

IMPROVED PACKAGE OF PRACTICES FOR CASHEW PRODUCTION IN GOA



Indian Council of Agricultural Research
ICAR Research Complex for Goa
Ela, Old Goa. 403 402, Goa

1. Introduction

Cashew is one of the most important plantation crops in India as it brings in considerable foreign exchange earnings. In the state of Goa, it occupies the largest area among horticultural crops. This crop covers about 55,000 ha area with an annual production estimated at 27,000 tonnes.

2. Soil and climate: Well-drained deep sandy loam soils are the best for growing cashew. Heavy clay soils are not suitable, as cashew does not withstand water logging. In general, all soils from sandy to laterite are well suited for this crop. The light soils need to be replenished with adequate nutrients for better performance of this crop.

Cashew is an introduction from Brazil and is very well adapted to Indian coastal area under hot humid conditions with temperature in the range of 20 to 38 °C, relative humidity in the range of 60 to 95 % and annual precipitation in the range of 2000 to 3500mm. Extreme low temperature and frost are not conducive to raise cashew plantations. Edaphic and agro-climatic conditions of Goa offer good scope for cultivation of cashew. Of late, the cultivation of this crop is being extended to non-traditional areas in the plains of Karnataka, Madhya Pradesh, Chattisgarh and some parts of North East hill region.

3. Land Preparation: For planting new orchards, the land has to be cleared off thorny bushes, shrubs and other weeds well before the pre-monsoon showers (April - May). Lay out the field with appropriate peg marking to facilitate digging of pits. Dig pits in the following way and leave them open for about 15 days for curing.

- a) Normal planting in Square system: Open pits of 60 cm X 60 cm X 60 cm size at a spacing of 7m X 7 m. (200 grafts / ha)
- b) High density Planting in square system: Pit size - 60 cm X 60 cm X 60 cm, Spacing 5m X 5m (400 grafts / ha)

4. Varieties : Vengurla-4, Goa-1 (Balli-2), Vengurla-7, Vengurla-8, Bhaskara (Goa11/6), etc. Tiswadi-3 (Goa-2) and G N J - 2 (Goa - 3) are also the promising accessions that are under multilocational trial.

Grafts of local types with bold nut, high yielding and bigger apple size can also be used in the respective area for planting.

5. Planting material and method of planting:

Use soft wood grafts of improved and high yielding varieties. After pre-curing, fill pits completely with top soil mixed thoroughly with one basket (15 - 20 kg) of compost or Farm Yard Manure, 400 - 500 g murrum phosphos or rock phosphate and 100 g of anti termite pesticide.

Immediately after the onset of monsoon, plant the graft in the center of each pit and support it with appropriate staking. Complete planting before the end of June to take full advantage of monsoon.

6. Time of planting: The most ideal time for planting of cashew grafts is second fortnight of June to July. Planting during this season ensures better establishment of grafts in the field.



Planting a graft and staking with bamboo

7. Propagation :

- a) Soft wood grafting
 - i. Raising of seedlings for root stock
 - ii. Selection of scion
 - iii. Grafting technique
 - iv. After-care of the graft
- b) Top working:
 - i. Selection of trees
 - ii. Beheading
 - iii. Grafting with high yielding variety scions
 - iv. After care



Soft wood grafting in cashew

8. Soil and water conservation measures: Field length continuous contour trenches (CCT) of 45cm top width X 30 cm bottom width X 45 cm depth or 2m long Staggered contour trenches (SCT)

9. Fertilisers : Cashew responds well to fertilizer application. The fertilizer schedule for different age groups is as given below.

Age	Compost / FYM(kg)	Nutrients (g /tree/year)			Fertilizers (g /tree/year)		
		N	P ₂ O ₅	K ₂ O	Urea	Rock phosphate	Muriate of potash
1	15	250	50	50	250	175	85
2	30	500	100	100	500	350	165
3	40	750	200	200	1000	750	330
4 th yr & onwards	50	1000	300	400	2000	1500	660

Note: 1) Half of the dose can be applied in June and remaining half in August. In hill plantations to avoid leaching, entire dose can be applied once in August. Problematic soils (reclaimed mine rejects) need to be tested. Special care needs to be given while recommending for High density plantations to avoid excess application per unit area.

2) Organic cashew: Supplementing nutrients through organic sources like oil cakes, vermicompost, fish meal, bone meal, FYM and Poultry/pig manure, spray of EMO, etc. Apply fertilizer within a radius of 2 - 2.5 m around the tree trunk at a depth of 15 cm and cover with green leaves and soil.

10. Inter-cultivation:

Intercropping : First 4 years, suitable inter crops can be had in the inter-space in cashew plantations of regular

spacing under mild undulations or plain fields. Groundnut, cucurbits, bhendi (okra), turmeric, ginger, chillies can be cultivated with appropriate crop rotations to get income during the juvenile period of plantation.

Guava can also be planted as intercrop in the initial years. Drumstick (which can serve as trap crop against TMB) with proper pruning can also be taken up along the contours.

1. Plant Protection

Major Pests : Tea mosquito bug(TMB) and Cashew stem and root borer (CSRB)

Minor pests : Thrips, Leaf miner, fruit and nut borer and scale bugs

Phytolactic Spray for managing Tea mosquito bug:

Spray: Monocrotophos 1.5ml / litre of water (0.05%) + Lambda Cyhalothrin at 0.003% during new flushing stage (November-December)

spray: Carbaryl 50% WP at 2g/litre of water (0.1%) or Chlorpyrifos (0.05) at flowering stage (Dec-January)

spray: Repeat the first spray at the initial fruiting stage (Feb-March)

Management of Cashew Stem and Root Borer (CSRB):

Monitor for the presence of frass near the tree trunk. Mechanically remove the grubs from the infected trees and destroy

Inject 0.36% monocrotophos by padding method. Soak or drench the bark of the infested trees with 0.1% Chlorpyrifos 1m above the ground and also on soil and root zone in a radius of 0.5m around the trunk.

Repeat the injection for all infested trees with monocrotophos after 15-20 days.

Adopt the phytosanitary measures by removal of dead trees infested with CSRB and bury or burn the same to avoid further spread of infestation.



Grub of CSRB



Infected trunk



Tree affected by CSRB

12. Harvesting and Yield : It is advisable to take crop from fourth year onwards, before which flowers if any may be removed to encourage proper vegetative growth. The harvesting commences from February and continues till May. The dropped fruits with nuts are collected and nuts are separated from the apples.

Yield performance of cashew over the years

Age of tree	Nut yield (Kg /tree)	Apple yield (Kg/tree)	Yield per ha*. (tonnes)	
			Nut	Apple
4 th year	0.5	3.5	0.1	0.700
5 th "	1.0	7.5	0.2	1.400
6 th "	2.5	17.5	0.5	3.500
7 th "	5.0	35.0	1.0	7.000
8 th "	7.5	60.0	1.5	10.00
9 th "	10.0	70.0	2.0	15.00
10 th "	12 - 15	85.0 - 100.0	2.5-3.0	15.0 - 20.0

* 200 grafts/ ha (7m X 7m spacing)

About 10 - 15 kg per tree (2- 3 tonnes/ha) of raw nut yield may be expected at 10th year and onwards, and about 70 - 100 kg per tree (15 - 20 tonnes /ha.) of cashew apple yield may be expected.

Prepared by

Dr. A.R. Desai, Dr. S.P. Singh, Dr. M. Thangam,
Dr. (Mrs.) S. Priya Devi, Mrs. S.A. Safeena and Dr. N.P. Singh

Published by

DR. N. P. SINGH

Director, ICAR Research Complex for Goa,
Ela, Old Goa, Goa 403 402

For details please contact

DR. N. P. SINGH

Director, ICAR Research Complex for Goa
Ela, Old Goa, Goa 403 402

Telephone: 0832-2284677 / 78 / 79

Fax: 0832-2285649

Email: director@icargoa.res.in

Website: www.icargoa.res.in

Technical Assistance

Siddharth Marathe