A NOTE ON CLONE TRIAL PLOTS*

IT has been found in previous experimental work on the establishment of new clones that only a comparatively small number of selected high yielding mother trees give high yielding clones. Different workers have obtained varying results in this respect but for the present one may assume that the percentage figure is not greater than 10 per cent.

The reasons for this are numerous; some of them are clear and others are still obscure. The capacity of a tree to produce latex is influenced by three sets of factors. This division is simple but somewhat artificial for all the factors are closely inter-related.

(1) External factors—soil, climate, altitude, the proximity of other trees, disease, tapping system, and time of tapping.

(2) Internal factors—the development of the latex vessel system, its extent and special characters (morphology).

(3) Inherent ability of the tree to produce latex (physiology).

1. It is quite possible to visualise a tree possessing a moderately well developed latex vessel system and a fair capacity to produce latex. Such a tree growing under very favourable conditions may be a steady high yielder, but buddings from this tree, planted under different conditions less favourable than those under which the mother tree was growing, may prove to be either medium or even poor yielders. This point should be always borne in mind in selecting mother trees for trial. Any tree, no matter how promising its yield may be, which appears to enjoy special advantages of positon should be regarded with suspicion.

2. Internal characters which are measurable such as the number of latex vessel rows and their distribution and the size of the latex vessels are all contributory factors influencing yield but even a tree possessing an exceptionally well developed latex system may be a moderate or poor yielder. A study of form alone (morphology), though it contributes some evidence worthy of consideration in the final selection of a mother tree, is quite inadequate in itself.

3. No matter how good a tree may appear from its yield record and a study of its latex vessel system, if the capacity to fill the latex system is not inherent but induced by special conditions, then it is very probable that the tree will not give high yielding buddings. This peculiar property of Hevea still awaits a full explanation and only very careful chemical and physiological study will aid in its elucidation.

From these considerations it is clear that extensive budding from new mother trees would be uneconomical; the risk of obtaining 90 per cent. of trees which are no better, and may be poorer, than ordinary plants grown from seed is too great. The aim should be to establish only a sufficient number of buddings from each selected mother tree to give a reliable test when the tapping stage is reached. For this purpose from 20 to 30 buddings from each mother tree should be established and, for the purpose of direct comparison when the tapping stage is reached, buddings of a good proved clone of long standing should be interplanted with the unproved material. A plan similar to that detailed below is suggested.

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Clone Trial Plot . . Planting distance 12 ft. × 24 ft. or such as to allow about 150 trees per acre.

(1) Alternate trees to be budded with buds from the selected mother trees: Unproved buddings 75 per acre.

(2) The remaining trees to be budded with buds from a good proved clone: Proved buddings 75 per acre.

A stand of 150 trees per acre would allow for two years' tapping without serious thinning out by which time it could be decided whether to retain the "standard proved clone" trees or the new buddings. Should all the latter prove to be inferior to those of the proved clone their complete removal will still leave the area almost fully planted with about 70 trees per acre of a high yielding clone.

A plot of 10 acres established on these lines would provide for the trial of about 30 promising mother trees.

For our own clone trial work on the Sungei Buloh Experiment Station we have chosen as our control, or standard clone, AVROS clone 50. This choice was not made on account of its exceptional yielding capacity for there are other clones which are better in this respect; but this clone possesses a long and reliable record and so far has shown no serious defects.