

# TEA RESEARCH INSTITUTE OF SRI LANKA

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## GUIDELINE FOR CLEFT GRAFTING IN TEA NURSERIES

### Introduction

Grafting is the technique of combining plant parts or plants together with desirable characters so that they will unite and grow as a single unit. This is a standard horticultural practice, which involves the combination of two plants of different genetic constitution, having different characters. In tea cultivation, it is advantageous to have a combination of some of desirable characters such as high yield, quality, drought tolerance and pest and disease tolerance which could be obtained by grafting. Success of grafting depends on the compatibility of cultivars and skills of workers.

### Technique of cleft grafting tea

Cleft grafting involves two components of plant parts which are referred as scion and stock. Cuttings for grafting are obtained from the same type of shoots as employed for vegetative propagation of tea. Shoots for taking cuttings to be used as scion and stock should be obtained after proper pruning of mother bushes. Cuttings should be kept in water and grafting should be carried out in a shaded place. Other nursery practices are same as that of the conventional nurseries (Please refer TRI Advisory Circular No. PN2 on Tea Nursery Management, Issued in November 2009).

**Scion:** This is the upper component of the graft. Desirable characters for the scion are high yield, quality and pest and disease tolerance (e.g. Blister Blight). It is a single node cutting where the basal 1.5 cm of stem is shaved off on two sides to form a wedge (Fig. 1).

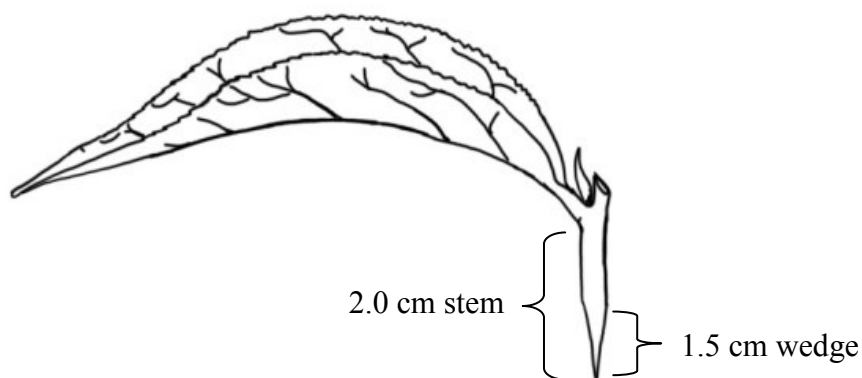


Fig. 1. Preparation of scion

**Stock:** The stock or basal part of the graft is also a single node cutting, but here the stem above the node of the stock should extend up to about 2.5 cm. A cleft of about

1.5 cm deep is made by splitting the stem above the node using a budding knife. The cleft should not be too deep and should correspond to the length of the wedge in the scion (Fig. 2). The desirable characters for the stock are better rooting, drought tolerance, and pest and disease tolerance abilities viz. parasitic Nematodes.

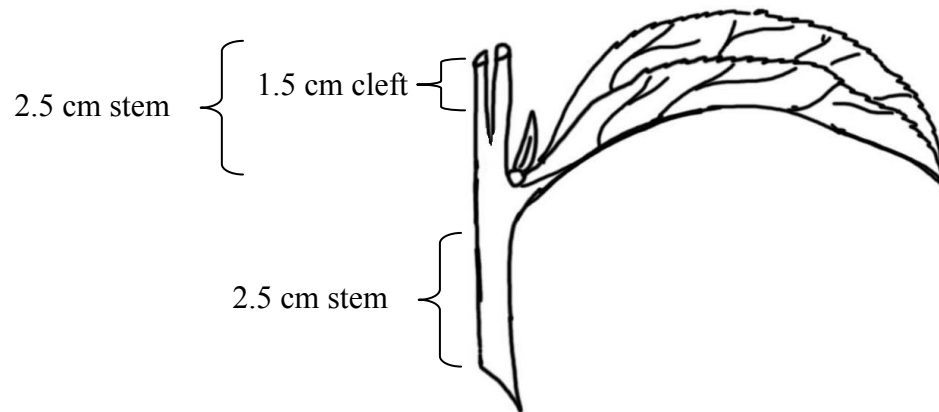


Fig. 2. Preparation of stock

**Union of scion and stock:** Wedge is inserted into the cleft until it is firmly held without exposing the cut so that the leaves of stock and scion will be on opposite sides (Fig. 3). The graft union is then gently tied using a strip of long polythene commencing from the bottom upwards or clipped (grafting clips) to prevent water travelling in (Fig. 4).



Fig. 3. Inserting wedge of the scion into cleft of the stock

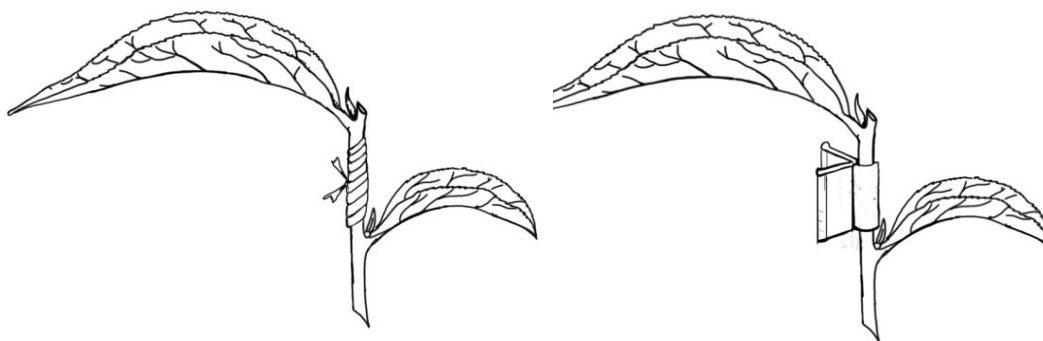


Fig. 4. Use of polythene strip (left) or grafting clip (right) to tie the graft union

**Planting of the grafted cuttings:** Grafted cutting is planted in soil filled nursery bags up to the petiole of mother leaf of stock, ensuring its axillary bud is not covered with soil. After planting, the soil around the cutting should be gently pressed to avoid air pockets. Then watering should be done thoroughly to saturate soil in the nursery bags and the bed. The nursery bed should be covered using a 300-gauge transparent polythene sheet laid over semi circular hoops of about 90 cm (3 feet) height from the ground. It should be sealed on all sides for maintaining high humidity. High shade should be provided as for the conventional nurseries at 180 cm (6 feet) height. If the moisture inside the propagator is found inadequate, the polythene may be opened for watering again and sealed immediately. After 2 - 3 months period, propagator can be opened gradually, over 4 - 5 days. Polythene strip or grafting clip should be removed one month after opening the propagator. The other nursery after care operations such as watering, fertilizer application, re-stacking, hardening of plants, encouraging early spread (disbudding and thumb nailing) and pest and disease control *etc.* are undertaken as in the case of an ordinary nursery. While the axillary bud of the scion is allowed to grow, the shoot arising from the stock should be removed only after 5 months from planting of cutting.

**Planting in the field:** A well grown grafted plants could be transplanted in the field after a nursery period of 8 - 10 and 10 - 12 months in the low and up country growing conditions respectively.

#### **Compatible graft combinations**

As all the cultivars are not compatible with one another, large number of combinations have been tried out by the TRI before making firm recommendations. Based on nursery and field performances, following graft combinations are recommended as compatible combinations.

• **For drought tolerance**

Region	Scion	Stock
Mid country	TRI 2026	DN
Up/Mid country	TRI 2023	CY 9
Low country	TRI 2025	DG 39
Low country	TRI 2026	DG 39
Low country	TRI 2026	H 1/58
Low country	TRI 3025	H 1/58

• **For quality**

Region	Scion	Stock
Up country	TRI 777	TRI 2025
Up country	TRI 777	TRI 3019
Up country	TRI 777	TRI 3020
Up country	TRI 777	TRI 4052
Up country	TRI 777	TRI 4053
Up country	TRI 4067	TRI 3019
Up country	TRI 4079	TRI 2025
Up country	TRI 4079	TRI 4052

• **For blister blight tolerance**

Region	Scion	Stock
Up country	TRI 3072	TRI 4006
Up country	TRI 3072	TRI 4053

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