

INTRODUCTION.

(a) A Survey of Factors affecting Yield.

The ultimate yield of a crop is of primary importance to the grower; he is concerned with providing optimum conditions for the plant so that a maximum yield may be obtained. Yield is the outcome of the degree of utilisation by the plant of the numerous factors, internal and external, affecting it. Under ideal conditions beneficial factors predominate, and detrimental factors are of insignificant importance. Yield may therefore be regarded as an index of health and conditions in which the plant may be situated.

Cacao yield is affected by many factors which may operate together or be dominated by one or two. A knowledge of the relative importance of these factors is still only small, but some are known to exert a big influence, and others are believed also to do so.

Hardy (1939) classifies factors as :

1. External or environmental.
2. Internal or genetic.

These he sub-divides :

1. Environmental

- (a) Soil conditions: type of soil: water, air and nutrient supply.
- (b) Atmospheric conditions: climate, light, humidity.
- (c) Density and efficiency of pollinating agents.
- (d) Distribution of 'compatible' trees.
- (e) Incidence of Pests, Disease and damage.
- (f) Density of tree population: competition.

2. Genetic

- (a) Density of flower production.
- (b) Time and period of flower production.
- (c) Degree of compatibility.
- (d) Proportion of fruit set and ripened.
- (e) Number of beans per pod.
- (f) Average weight of bean.
- (g) Age of the tree.

He emphasises that many of these are closely inter-related, and that genetic factors are to some extent modifiable by environmental ones: also, that soil conditions and the supply of available nutrients are of particular importance.

Shephard (1936) is of the opinion that the soil is a primary factor affecting the yield of a field and that the age of the cultivation also largely affects it. He mentions other factors contributing to low yield, particularly damage, due to pests, diseases, injury, drought and water-logging.

Voelcker and Cope (1937) enumerate three stages in the production of a Cacao crop :

- (a) Flowering.
- (b) Setting.
- (c) Cherule maturation.

and they state that, in their opinion, other factors influence yield only through their effect on these three stages.