

Introduction.

A mulch is, essentially, a protective covering spread over the surface of the soil, for protection of the soil. Mulches therefore, can consist of any materials which serve the function of a protective cover, and include a very wide variety of materials, ranging from stones, bitumen and sawdust, to paper, straw, leaves, and other plant material. Indeed, soil itself can be used as a mulch, or protective cover, and the words "vegetable mulches" are specially chosen for the subject of this project, so as not to include the soil or dust mulch.

Briefly, a soil or dust mulch consists of giving a shallow cultivation to the soil as soon as possible after every rain, to serve as a barrier to both the rise of water to the soil surface, and to the downward conduction of heat that would induce a high evaporation rate. For the purposes of this report, "vegetable", as applied to mulches may be taken to mean materials derived from, concerned with, or comprising plants, especially herbaceous plants.

Vegetable mulches are capable of increasing crop yields in many instances, and many experiments have been carried out which prove this; on the other hand, similar experiments have also gone to show that vegetable mulches have detrimental effects on crop yields. It is proposed to give as far as possible, results which tell both sides of the story, and when necessary, to give as briefly as possible, a summary of the methods used in various experiments, and the conditions under which they were carried out.

There is no doubt that one of the factors contributing to the increase in crop yields, as a result of vegetable mulching, is the rotting of organic material and its incorporation with the soil through the activity of insects, bacteria and other organisms. How

true this is in the Tropics where soil temperatures are high, and the rate of decay and bacterial activity also correspondingly high, is debatable. More often, it may be true that increase in crop yields, as a result of vegetable mulching is attributable to a change in soil conditions such as soil temperatures, soil moisture content, soil structure, amounts of soluble nitrate, potash, pH, Soil-micro-organisms, and very probably, other factors. It is hoped, in the course of this report to make a critical study of available data on the soil conditions just mentioned, and to draw conclusions as to which soil conditions have a greater influence on yields; it is also very likely that one set of soil conditions may be found to have a marked effect on another set of soil conditions, or in other words, to be inter-related.

The soil is an extremely variable material, and it is to be expected that a given vegetable mulch will have varying effects on different soil types; similarly, different vegetable mulches will have differing effects on the same soil. As a corollary, it may also be stated that vegetable mulches affect different crops in different ways. A determination of the optimum time of mulching is another aspect of the subject which is likely to have a profound effect on the soil and on crop yields. Therefore, as a result of the extreme variability of soils, it becomes apparent that the solution of many mulching problems regarding crop yields and soil conditions is a local one, depending on climatic conditions and the type of soil, in addition to availability of mulching materials and so on.

This report is a reading project for which the data are supposed to be obtained from the available literature. However, it has been possible to observe some work on mulching in the field, and to have access to the results. Some of these results have been included in the report. The numbers of references to various aspects

of the subject are somewhat variable; plentiful in some cases, and few in others. On the whole, however, there has not been very much difficulty in obtaining information for the project.
