PROSPECTS OF VEGETATIVE PROPAGATION IN CASHEW (ANACARDIUM OCCIDENTALE L.) BY AIRLAYERING

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ABSTRACT

Air layering trials carried out in cashew have shown that under South Kanara conditions. March-April months are most congenial for obtaining more number of rooted airlayers. Curing of airlayers prior to planting in the main field has been found necessary. Further, it was also found that better establishment could be got causing minimum disturbance to the root system during transplantation in the main field.

INTRODUCTION

Propagation such as layering, budding and grafting methods are used to increase the number of plants of a variety which does not come true from seed. The fact that in the cashew processing industry, the nuts are classified into numerous grades by itself is an indication of the vast variation that occurs in the cashewnut and its kernel. A rigid selection of the parent trees and their perpetuation through vegetative propagation would go a long way in achieving the desired quality and performance. Demanding no special attention, the cashew is well suited to large scale extension with little expense by airlayering when compared to other techniques of vegetative propagation.

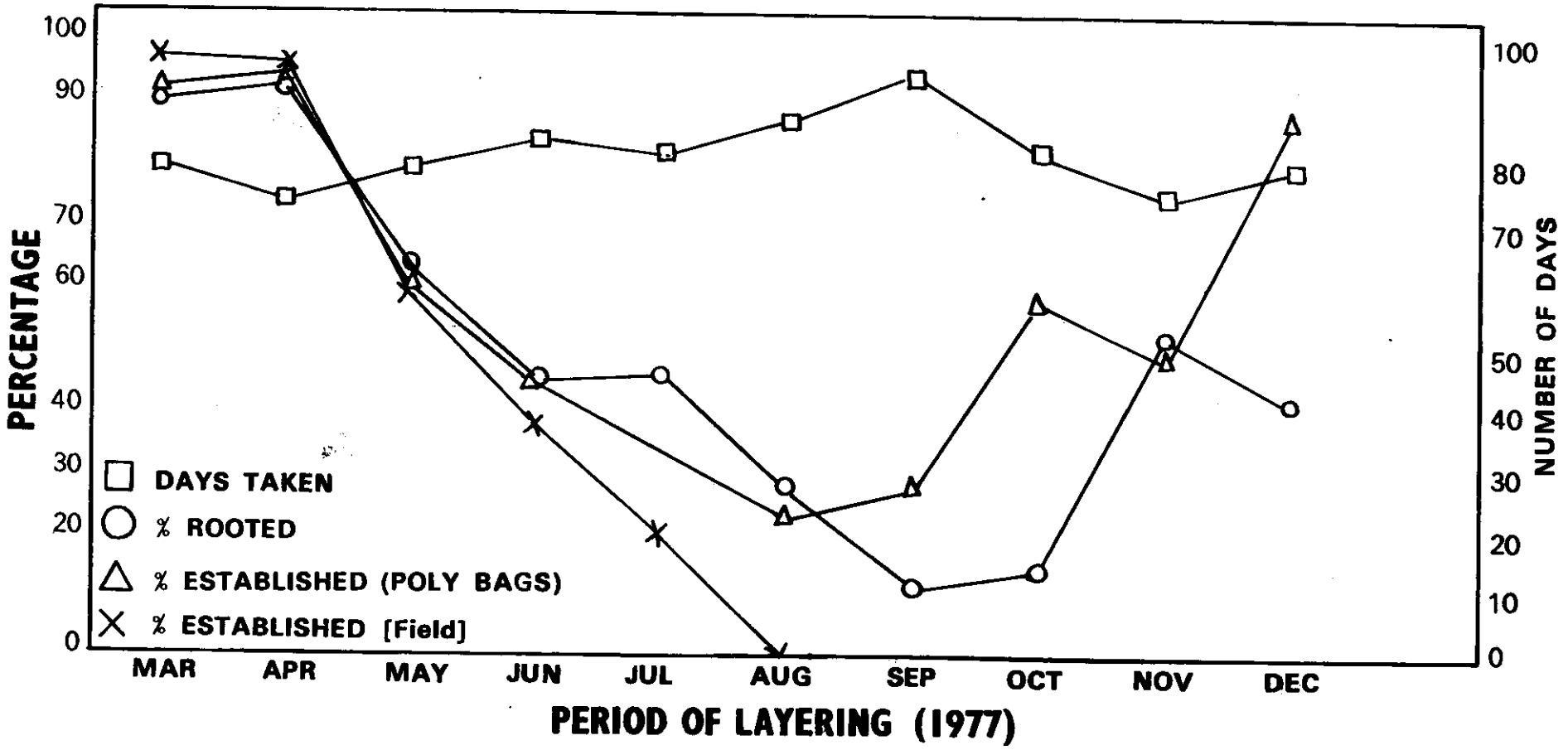
Several vegetative propagation methods have been tried in the various Cashew Research Stations in India and abroad.

The trials conducted by Naik (1949) at Fruit Research Station, Kodur (Andhra Pradesh) revealed that the layers readily root within two months, if layering done during the rainy season achieving cent percent success. Different aspects of airlayering were studied by Rao and Hassan (1957) under the conditions available in the west-coast of India and found that layering done during flushing and flowering of cashew gave high percentage of rooting. Aiyadurai (1968) also suggested for layering when cashew is in flush and bloom. Chhonkar and Singh (1967), Acharyya and Dash (1972) and Sen and Chakravarthi (1972) utilized root promoting hormones in layering and obtained encouraging results. Abraham (1956), Kurup and Viswanathan (1970), Muthappa Rai (1970), and Damodaran (1970) had also reported success with airlayering in cashew. Argles (1969) opined that airlayering is the most satisfactory method of propagation by vegetative means in cashew, but Northwood (1964) doubted it to be time-consuming and expensive operation that cannot be regarded as satisfactory means of producing improved planting material on a large scale for African farmers.

Although encouraging results have been obtained in airlayering, yet the information on their establishment under field conditions is scanty. Hence, experiments on airlayering in cashew were carried out at the Central Plantation Crops Research Institute Regional Station, Vittal, Karnataka State (India) and the results achieved are discussed in this paper.

MATERIAL AND METHODS

Airlayering was done every month from March to December on shoots of 1.4 to 1.8 cm thickness of past season's growth selected from healthy adult trees with desirable characteristics. A cincture extending upto 3 cm in length was made to remove a ring of bark from the selected shoots. The ringed portion was covered with moistened saw-dust and wrapped with alkathene film of 150 gauge thickness. No hormone was used to induce rooting. Separation of rooted shoots from the parent tree was done as and when the roots were clearly seen through the alkathene wrapper. After severing the rooted layers


100
90
70
60
40
30
20
0
PERCENTAGE
DAYS TAKEN
% ROOTED
% ESTABLISHED (POLY BAGS)
% ESTABLISHED [Field]
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
PERIOD OF LAYERING (1977)
100
80
70
50
40
30
20
10
0
NUMBER OF DAYS

the wrapper was carefully removed and layers planted in polybags (45 x 30 cm size and 500 gauge). Earlier, these polybags were filled with potting mixture consisting of 2 parts sand and 1 part each of compost and red soil. The layers were kept for curing for 20 days in poly-bags. The layers prepared from March to August were transplanted in the mainfield and when planting, the bottom of the polybag only was severed to avoid disturbance to the root system. As it was found that the mortality of layers made in August was maximum the layers separated subsequent to August were retained in the polybags for future planting. Monthwise particulars of layerings done, number rooted and percentage success, number of days taken for separation from the parent tree, percentage survival in polybags and percentage establishment under main field condition are given in Table 1.

TABLE 1. *Monthwise particulars of air-layerings done, number of rooted layers and percentage success, number of days taken for separation, number and percentage establishment in polybags and in mainfield (Air-layering done in* 1977)

Air-layers done		No. of rooted layers	Percentage rooted layers	Mean No. of days taken for separation of layers from parent tree	Establishment of air-layers			
Month	Number layered				No. in polybags	Percentage establishment	No. in mainfield	Percentage establishment
March	93	82	88.1	78	74	90.2	70	94.7
April	90	82	91.1	72	75	91.4	71	94.3
May	100	62	62.0	78	36	58.0	21	58.0
June	100	44	44.0	82	19	43.2	7	36.4
July	100	45	45.0	80	15	33.3	3	20.0
August	100	27	27.0	85	6	22.2	Nil	Nil
September	100	11	11.0	93	3	27.2	Retained in Polybags	
October	100	14	14.0	80	8	57.1	-do-	
November	100	51	51.0	73	24	47.0	-do-	
December	100	40	40.0	78	34	85.0	-do-	

RESULTS AND DISCUSSION

It could be seen from the data that the percentage of rooted layers was maximum during March-April (88.1 and 91.1 per cent) and showing decline in subsequent months. This trend has been in conformity with the findings of Rao and Hassan (1957) that the maximum rooting in cashew with airlayers obtained during flushing and flowering. This fact has been further established with increased rooting percentage (51.0%) obtained during November which coincides with emergence of new flush in cashew. The same trend could also be seen during December. Profuse rooting observed in layers made in March-April might have resulted in giving higher rate of survival in polybags (91.4-90.2%) and favourable seasonal conditions for maximum field establishment (94.7-94.3%), than those rooted and transplanted from August onwards. Hence, the layering made in March-April become available for field transplantation at the right season. On the other hand, the layering done after June and separated by about August would not only miss the appropriate season for planting but also become highly expensive to maintain them in containers until transplantation in the mainfield. This could clearly be seen in diagram I. Further, it could be seen from the weather data collected during the period of layering that the rain fall and humidity had no bearing on the success o layerings done in monsoon under South Kanara con ditions. The weather data collected during the perio of layering are presented in Table 2.

TABLE 2. *Statement showing monthly weather data recorded during the period of layering in* 1977

Month	Rain fall		Temperature °C		Humidity % (AV)
	Quantity mm	No. of rainy days	Maximum (AV)	Minimum (AV)	
January	Nil	Nil	32.8	18.3	63
February	0.6	Nil	33.9	21.5	72
March	42.0	3	35.8	23.3	71
April	151.1	3	35.1	24.3	73
May	163.8	8	33.0	24.1	79
June	915.9	24	29.5	23.1	89
July	1616.7	28	27.8	22.6	97
August	414.7	23	29.1	23.2	87
September	335.3	15	30.5	23.2	83
October	269.2	17	32.0	23.0	81
November	262.5	13	31.4	22.6	81
December	Nil	Nil	32.3	18.1	62
Total	4173.8	134	—	—	—

Airlayers Established in Polybags And Ready For Planting in the Main Field.

CONCLUSION

In view of the results obtained under South Kanara conditions, the air layering will be successfully carried out during March-April months to obtain more rooted layers and maximum field establishment.

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