

P A R T I

1. INTRODUCTION.

It is not often realised that a large quantity of various types of vegetables is grown in the Tropics. Vegetable growing is rapidly increasing, particularly in areas near large centres of population which provide - readily accessible markets for the quickly perishable commodities. One cannot go away unimpressed by the keenness shown in the growing of vegetables near homesteads by the people of most Tropical countries. Apart from the growing of vegetables for sale, vegetables must play an important part in the diet of the people who actually grow them. This fact is of great significance, especially when it is remembered that animal proteins are not obtainable in sufficient quantities everywhere; so that means that the needs of the people for proteins, vitamins and minerals are to a large extent met from vegetable sources.

One of the crops which is popularly grown are beans of all sorts. The beans are frequently interplanted with crops such as the Sorghums, but are also grown as pure stands. They are very useful, in that being legumes, all the parts of the plants are comparatively rich in proteins and certain minerals; they therefore form a valuable food for human beings and farm animals. In the rotation of crops, the beans could be sources of organic matter and under certain favourable conditions in the Tropics, they may increase the nitrogen content of the soil through the activity of the symbiotic nitrogen - fixing bacteria in the root nodules. Moreover, most legumes are deep rooting and so are fairly drought - resistant. They also aid aeration and percolation of water into the soil.

This report is concerned with the Dwarf or "Snap" bean (Phaseolus vulgaris L) which is either grown for the mature fruit or its immature pods which are boiled green and eaten as a vegetable. According to Cobley (1957), the crop originated in the New World Tropics.

The Dwarf bean is grown under conditions of high temperatures (65 - 80° F), a moderate rainfall, and at low or moderately high

altitudes of up to 3,000 feet above sea level. In high rainfall areas, production tends to be confined to the drier seasons since heavy down-pours will adversely affect insect pollination or knock off some of the flowers. Under very wet conditions too, diseases caused by fungi are likely to be serious. Most soils are suitable for 'Snap' bean production, provided they are freely drained and of medium fertility. The base status of the soil, especially the phosphorous content, is important and the optimum pH lies between 5.5 and 6.7 ; more acid conditions will reduce yields while a pH over 7 may render unavailable certain essential micro-nutrients.

The crop matures in about eight weeks from the time of sowing. During the growing period, deep and frequent cultivations to control weeds are beneficial but care is needed in the process so that the superficial roots are not damaged. The immature pods are harvested when they are fully grown in length but the seeds inside have not started to swell out. Harvesting at short intervals of four days not only ensures that pods of the right quality are collected but it increases yield because weakening of the vines due to overhanging mature pods is reduced.

The growing crop is susceptible to the attack of various insect pests such as leaf-hoppers, leaf-beetles, thrips, lace wing bugs and pod bores. In Trinidad fungous diseases appear to be more serious. Amongst the diseases 'damping off' diseases (*Phytophthora* sp., *Sclerotium rolfsii* and *Rhizoctonia solani*), are most serious, but anthracnose (*Colletotrichum lindemuthianum*), powdery mildews (*Erysiphe polygoni*), bacterial blight, scab and rust (*Uromyces appendiculatus*) also occur.

The most likely sources for information on research work done on Dwarf beans have revealed that practically no work has been done on the spacing and manuring of the crop in the Tropics. This dearth of information regarding the influence of spacings and fertilisers on the yield must have given a fillip to the series of investigations which started at the Imperial College of Tropical Agriculture (I.C.T.A.) in 1954. The aim in these experiments has been to try out various spacings and levels of various combinations of fertilisers in order to study their effects on yield.