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Asexual Propagation of Cocoa (*Theobroma cacao* L.)*

Cocoa plantations by and large are of seed origin resulting in variation both in production and productivity. In order to achieve higher yields per unit area and to obtain quality product, it is imperative to resort to vegetative propagation for clonal multiplication. Establishment of clonal seed gardens with vegetative progenies would help in generation of superior planting materials for supply to growers. Earlier

trials conducted by Somappa and Rao (1983) got 58% of rooted layers with the application of root promoting hormones while Nair (1983) achieved a success of about 80% with the cuttings, under polythene and hardening the rooted cuttings by gradual exposure to natural conditions. Planting materials produced through cuttings in a large scale have a low spreading habit of growth in Trinidad as indicated by Moll

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(1956). The current trials were carried out to evolve an easy technique to propagate cocoa by vegetative means, adopting cleft grafting and patch budding at the Central Plantation Crops Research Institute, Regional Station, Vittal, Karnataka, during 1985-86.

Healthy vigorous seedlings of about four months old were utilized as root stocks and the scion materials were taken from the fan-branches of a single clone. Every month, during the period of the trial, hundred each of buddings and graftings were made and month-wise success worked out for one year.

The results indicated that patch budding gave a success which varied from 18-37% as against an overall mean of 12% obtained with cleft grafting. Percentage of success with cleft grafting and patch budding and the weather data during 1985-86 are furnished in Table I.

As could be seen from the table, a maximum success of 37% with patch budding was obtained in June followed by August in which the relative humidity and precipitation being higher when compared with the other months during the period of trial. High relative humidity and rainfall seemed to be conducive to secure better success with patch budding. About 300 clones produced by patch budding at Vittal have established well (90%) similar to seedlings. However, the seedlings have registered better growth than the buddings in the initial growth period. Bud grafts raised by taking budwood from fan branches need to be tended to grow straight by proper training and staking at the initial stages of growth. The trials gave an indication that patch budding in cocoa could be practised all the year round with a degree of variation in success.

Patch budding will be an ideal

Table I. *Percentage success of cleft grafting and patch budding during 1985-86 and meteorological data*

| Month | Success | | Meteorological observations | | | |
|-----------|----------------|---------------|-----------------------------|-----------|---------------------|---------------|
| | Cleft grafting | Patch budding | Temperature °C | | Relative humidity % | Rainfall (mm) |
| | | | Mean Max. | Mean Min. | | |
| March | 41.0 | 19.0 | 34.8 | 22.1 | 91.0 | — |
| April | 22.0 | 29.0 | 37.1 | 22.4 | 89.5 | 1.3 |
| May | 19.0 | 19.0 | 36.8 | 23.6 | 91.6 | 5.7 |
| June | 12.0 | 37.0 | 30.0 | 24.0 | 96.5 | 34.1 |
| July | 8.0 | 22.0 | 29.6 | 23.4 | 95.6 | 19.7 |
| August | 11.0 | 35.0 | 28.0 | 21.4 | 95.7 | 24.7 |
| September | 11.0 | 18.0 | 31.0 | 22.9 | 95.0 | 3.8 |
| October | 4.0 | 24.0 | 32.0 | 22.8 | 95.0 | 9.9 |
| November | 1.0 | 22.0 | 35.0 | 23.5 | 94.5 | 2.3 |
| December | 1.0 | 21.0 | 33.1 | 20.8 | 93.6 | 0.7 |
| January | Nil | 23.0 | 34.1 | 18.0 | 92.6 | — |
| February | 16.0 | 25.0 | 32.8 | 19.0 | 93.6 | — |
| Mean | 12.2 | 24.5 | — | — | — | — |

technique suitable to the region for easy adoption by growers through the extension agencies. Shepherd, Chong and Taylor (1981) preferred bud grafting in cocoa estates of Malaysia as production cost of planting materials worked out cheaper, apart from being easy to adopt.

ACKNOWLEDGEMENT

The authors are thankful to Dr. K. V. Ahamed Bavappa, former Director, Central Plantation Crops Research Institute, Kasaragod and late Dr. K. Shama Bhat, former Joint Director, CPCRI, Regional Station, Vittal, for the facilities provided to undertake the trials.

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