

INVESTIGATIONS INTO THE INTERCROPPING

OF VEGETABLE CROPS

WITH LEGUMES

By

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1. INTRODUCTION

Owing to the specialised climatic conditions and the relatively low standards of peasant agriculture found in the tropics, combined with the lack of complete knowledge as to the best cultural methods of growing vegetable crops, it is of vital importance to devise a cheap, simple and effective method of producing crops and yet conserve both soil and moisture with the maintenance and increase of fertility.

In order to put these fundamental points into practise it is necessary to have a method whereby the land is kept constantly covered, protecting it from the torrential downpours and the intense heat of the sun, which not only dries out the soil, but also has a deleterious effect on the numbers and activities of the soil micro-organisms.

It has long been a practise in peasant agriculture to grow a mixture of crops, particularly a mixture of leguminous and non leguminous plants. The advantages claimed for such a combination are many, but the results obtained are conflicting, it being impossible to generalise, as so much depends on local conditions and agricultural practises.

Besides the advantages of complete coverance and maximum utilisation of the soil, the best use of existing soil nutrients, due to differing rooting habits, economy of labour, in reducing the after cultivations, and in the case of productive legumes, an insurance against complete failure; there is the question of increased yields.

When a leguminous and a non-leguminous plant are grown in association some workers, such as Virtanen and Associates (1) claim that the legumes excrete organic nitrogen from their developing nodules, and this nitrogen is then utilised by the non-leguminous plant during its growth. On the other hand, Trumble and Shafter (2) Wilson and Burton (3) and Shafter, Wilson and Wyss (4), have not been able to confirm these results. Apparently certain enviromental factors, which are not thoroughly understood, govern the excretion of nitrogen by the nodules bacteria. If enviromental conditions are such that the leguminous plant fixes more nitrogen than is required for its own development, then nitrogen is accumulated and excreted.

Madlock and Papdakis (5), found that the combination of the plants was important, as in some cases yields were despressed when a legume and a non-legume were grown together, but increased when one or the other was grown in association with another crop plant.

The common practise is to grow productive legumes in association with crop plants, but in this case it was decided to use a non-productive legume, of procumbent habit and perennial in nature which would provide a constant cover, and allow the growing of short term vegetable crops, with the minimum of interference.

In order to obtain some information on the subject of associated growth, under local Trinidad conditions, an experimnet was laid down in the Market Garden situated on the New Farm of the Imperial College of Tropical Agriculture.