

CURING BUD WOOD AND METHOD OF BUDDING ON 'BUD TAKE' IN COCOA VAR. FORASTERO (*THEOBROMA CACAO* L.)

Budding has been commonly adopted for the multiplication of cocoa clones as well as for the establishment of hybrid seed gardens in the major cocoa growing countries in West Africa (Edwards, 1969) and elsewhere. Although different methods of vegetative propagation have been found feasible in cocoa, budding by far is the easiest and the most economical. Curing of bud wood has also been reported to enhance 'bud take' in cocoa (Parades, 1949) as in other horticultural crops. However, information regarding the best method of budding and the favourable effect of curing on 'bud take' are meagre. Attempts were, therefore, made at the College of Horticulture, Kerala Agricultural University, to study these aspects.

Bud wood from a selected Forastero cocoa plant was collected and budded on to 6 month old seedlings, var. Forastero in June 1979. Ten fan branches of the season's growth which were just hardened and turning from green to brown were selected. Five branches were cured and five left as such. Curing was done by cutting back the leaves leaving part of the petioles 10 days prior to the budding operation. The cured and fresh bud woods were separated from the tree on the day of budding and they were kept in a moist condition till they were used. Budding was done adopting patch, T and modified Forkert methods below the cotyledonary nodes, on 15 seedlings (Anon, 1978). The budded stock plants were kept in partial shade and were given proper care. The tapes were cut loose and the seedlings were snapped back about 10 cm above the bud two weeks after budding to encourage the bursting of those buds which had formed union with the stock. Observations on 'bud take', number of days for the first bud emergence and vigour of the new growth were made at fortnightly intervals for a period of three months.

Data on the percentage of 'bud take' and the number of days for bud emergence are given in Table 1. Curing of the bud wood was found beneficial as compared to using fresh bud wood in getting a higher percentage of bud take in cocoa. Similar results have been reported by the Cocoa Research Institute, Tafo, Ghana (Anon, 1978). Besides earlier bud burst, more vigorous growth also was found associated with the new growths from the cured buds (Fig. 1). In all the three methods, bud emergence was noticed within 3 to 5 days after snapping back of the stock shoots as against 8 to 12 days in the case of fresh buds. The earlier bud-burst and vigorous growth associated with the cured buds might be attributed to the availability due to defoliation, of sufficient quantity of auxins or similar growth hormones responsible for cambial activity resulting in earlier bud union and subsequent emergence of the buds. Keeping (1950) also obtained similar results in cocoa. However, this 'vigour' in growth slowly disappeared with the first flush. Among the three methods of budding, modified Forkert method was found superior

Table 1
Percentage of 'bud take' and number of days for bud burst in three methods of budding using cured and fresh cocoa bud wood

Method	Cured bud wood		Fresh bud wood	
	Per cent 'Bud take'	No. of days for first bud burst	per cent bud take	No. of days for first bud burst
Patch budding	53.3	20	40.0	22
Modified Forkert budding	73.3	17	60.0	22
T budding	60.0	19	46.7	26

to other methods with both types of the bud wood which is in agreement with the findings by Kesavachandran (1979) who obtained 60 per cent success by this methods using fresh buds on nine month old root stocks.

It is suggested from the present study that for large scale budding in cocoa, bud wood should be cured for 10 days and that modified Forkert method should be adopted for greater success. Subsequent attempts by the senior author have given 90 to 95 per cent success with this method which shows that the percentage of success can be improved by experience. However, as indicated by Ascenso (1968) and Giesberger and Coester (1976) curing of the bud wood may not be necessary when they are to be collected from distant places which would make the operation more expensive. The authors wish to thank the Kerala Agricultural University for the facilities provided.

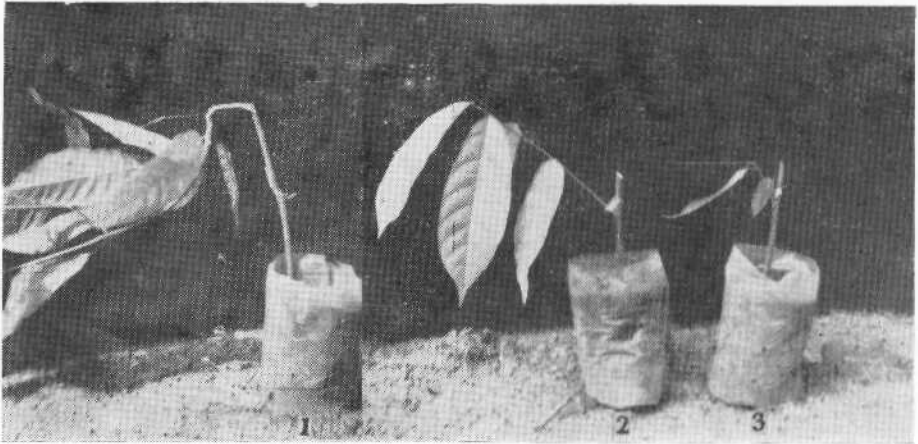
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raiap^ മാസം പ്രായമുള്ള കൊക്കോ തൈകളിൽ fc^orr^ ft^Q' ഒട്ടിക്കൽ സമ്പ്രദായങ്ങളും rasns^ തരത്തിലുള്ള മുകളും തയ്യാറാക്കലും പരീക്ഷണവിധേയമാക്കിയപ്പോൾ tO ദിവസം ffl^micofl 'കാർ' ചെയ്തു 'മോഡിഫൈഡ് ഫോർക്കെർട്ട്' സമ്പ്രദായ പ്രകാരം ഒട്ടിക്കുന്നതാണ് മറ്റുള്ളവയിൽനിന്നും മെച്ചപ്പെട്ടതെന്ന് തെളിഞ്ഞു. മറ്റു രാജ്യങ്ങളിലെന്നപോലെ വിപുലമായ തോതിലുള്ള കായിക പ്രവർത്തനത്തിന് ഈ സമ്പ്രദായം കൊക്കോയിൽ പൊതുവേ പ്രായോഗികമാക്കാവുന്നതാണ്.

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Budding on cocoa



1. Stock snapped back.
2. Early emergence and vigorous growth of a cured bud.
3. Delayed emergence and less vigorous growth of fresh bud.

References

- Anonymous, 1978. Report of training on cocoa and oil palm submitted to the Kerala Agricultural University, by K. Kumaran, College of Horticulture, Vellanikkara.
- Ascenso, J. C. 1968, Cacao budding in Sao. Tome. *Trop. Agric.* 45 (4) 323-329
- Edwards, D. E. 1969. Hybrid seed gardens-some practical considerations. *Cocoa Growers' Bull* No. 13.
- Giesberger, G. and Coester, W. A. 1976. Glass house experiments on green budding and grafting of cocoa (*T. cacao* L) *Trop. Agric.* 53 (4): 359-372.
- Keeping, G. S. 1950. The Vegetative propagation of cocoa *Malay. agric. J.* 51: 77
- Kesavachandran, R. 1979. Propagational studies on cocoa, *T. cacao*. M. Sc. Thesis, Kerala Agricultural University.
- Parades, L. A. 1949. Propagation of cocoa by budding. *Cacao Inf. Bull.* 1: 21-25

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