

# THE TECHNIQUE OF VEGETATIVE PROPAGATION OF TEA

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Since 1939 when a short account of how to prepare rooted cuttings of tea from selected bushes was given in this journal (1939 p. 50), a good deal of experience has been gathered which has modified the technique that the Institute recommends. The original method gave very disappointing results in the hands of a number of those who tried it, and the Institute itself was not exempt from failures. It appeared to us that this was due not to any lack of care and attention on the part of the experimenters but to imperfections in the technique itself. Attention was drawn to this in the annual report for 1939 (Bulletin 21, p. 51), and an account of investigations designed to improve the method is given in the current annual report (Bulletin 22, p. 63).

Variation in climate and circumstances generally will probably make corresponding variation in technique desirable. Though we have not yet enough experience to lay down definitive methods for all occasions, the improvements attained in the last two years are sufficiently striking to warrant the publication of a revised method.

### TYPE OF CUTTING

After consideration of further work on this subject, we have no alteration to make to the original recommendation that single-node cuttings are best. If a growing axillary shoot is present, it should be pinched back to its fish leaf. Both green and young red wood cuttings are capable of giving a high percentage of successes in rooting, though the material from a particular bush may show slightly superior results from red wood. Cuttings are normally successful from bushes that are in active growth, and some of the best results we have had (80—90 per cent rooting) have been derived from cuttings taken from prunings immediately after severance from the bush. Young seed-bearers where active growth had ceased, gave cuttings that were sub-normal in performance. Some bushes will always prove intractable, but poor results from a single bush do not invalidate a technique generally.

### ROOTING MEDIUM

The use of peat makes cuttings easy to handle, but experience has shown that it is by no means necessary. Those who still have stocks (which are now irreplaceable owing to the war), can best use them by mixing the peat with three times its volume of soil. In the absence of peat, soil alone suffices: drain silt from a good tea field is a thoroughly satisfactory medium. *On no account should coir dust or fibre be used either plain or mixed with soil.*

### INSTALLATION

The rooting is carried out in beds, which for convenience in the handling of material should not exceed 3 to 4 feet in width. Their length will depend on the number of cuttings used. The base of the bed is a 4-inch drainage layer of small road metal or of ash-free cinder or clinker. On the top of this is a 6-inch layer of the soil, or soil and peat. If building rubble is used as the drainage bed, then it must be free from mortar, otherwise there is risk of promoting an alkaline reaction in the bed. A similar risk is involved in using soil from an old building site or a line garden. Such sites are often convenient for other reasons, but if used for propagating batteries, the soil for the beds must be transported from elsewhere.

On St. Coombs we have found it convenient to excavate 10 in. of soil before making the propagation bed ; thus bringing the top of the bed to the original soil level. Conditions of drainage must influence the decision to follow this plan or to use raised beds enclosed within edging boards, concrete parapets or rough stone edges. The essential condition is excellent drainage. When watering these beds they can be thoroughly soaked and allowed to drain. We have found daily watering unnecessary. We have left cuttings for as long as a week or ten days without harm in showery weather. There is no doubt that failure in the past has frequently been due to over-watering.

The propagation bed must be consolidated both before and after insertion of the cuttings. The cuttings are inserted up to the axil of the leaf in such a way that the leaf lies as flat as possible, care being taken that the leaves do not overlap.

Sheds or frames are unnecessary: heavy ferning is better. Experience has shown that a second frequent cause of failure in rooting has been insufficient light. Scorch must of course be avoided, but attention to this has previously led to the opposite extreme. As the freshly cut fern dries and the shade it gives decreases, further additions may have to be made. Ferning should follow the insertion of cuttings immediately; the first few hours are critical.

### ROOT STIMULANTS

The use of a growth regulating substance, Hortomone A, has resulted in earlier rooting, but its extensive use would entail an expenditure out of proportion to the benefit gained. In particular circumstances such as those arising from the approach of a suitable transplanting season, the hortomone treatment may be useful as an accelerator. It is not likely, in our experience, to be of any value in breaking down an inherent resistance to root formation on the part of individual bushes. When tried it should be used according to the suppliers' directions.

### TIME OF TRANSFERENCE

At the end of 3—4 months a sufficient number of cuttings will normally have rooted to enable a transfer to be made to baskets ready for the field, if the weather is suitable.

The beds can be picked over subsequently about once a month till it is obvious that rooting is virtually finished. Specimens that are not rooted are replaced in the same manner. After six months it is not usually worth while to go on. By this time 80—90 per cent

should be rooted. Cuttings should be transferred to baskets with care so as not to damage roots. When raised in ferned beds, cuttings need no hardening-off, but fern must be maintained in the baskets. At this stage they are ready to go out into the field with protection baskets, but if the season is unsuitable they can be maintained in a nursery as basket plants sunk into the soil.

It may be possible at selected times to plant out cuttings straight from the rooting-bed to the field; on the other hand, in order to eliminate any possible check in growth, it may be worth while to supersede transplanting by raising cuttings from the beginning in individual baskets. These alternatives require further testing, but for the time being the technique outlined here represents an improvement in performance and a simplification in procedure that should make it practicable without difficulty on estates.

#### SUMMARY OF METHOD

*Cuttings.*—Single node; rigid green or young red wood from bushes in active growth. If growing an axillary shoot pinch back to its fish leaf.

*Beds.*—6 inches of soil from drains, or soil and peat (3:1), overlying 4 inches small ashless cinder or road metal.

*Installation.*—Cuttings firmly inserted up to mother-leaf without overlapping. Bed heavily ferned at time of insertion.

*Watering.*—As required: thorough soaking needed, but daily watering is to be deprecated.

*Transplanting.*—At 3 to 4 months to baskets ready for field, and ferned. Careful handling to prevent root damage.