

I. INTRODUCTION

(A) General

Nelson's Bamboo estate is an area of about a thousand acres planted with bamboo as a pure crop. The crop was planted some twenty years ago, and after the plants had been growing for ten or twelve years it became apparent that growth and habit were not uniform through the estate. In some areas growth was dense, the habit of the plants being large and clumped, whilst in others the clumps were small and the stand thin.

Since this differentiation was first noticed it has become progressively more marked, up to the present, so that it is possible to distinguish definitely good and poor areas in the estate. The object of the present work was to elucidate, if possible, the underlying causes for this variability, and incidentally to obtain information of general use in managing the estate.

When a crop community is variable from one area to another, as this bamboo is, there are two distinct possibilities, either

- (1) the variation is internal, i.e. inherent in the plant itself
- or (2) the variation is externally conditioned i.e. due to environmental factors.

It is necessary therefore to consider these two possibilities in formulating possible lines of attack. There may, for example, be genetical variations in the bamboo due to mutations, or much more likely, to variability in the planting material, so that the poor areas are composed of plants of an inherently different kind from the good areas. On the other hand the variation may be ecological, and of this class of factors, those associated with the soil environment are likely to be of greatest importance. The estate is flat and of such a small area that it is unlikely that the climate will vary appreciably from one field to another, so that if the variation is conditioned externally, the clue will be obtained from soil studies.