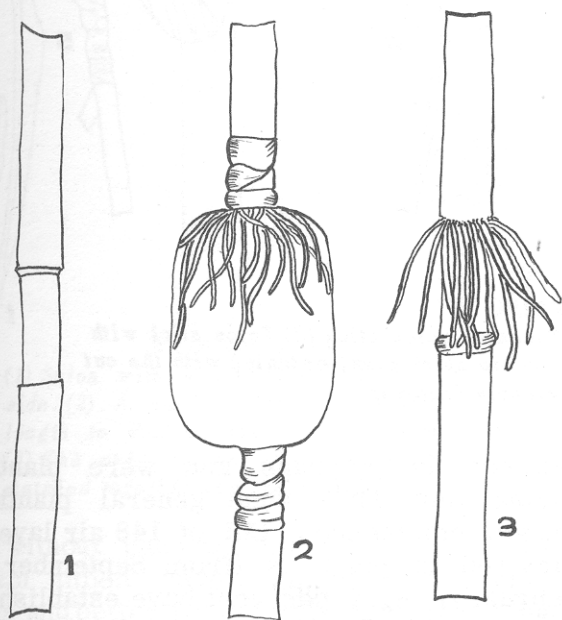


# MORE ON VEGETATIVE METHODS

S. NAGABHUSHANAM, K.N. MURTHY and E. MOHAN  
Central Plantation Crops Research Institute, Regional Station, Vittal, Karnataka



## AIR LAYERING

- (1) A shoot ringed for air layering
- (2) Root emergence visible through polythene wrapper
- (3) Rooted shoot after removal of wrapper.

With the price of cashew soaring high, many people are interested in cultivating the crop even on fertile soils. These lands could be harnessed to raise new cashew plantations with superior vegetatively propagated material and by adopting improved cultural practices.

With a view to standardize a technique suitable to the region, different methods of vegetative propagation were tried on cashew at Regional Station of the Central Plantation Crops Research Institute, Vittal in South Kanara District of Karnataka during 1977-78.

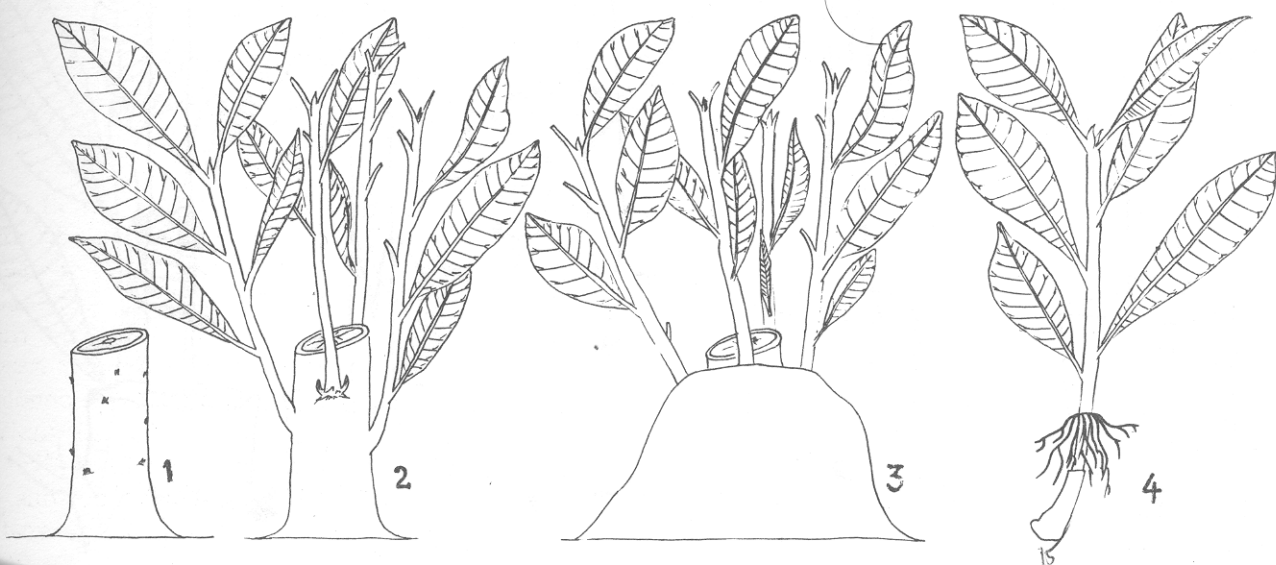
The techniques of vegetative propagation of cashew studied were: air layering, ground layering, grafting and patch budding.

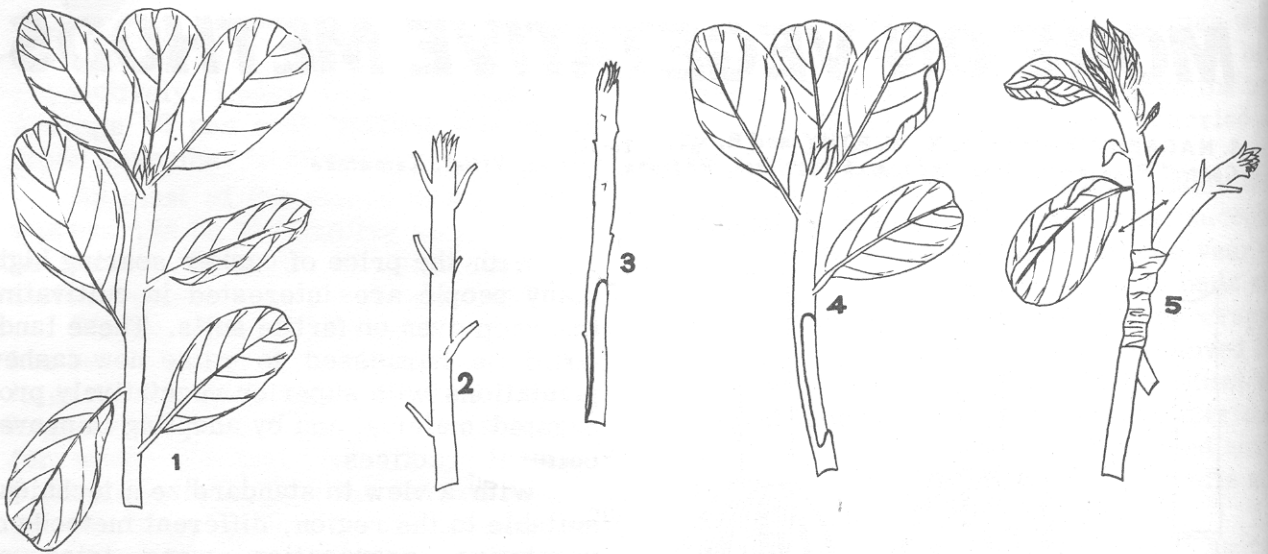
## AIR LAYERING

Although, air layering could be done all the year round, studies indicated that the layerings done during March-April gave maximum percentage of rooted layers (88.1 and 91.1). Profuse rooting seen in the layers made in March-April probably helped high percentage survival in polybags

## MOUND LAYERING

- (1) A stool
- (2) Coppice emergence from the stool
- (3) Sand mound around the basal portion of the shoots for etiolation
- (4) A separated shoot with roots after cincturing.





#### VENEER GRAFTING

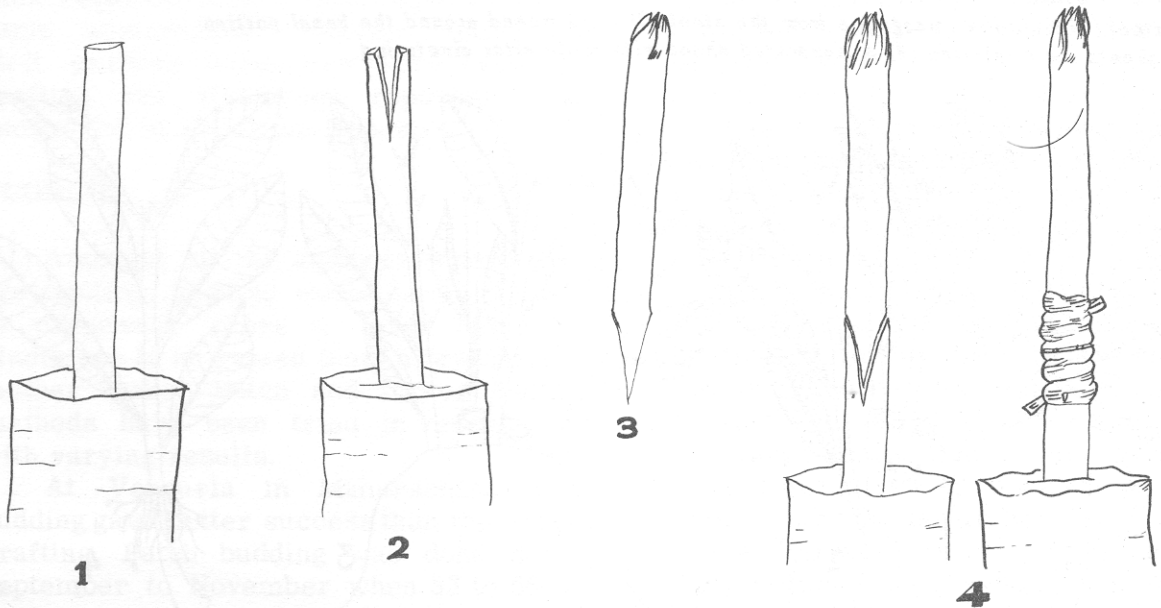
- (1) Terminal shoot with dormant apical bud (2) Precured scion stick (3) Scion stick with a slanting cut on one side (4) Slanting cut given on the stock plant matching with the cut made on the scion (5) Scion grafted on the stock closely fastened

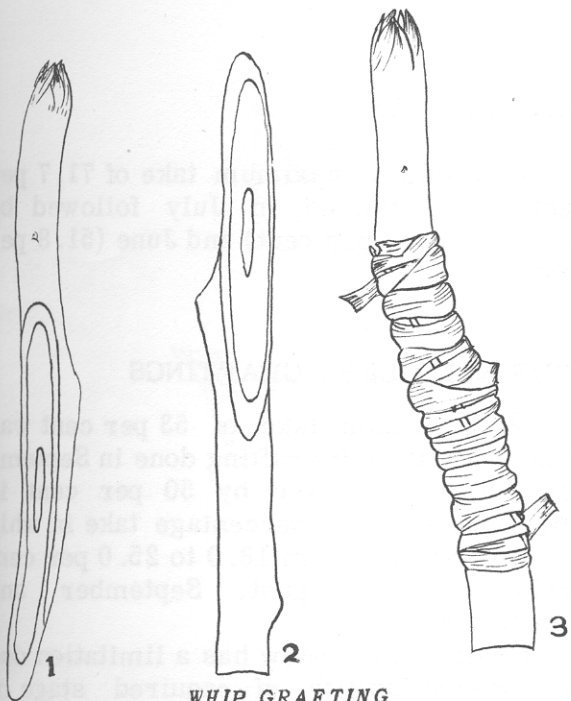
(90.2 and 91.4 per cent) and maximum field establishment (94.7 and 94.3 per cent) when transplanted by the onset of rains (June first week) than those rooted and transplanted in other months. The rooted layers available from the layerings made from September to February months were

retained in polybags and were planted during June 1978 when general planting season commenced. Out of 148 air layers survived in polybags (from September to February), 84.4 per cent have established in the field. Planting of air layers with polybags giving a cut at the bottom of the

#### CLEFT GRAFTING

- (1) A clean transverse cut given to the stock (2) A cleft made to facilitate insertion of scion (3) Scion prepared with a tapering wedge (4) Scion inserted into the cleft matching the cambial regions and closely fastened with polythene wrapper.





#### WHIP GRAFTING

- (1) Scion with a flat slanting cut on one side
- (2) A slanting cut corresponding in length to that of the scion made on stock
- (3) The cut-surfaces of the scion and stock matched together and fastened

and one part each of compost and soil. This would help in providing better care and nourishment to the layer in putting forth new rootlets than planted directly in the field. Further, the grower is saved of losing a high per cent of layers in the field by going in for cured layers, as is done in mango, sapota, orange and other fruit crops.

#### MOUND LAYERING

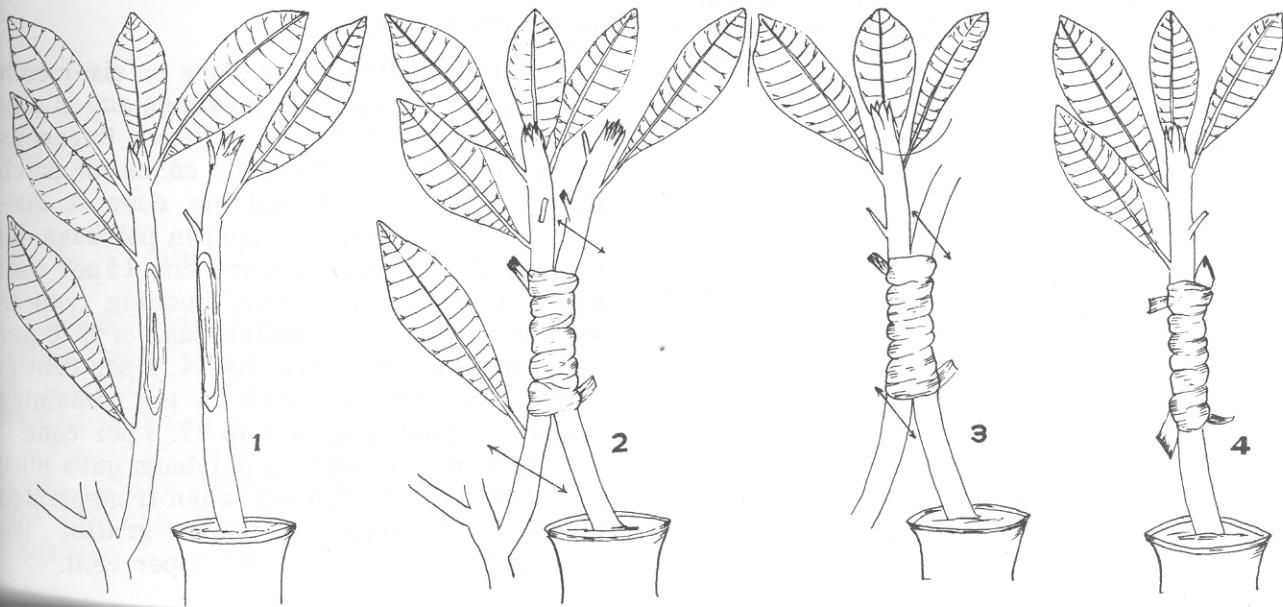
Studies were made to obtain ground layers by stooling and mound layering the coppice after etiolation.

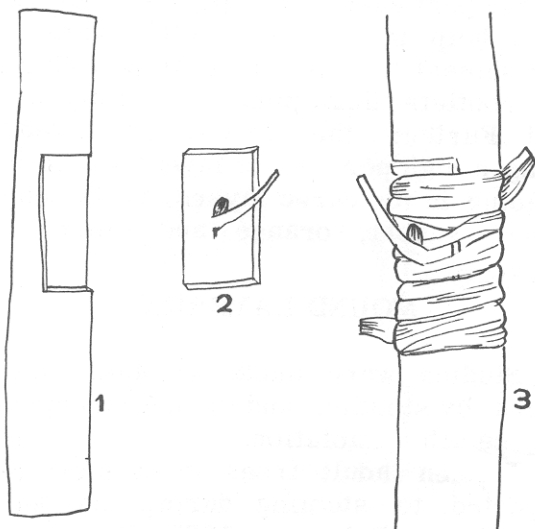
Fifteen adult trees of cashew were subjected to stooling during the second fortnight of February 1978. The coppice were covered with sand up to about 20 cm. height forming a mound around the stool during the first week of May 1978. The shoots were allowed for etiolation for about 40 days. The basal portion of the etiolated shoots were cinctured and the upper portion of the ringed area was smeared with IBA for quick rooting and covered with sand for rooting to take place.

Out of 157 shoots cinctured 64.3 per cent had struck roots and 72.0 per cent survived in polybags after planting. Establishment of mound layers in the field is being studied.

#### APPROACH GRAFTINGS

- (1) Stock and scion of similar thickness sliced with flat cuts for matching
- (2) Cut surfaces of stock and scion matched together and fastened
- (3) Secure the scion and stock at the places marked with arrow, to form a graft
- (4) Graft ready for planting after union.





#### PATCH BUDDING

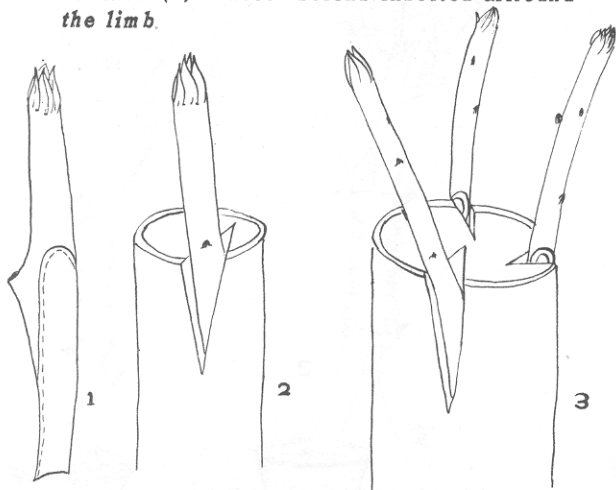
- (1) Scion shoot where from a rectangular bud patch removed (2) A rectangular bud patch (3) Bud patch grafted on the stock and fastened

#### VENEER GRAFTING

Veneer graftings done in situ gave comparatively a better result than on seedlings in polybags. A maximum success of 44.8 per cent was secured in polybags in October followed by June (39.9 per cent) and July (31.2 per cent). Veneer grafting done in situ registered a maximum success of 65.0 per cent in August followed by September (50.0 per cent) and October (40.0 per cent).

#### TOP WORKING BY CLEFT GRAFTING

- (1) Scion with a wedge (2) Limb partly split open to insert the scion ensuring cambial contact (3) Three scions inserted allround the limb.



#### SIDE GRAFTING

In trials a maximum take of 71.7 per cent was obtained in July followed by October (52.3 per cent) and June (51.8 per cent).

#### WHIP AND CLEFT GRAFTINGS

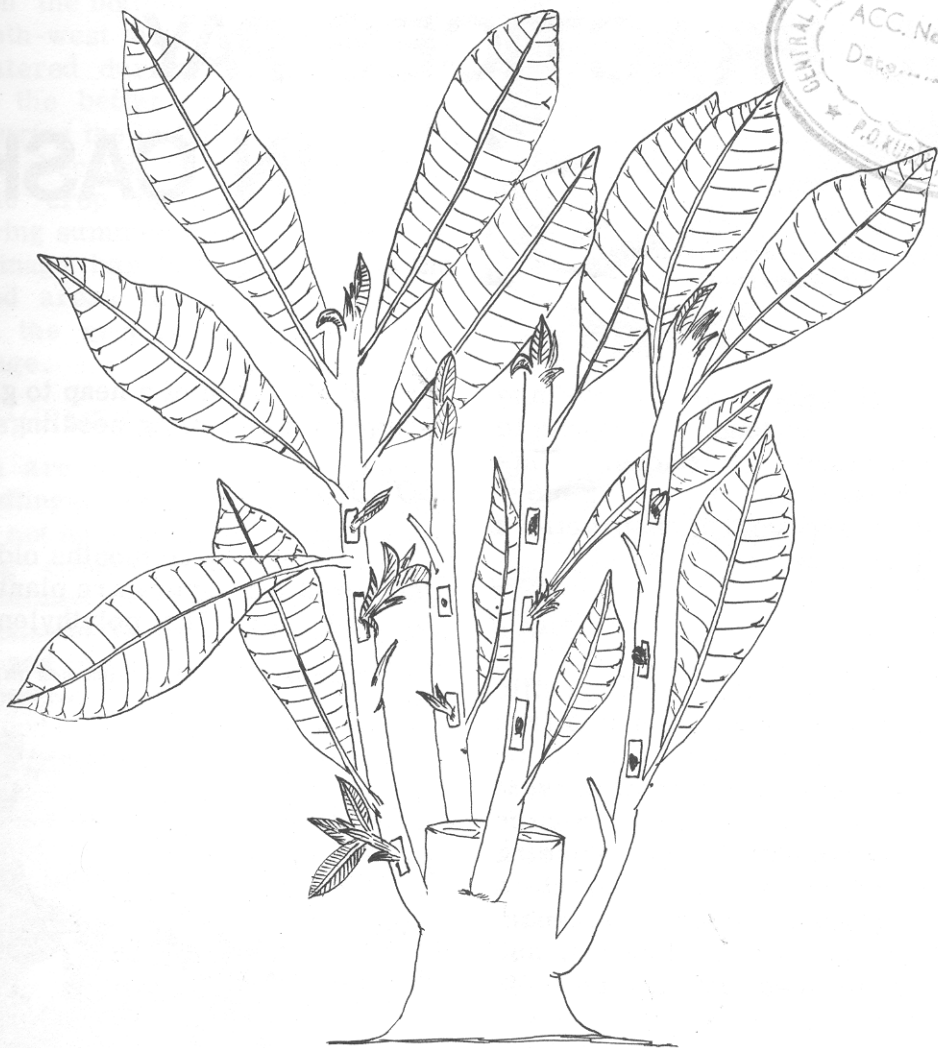
A maximum take of 53 per cent was obtained with cleft grafting done in September closely followed by 50 per cent in August while the percentage take in whip grafting varied from 18.0 to 25.0 per cent during June, August, September and October months.

Grafting in cashew has a limitation due to non-availability of required stage of dormant terminal shoots all the year round. After emergence of new vegetative flush and flowering from November to April months, the non-flowered shoots and those which emerge afresh on completion of flowering remain inactive for some time and such shoots were utilized for grafting study from June onwards. The scope thus for taking up intensive grafting on commercial scale found to confine to about six months period only. As the inactive growth phase of adult cashew trees mostly coincides with monsoon period, this would help in securing good results with veneer grafting due to congenial humid weather conditions.

#### BUD GRAFTING

Patch budding was done on six-month old seedlings raised in polybags and in situ separately. The shoots of pencil thickness were selected in both the cases for patch budding. The patch budding done on six-month old seedlings raised in polybags did not result in securing more than 15 per cent take in any month. But, budding done in situ registered a maximum take of 59.0 per cent in May followed by 44.4 per cent in June while the success in the remaining months varied from 9.6 to 27.0 per cent.

Budlings raised in polybags gave 80.0 per cent establishment when transplanted in field. In respect of veneer grafts, the field establishment was 92.3 per cent.



**TOP WORKING BY PATCH BUDDING**

*Shoots emerged from a stool could be patch budded. A single shoot could be budded with two or three bud-patches to ensure success*

**IN A NUTSHELL**

Quick multiplication of promising cashew trees seemed to be possible through air layering and also by in situ veneer grafting on 6 to 8 month old seedlings.

There is wide scope to improve unthrifty cashew trees of five to six years by side grafting them with superior scion material.

Studies on patch budding need further detailed investigation to arrive at definite conclusions.

Mound layering may offer greater scope for quick multiplication of promising cashew trees economically.

Studies on whip and cleft methods of grafting need further investigation.

The scope for seed grafting in cashew appears to be not encouraging. However, this method needs intensive study.