

INTRODUCTION

Tea is a crop of great antiquity and was first mentioned in Chinese literature 2,700 B.C. Although originally used for medical purposes it soon became recognised as a beverage and quickly spread from its indigenous areas in China and Northern Assam so that today it covers large areas in China, India, Dutch East Indies, Malaya, Russia, Ceylon, East Africa etc.

In China and Japan the industry is mainly carried on by the peasantry but in the other countries mentioned it has been developed by large capitalistic companies operating on plantation scales.

Since time immemorial the tea bush has been propagated by seed and as any tea bush is infertile with its own pollen it follows that the vast numbers of tea bushes in any country are highly heterozygous i.e. no two are exactly alike. The position has been further complicated by the introduction of various types of jats into different countries - in early times Chinese varieties were introduced into Assam and the two types hybridized. Of course many of the variations are due to environmental conditions e.g. a bush growing in a rich pocket of soil will naturally be more vigorous than one growing in a poor pocket of soil. However, the hereditary factors i.e. the genetical characters which an offspring derives from its parent are highly important as is shown by the following experiment quoted from Tubbs in Ceylon.

To prove the point Tubbs in Ceylon germinated a number of seeds and just when stem and roots were discernable he slit the young plant in such a way that one cotyledon remained attached to each section. The halves grow normally and in this way the experimenter got a number of twins - each pair (of which) being exactly alike genetically. On allowing them to grow into bearing bushes he was able to divide the differences into two groups:-

(a) Those differences between the twins will be due to variations in the local environment of the plants.

(b) Those differences between pairs of twins will be due to variations in environmental and heritable factors.

Differences between the variations within pairs and the variations between pairs will indicate the importance of differences of inherited constitution, since if the latter are unimportant the variations will be the same. If they are important the variations between pairs should be greater than variations within pairs.

	<u>Height</u>	<u>Leaf Number</u>
Between pairs	1.918	4.687
Within pairs	0.743	2.251

These differences can be proved to be real by subjecting them to statistical analysis. He therefore came to the conclusion that the heritable factors play a real and important part in producing variation in seedlings.

Thus it seems that certain plants have genetical constitutions which are more favourable and associated with higher yields than others. Of course this is not only true of Camelia; workers with rubber and cocoa realised this quite some time ago and exploited the position by vegetatively propagating the outstanding yielders and the results achieved have been very satisfactory and of great importance economically - especially with the rising cost of labour.

Similar results can and will be obtained with Tea. Great strides were being made in Ceylon, India and Java before the outbreak of the late war in 1939. From 1939-1945 much valuable time was unavoidably lost due to the absence of Technical Staff on Active Service, to shortage of manual labour and as in the case of Java, occupation by the enemy. However, the threads are now being picked up again and during the next few years it is hoped that great progress will be made and this is especially important with the present world shortage of tea.

In all work on vegetative propagation success depends on selecting or raising outstanding mother trees. Thus the first section of this report will deal with this important aspect and will be followed by accounts of methods of vegetative propagation and an assessment of what has already been achieved in this very promising field.

Selection of trees for vegetative propagation is a difficult task. In many cases the trees have not been vigorously tested so that the best ones yielders can be weeded out have often proved to be disappointing and indeed may even be below the average of bushes raised from seedlings.

In most cases the Estate Manager will have to start selection in gardens already in production. Before dealing with this problem I would like to say a little about nursery selection of seedlings - this is important as seedling tea will have to bridge the gap before such time as clonal material becomes available for the garden. By adhering to a few simple criteria the yield of seedling tea can be increased and this at the same time gives a better standard of material from which to select in a few years time.

Nursery Selection

Tea seed is obtained from seed gardens located in the forest. In former times there was no consideration given to the bushes which were planted in the seed bed. Today it is essential to plant only those bushes which are known to have yielded well and proved themselves to be superior to their neighbours. In this way the standard of seed collected at the garden will be much enhanced.

On obtaining the seed which varies in size e.g. from 15,000 - 20,000 seeds per pound (80 pounds) only the largest should be planted in the nursery as it has been proved that these give rise to more vigorous plants. A simple way of doing this is by passing the seed through sieves of known diameter and also sorting them out by floating them in a sugar solution - the lightest float and the heaviest sink. The heaviest are the best.