being utilised. Foodstuffs manufactured from the meal include starch, dextrans, syrup and sugar, while the edible oil contained in the embryo is an important industrial by-product. The extremely diverse uses to which this crop is put are illustrated by Wallace and Bressman (33) who have listed nearly five hundred different forms of human, livestock and industrial uses.

The nutrient composition of maize as published by the American Chemical Society (29) in 1953, is given in Appendix I. It is a very palatable food rich in digestible carbohydrates and fats, but protein supplements, especially those rich in lysine and tryptophane, are needed for a balanced diet. It is a rapidly growing crop adaptable to varying methods of cultivation and the comparatively small amount of seed required for planting, together with the high productivity of each plant, makes it a very suitable crop for peasant cultivation where soil and climatic conditions are satisfactory.

Most of the improvements in the technique of maize cultivation have been developed in the United States owing to the importance of the crop in the agricultural economy of that country - production and value being greater than for the combined American crops of wheat, oats, barley and rye. In recent years, complete mechanisation, contour planting, the use of selective chemical weed killers, and the introduction of hybrid seed have had an important effect in raising yields. If similar results can be obtained in other countries where maize is important as a direct human food, this crop would be playing an important role in helping to mitigate present and future world food shortages.

or absence of toxic compounds in the soil and of plant diseases and pests. Fertiliser and spacing treatments must be associated since the extraction and utilisation of nutrients by plant roots would depend on lateral spacings as well as on the nutrient status of the soil. On land of uniform fertility the productivity of the maize plant will tend to be in direct proportion to the area of land it occupies. As the area per plant is increased an increase in production per plant will be either through an increase in the weight of the cob or an increase in the number of cobs or both.

A knowledge of the nutritional requirements of maize is relevant in the determination of optimum plant population, according to American workers (25). Maize takes its maximum demands upon the soil during the latter stages of growth. It must obtain water from the soil during the period of its most rapid growth. It is sensitive to conditions of deficient soil aeration that may result from excessive soil water, poor tilth, or impervious character of the sub-soil and grows best where the soil reaction is within the range of pH 5.5 to 6.