

## Cashew Nut Cultivation in Goa State with Special Reference to Organic Cultivation Practices

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### ABSTRACT

*The present study was conducted with the objectives, to study the personal socio economic and psychological characteristics of the organic cashewnut growers, to determine the extent of use of organic cashewnut cultivation practices by the cashewnut growers, to know the association of personal, socio-economic and psychological characteristics of the cashewnut growers with extent of use of organic practices, to identify training needs of growers about cashewnut cultivation in general and organic cashewnut cultivation in particular and to know the constraints and seek suggestions of cashewnut growers about organic cashewnut cultivation practices. The study was undertaken in Goa state. In all, 200 organic cashewnut growers from four tahsils of Goa state were contacted. The data were collected with the help of structured interview schedule. Personal interview technique was used for data collection. The extent of use of organic cultivation practices was the dependent variable, which was measured with the help of specially developed scale. It was observed that the average age of the organic cashewnut growers was 48 years. They had average 7th standard education. The average land holding was 2.74 ha., with 23 years of farming experience. Majority of them had farming as a major occupation and average annual income was Rs. 79,767/-. They had put up average 2.30ha area under organic cultivation with average number of 444 trees. The average age of orchard was 19 years and their average cashewnut yield was 8.3 quintals. The average score regarding information seeking behaviour was 17.5, infrastructural facilities 27.5, risk orientation 12.7, economic motivation 14.72 and market orientation 12.53. Majority of them were in medium knowledge level about organic cashewnut cultivation practices.*

**Key words :** Organic cashewnut cultivation; Cashewnut growers; Organic practices;

Organic farming is an age old practice of natural farming which avoids use of chemical fertilizers and pesticides. It is well known now that increased use of chemical pesticides and fertilizers have created chain of problems of soil, environment and water degradation. The intensive chemical agriculture that has been followed during green revolution is causing heavy pollution of food, drinking water and air. The life expectancy has improved, but the quality of life has substantially deteriorated. The rural economy is in ruins because of over dependence of purchased input such as seed, fertilizer, pesticides, growth promoting chemicals, animal feed additives etc. It is even said that the chemical agriculture has destroyed our health and ability to think about right way to go forward. Fortunately, alternatives to chemical agriculture are available in organic farming approaches.

Scientists have realized that the green revolution with intensive inputs use has reached a plateau and is now sustained with diminishing return and falling dividends. Nevertheless, the intensive use of chemical fertilizers and pesticides has not only polluted soil, water and environment, but has also caused several health hazards to human beings. So, a natural balance needs to be maintained, at all the costs, for existence of life and prosperity. The obvious choice for this would be reintroduction of organic farming without compromising with agricultural production. Organic farming is the backbone of sustainable agriculture. It is environment friendly, ecologically balanced and socially accepted.

*Status of organic farming:* The worldwide concern for conservation of environment and realization of socio economic ill effects of use of chemical fertilizers and

pesticides, coupled with the concern for sustainable agricultural production has led thinking of alternate ways of agricultural production. This, along with the fact that production from irrigated agriculture has reached a plateau, has shifted the focus of our Indian policy makers to dryland / upland agriculture. It is in this context, that the organic farming has come into focus. The Government of India has identified organic agriculture as a major thrust area for the tenth five year plan by way of production, promotion, certification and market development of organic farming. The midterm appraisal (MTA) of the tenth five year plan has also emphasized the need to promote organic farming, not only due to its high value export potential, but also to encourage sustainable development (Jaiswal, 2006). Therefore, it is important to identify and document the organic cultivation approaches for organic farming.

*Need of the study :* Organic farming is the need of the hour in the present day context of serious threat to our ecology and environment. Great harm is being caused due to large scale pollution of our soil, water and air which have resulted in degradation and loss of those natural resources and a declining trend has set in the productivity of our soil. Chemical agriculture with a heavy dependence on fertilizer and pesticides is affecting the quality and safety of produce and well beings of humanity. For a sound future, organic farming offers a dynamic interaction between soil, plants, animals, human, ecosystem and environment (Daniel, 1996).

Cashew cultivation is mostly observed in hilly regions, as well as, upland area. Hilly areas are naturally endowed with good vegetation which not only conserve the soil fertility but also contributes to soil organic matter through its abundant litter. Therefore, such tracts are much suitable to adopt organic cashew cultivation practices which help to reduce the production costs. However, empirical data about cashew nut cultivation with special reference to organic practices are not available. There are areas like North Eastern Region (NER) and different states which still practice organic cultivation. Looking to the prospects for organic products in global market, demand for organic cashew nut and its products is increasing. Cashew, being an export oriented cash crop, its organic production has more relevance. It can revitalize export, besides protecting the environment, soil fertility and soil health, as well. Cashew has emerged as one of the most important dollar earning plantation crops of India having very significant

role to play in Indian economy. For this, thorough understanding and implementation of organic cashew cultivation practices is important. In this context, an effort was made through the present study for documentation of the organic cashew cultivation practices in Goa state. *Cashewnut in Goa state :* The area under cashew nut is increasing steadily in Goa state since last five decades. The Goa state has geographical area of 3,61,113 ha. with cropped area of 1,65,953 ha. Goa State is a much advanced state for horticulture covering 1,01,267 ha under fruit crops. The area under cashew nut cultivation in the state is 55,652 ha spread over two districts, North Goa covering 40,547 ha and South Goa covering 15,125 ha. (Anon, 2009 )

The Directorate of Agriculture of the State is promoting the cashew cultivation under National Horticulture Mission and has brought 1100.53 ha under new plantation and maintenance during 2005-08. An area of 939.36 ha has been brought under organic cashew nut cultivation with Rs 58.72 lakh of financial support. A recent survey made by the certifying agency IMO, in collaboration with Achal Industry and Adarsha Sahakari Vikri sangh, Quepem, revealed that the area under organic cashewnut cultivation is 5022.75ha in 73 villages covering 2003 farmers. One more largest private society "Goa Bagayatdar, Ponda" has also started organic cashew cultivator identification and certification with IMO.

*The scenario of cashewnut:* Cashew (*Anacardium occidentale*) is a native of Brazil, which was introduced into India by the Portuguese travelers in Goa during 16th century as a soil binding crop for soil conservation and afforestation. Later, due to its economic importance and wide adaptability, it was diffused through out Indian subcontinent. India was the first country in the world to exploit the international trade of cashew kernels in the early part 20th century. Now, India is the largest producer, processor, consumer and exporter of cashew in the world.

The cashew area and production in the world is mainly concentrated in 32 countries, of which India, Nigeria, Brazil and Vietnam are the major producers. The world cashew area is 33,900 km<sup>2</sup> with the total production of 3.1 MT per annum (<http://en.wikipedia.org/cashew>). Brazil is the leading producer of organic cashew, accounting for nearly 30.00 per cent of global organic cashew production. However, average productivity is highest in India, with 1300 kg per ha followed by Vietnam with 1200 kg per ha. At present

cashew nut is grown over an area of 8.55 lakh ha. with a production of 5.73 lakh tons in India. The main cashew growing and processing states in India are Maharashtra, Kerala, Karnataka, Goa along the west coast and Orissa, West Bengal, Tamil Nadu and Andhra Pradesh along the east coast. India's share in the world production is presently 49 per cent. (Anon, 2007)

#### *Objectives:*

- To study the personal, socio-economic and psychological characteristics of the cashew nut growers.
- To study the extent of use of organic cashew nut cultivation practices by the cashew nut growers.
- To ascertain the association of personal, socio-economic and psychological characteristics of the cashew nut growers with the extent of use of organic cashewnut cultivation practices by them.
- To assess the training needs of cashew nut growers about cashew nut cultivation in general and organic cashew nut cultivation, in particular.
- To know the constraints and seek suggestions of the cashew nut growers about organic cashew nut cultivation.

## METHODOLOGY

The study was conducted in north and south Goa districts of the Goa state, that had an area of 40,586 ha. and 15,146 ha., respectively under cultivation of cashewnut. A farmer having 40 bearing trees in the form of contiguous orchard of organic cashewnut was considered as a respondent. List of such organic cashewnut growers was obtained by contacting Assistant Director of Agriculture, Zonal Agriculture Officers and Registered Co-operative Societies of organic cashewnut growers. From this list, ten organic cashewnut growers were selected from each village. Thus, the sample was consisted of 200 organic cashewnut growers. Extent of use of organic cashewnut cultivation practices' was the dependent variable for the study. It was operationalised as "the level of use of organic cashew nut cultivation practices, either recommended by the research institutes, certifying agencies or progressive farmers or being followed traditionally."

*Standardization of scale to measure extent of use of organic cashewnut cultivation practices :*

*Item collection :* The first step in the construction of the scale was collection of items specifying organic

cashew nut cultivation practices with respect to thirteen selected aspects of organic cashew nut cultivation. A battery of 89 items was drafted. These items were edited, keeping in view that an item should be suitable, observable, easily scorable, clear and capable of indicating the use of organic cashew nut cultivation practices.

*Relevancy test :* From the data so gathered, relevancy percentage, relevancy weightage and mean relevancy score, were worked out for all the 86 items, individually.

Using these three criteria, the items were screened for their relevancy. Accordingly, items having relevancy percentage of more than 66, relevancy weightage of more than 0.66 and mean relevancy score of more than 2 were considered for final selection. Thus, 68 items were finally selected for the study by this process. The major dimensions along with number of items identified and retained under each of them are given below.

Standardization of scale to measure extent of use of organic cashewnut cultivation practices

S. N.	Particulars	Total number of items identified	Total number of items retained
1.	Selection of site	4	3
2.	Selection of varieties	3	2
3.	Planting material/grafts	5	5
4.	Planting	10	9
5.	After care, training and pruning	7	7
6.	Soil and water conservation	4	4
7.	Nutrient management	5	4
8.	Organic manure used for full grown trees	9	9
9.	Fruit set improvement	3	3
10.	Weed management	3	3
11.	Pest/diseases	15	4
12.	Pest/diseases specific control measures	15	12
13.	Cropping system	3	3
	Total	86	68

*Independent variables:* The personal, socio-economic and psychological characteristics of the cashewnut growers were considered as the independent variables in the present study. Accordingly, the characteristics namely age, education, size of land holding, farming experience, annual income, major occupation, area under cashewnut cultivation, number of cashewnut trees, age of orchards, cashewnut yield, information seeking behavior, infrastructure facilities, market orientation, risk orientation and economic motivation were studied.

S.N.	Variable	Measurement procedure
1	Age	Chronological age in completed years
2	Education	The formal education successfully completed by respondent.
3	Size of land holding	The total land owned by the respondent in ha.
4	Farming experience	The number of years actually spend by the respondent in farming
5	Annual income	Total income of respondent from all the source in rupees
6	Major occupation	An occupation from which respondents get the maximum amount of their annual income was considered as their major occupation. Procedure followed by Jadhav (1999)
7	Area under cashew cultivation	Total land brought by the respondent under cashew nut cultivation and expressed in ha.
8	Number of cashewnut trees	Total number of organic cashew trees owned by the respondents.

#### Other Aspects :

- Training needs with reference to organic cashewnut cultivation practices
- Constraints in organic cashewnut cultivation practices
- Tools and techniques of data collection
- Construction of interview schedule
- Collection of data
- Statistical analysis
- Correlation analysis
- Regression analysis

## RESULTS AND DISCUSSION

The findings of the present investigation in line with the objectives are presented as follows:

#### *Personal, socio-economic and psychological characteristics of the cashewnut growers :*

The data in respect of the selected personal, socio-economic and psychological characteristics of the cashewnut growers are presented and discussed in this part.

**Age :** The data regarding age of the respondents are presented in Table 1.

Table 1. Distribution of respondents according to their age.

S. No.	Age (Years)	Respondents (N=200)	
		Number	Percentage
1.	Young (up to 39)	39	19.50
2.	Middle (40 to 56)	115	57.50
3.	Old (57 and above)	46	23.00
	Mean: 48 years      Total	200	100.00

From the data in Table 1 it can be inferred that majority of the respondents (57.50 per cent) were 'middle' age while 23.00 per cent were 'old' and 19.50 per cent were 'young'. The average age of the respondents was 48 years i.e. middle age.

#### Education

S. No.	Education (std)	Respondents (N=200)	
		Number	Percentage
1.	Pre-primary(up to 4th )	16	8.00
2.	Primary(5th to 7th )	39	19.50
3.	Secondary(8th to 10th )	85	42.50
4.	Higher secondary(11th to 12 th)	48	24.00
5.	College	12	6.00
	Mean(std.) 7              Total	200	100.00

The educational level of the respondents observed from the table showed that 42.50 per cent of the cashewnut growers had studied up to 'secondary' level, followed by 'higher secondary' (24.00 per cent) and 'primary' (19.50 per cent), while 8.50 per cent and 6.50 per cent were studied up to 'pre-primary' and 'college' level, respectively.

#### Land Holding

S. No.	Land holding(ha)	Respondents (N=200)	
		Number	Percentage
1.	Small (upto 2.00)	4	2.00
2.	Semi medium (2.01 to 4.00)	93	46.50
3.	Medium(4.01 to 10.00)	103	51.50
	Mean (ha): 2.74              Total	200	100.00

The majority of the respondents (51.50 per cent) were 'medium' farmers and 46.50 per cent of the respondents were belonging to 'semi-medium' category. Only 2.00 per cent of the cashewnut growers were found to have 'small' (upto 2 ha) land holding. The average land holding of the cashewnut growers was 2.74ha

**Farming experience :** The data regarding number of years actually spent by the respondents in farming is given table

The majority (64.00 per cent) of the respondents belonged to 'medium' experience category (16 to 31 years), while 22.00 per cent of the respondents had 'low'

experience (upto 15 years) and 14.00 per cent had 'high' (32 years and above) farming experience. The average farming experience of the cashewnut growers was 23 years.

**Distribution of the respondents according to their farming experience**

S. No.	Farming experience (years)	Respondents (N=150)	
		Number	Percentage
1.	Low (up to 15)	44	22.00
2.	Medium (16 to 31)	128	64.00
3.	High (32 and above)	28	14.00
	Mean (Years): 23.4      Total	200	100.00

**Knowledge level**

The data in respect of knowledge of the respondents about organic cashewnut cultivation practices are presented in Table 16.

**Distribution of the respondents according to their knowledge level about organic cashewnut cultivation practices.**

S. No.	Knowledge level	Respondents (N=200)	
		Number	Percentage
1.	Low (up to 32)	24	12.00
2.	Medium (33 to 48)	143	71.50
3.	High (49 and above)	33	16.50
	Mean (score): 40.23      Total	200	100.00

The level of knowledge of the respondents about organic cashew cultivation, revealed that 71.50 per cent of the respondents had 'medium' knowledge, while 16.50 per cent and 12.00 per cent of the respondents had 'high' and 'low' knowledge level about organic cashewnut cultivation practices respectively.

**Extent of use of organic cashewnut cultivation practices :**

**Overall extent of use of organic cashewnut cultivation practices :**

The data pertaining to overall extent of use of organic cashewnut cultivation practices is presented in the table:

**Distribution of the respondents according to knowledge and use of organic practices for soil and water conservation in cashewnut cultivation**

S. No.	Practices	Cashewnut growers (N=200)			
		Knowledge	Extent of use		
			Full	Partial	No
1.	In slopy area, terracing be taken up around each plant during second year and soil be spread around plant basin.	121(60.50)	21(10.50)	100(50.00)	79(39.50)
2.	On level land, square, circular or staggered trench of 0.3 m depth should be dug and soil be spread around plant basin.	112(56.00)	46(23.00)	66(33.00)	88(44.00)
3.	Trenches of 50cm x 50cm x 1.20m be dug out in between rows across the slope.	112(56.00)	40(20.00)	60(30.00)	100(50.00)
4.	Soil around the plant be mulched with organic matter to prevent	138(69.50)	60(30.00)	78(39.00)	62(31.00)

**Distribution of the respondents according to overall extent of use of organic cashewnut cultivation practices**

S. No.	Extent of use (score)	Respondents (N=200)	
		Number	Percentage
1.	Low (up to 28)	34	17.00
2.	Medium (29 to 45)	131	65.50
3.	High (46 and above)	35	17.50
	Mean : 37      Total	200	100.00

The data with respect to overall extent of use of organic cashewnut cultivation practices revealed that 65.50 per cent of the respondents were in the category of 'medium' extent of use, while 17.50 per cent and 17.00 per cent of the respondents were found in 'high' and 'low' extent of use categories, respectively.

**Soil and water conservation**

The observations regarding knowledge and use of organic practices for soil and water conservation by the organic cashewnut growers are shown in Table 18.6

It is revealed from Table 18.6 that majority (69.00 per cent) of the organic cashewnut growers had knowledge about, 'soil around the plant be mulched with organic matter to prevent erosion and conserve soil moisture' and it was followed by 30.00 per cent growers fully and 39.00 per cent growers partially, while 60.50 per cent of the organic cashewnut growers were very well acquainted with the practice, 'in slopy area, terracing be taken up around each plant during second year and soil be spread around plant basin', with partial adoption by 50.00 per cent respondents.

The practices namely on level land, square, circular or staggered trench of 0.3 m depth should be dug and soil be spread around plant basin' and 'trenches of 50cm x 50cm x 1.20m be dug out in between rows across the slope' were known to 56.00 per cent respondents but their extent of use was not satisfactory as only less than one-fourth of the respondents had adopted those fully.

### Nutrient Management

The data with respect to organic nutrient management practices known to and used by the organic cashewnut growers are presented in the table.

It is observed from the table that majority of the organic cashewnut growers had knowledge about three practices namely, 'leguminous crops like cow-pea, horse

gram be grown for nutrient availability' (76.00 per cent), cashew biomass wastes like leaf litter, pruning wastes, cashew apples and /or apple residues after extracting juice, be used for preparation of vermicompost and compost', (68.00 per cent) and 'green manures be grown along with trenches' (60.00 per cent). Due to low cost involved and easy availability, their extent of use was also at satisfactory level.

#### Distribution of the respondents according to knowledge and use of organic practices for nutrient management in cashewnut cultivation.

S. No.	Practices	Cashewnut growers (N=200)			
		Knowledge	Extent of use		
			Full	Partial	No
1.	Green manures be grown along with trenches.	120(60.00)	38(19.00)	82(41.00)	80(40.00)
2.	Cashew biomass wastes like leaf litter, pruning wastes, cashew apples, and/or apple residues after extracting juice, be used for preparation of vermicompost and compost.	136(68.00)	62(31.00)	74(37.00)	64(32.00)
3.	Giripushpa ( <i>Glyricidia maculata</i> ) and Karanj ( <i>pongamia</i> ) be grown in the interspace between two rows or along the border.	80(40.00)	18(9.00)	62(31.00)	120(60.00)
4.	Leguminous crops like cow-pea, horse gram be grown for nutrient availability.	152(76.00)	60(30.00)	80(40.00)	60(30.00)

(Figures in parentheses indicate percentages)

### Use of manures

The data pertaining to knowledge and use of organic practices for use of manures by the respondents in organic cashewnut cultivation are given in the following table :

S. No.	Practices	Cashewnut growers (N=200)			
		Knowledge	Extent of use		
			Full	Partial	No
1.	Poultry manure (15 to 20 Kg.)	130(65.00)	51(25.50)	79(39.50)	70(35.00)
2.	Farm Yard Manure (50 to 60 Kg.)	137(68.50)	54(27.00)	83(41.50)	63(31.50)
3.	Vermicompost (30 Kg.)	143(71.50)	50(25.00)	80(40.00)	70(35.00)
4.	Glyricidia (dry leaves) (12 to 15 Kg)	102(51.00)	30(15.00)	72(36.00)	98(49.00)
5.	Biogas slurry (27 to 30 Kg.)	118(59.00)	49(24.50)	69(34.50)	82(41.00)
6.	Castor cake (8 to 10 Kg.)	114(57.00)	34(17.00)	70(35.00)	96(48.00)
7.	Ground nut cake (6 to 7 Kg.)	108(54.00)	43(21.50)	65(32.50)	92(46.00)
8.	Cashew waste compost (20 to 30 Kg.)	122(61.00)	32(16.00)	90(45.00)	78(39.00)
9.	Neem cake(9 to 10 Kg.)	105(52.50)	33(16.50)	72(36.00)	95(47.50)

(Figures in parentheses indicate percentages)

It is noticed that majority of the respondents had knowledge about 'use of 30 kg vermin compost (71.50 per cent), use of 50 to 60 kg. FYM (68.50 per cent) and 'use of 15 to 20 kg. poultry manure' (65.00 per cent). Obviously their extent of use was also noticed more than 65.00 per cent at full or partial level. The use of 20 to 30 kg. of cashew waste compost 'was known to 61.00 per cent organic cashewnut growers with full and partial adoption by 16.00 per cent and 45.00 per cent

respondents, respectively. The remaining four manures namely, 'biogas slurry', 'castor cake', 'groundnut cake' and 'glyricidia' were known to more than fifty per cent respondents, but their extent of use was noticed mostly at partial level.

The practices related to selection of varieties, aftercare, training and pruning, soil and water conservation, use of manures, fruit set improvement and general pest and disease management were used by

50.00 to 60.00 per cent cashew nut growers either fully or partially

It was observed that organic cashew nut cultivation practices with respect to selection of site, selection of planting material, initial cultivation, nutrient management and specific pest and disease management were used by 40.00 to 45.00 per cent respondents either fully or partially.

**Association between the personal, socio-economic and psychological characteristics of the cashewnut growers and the extent of use of organic cashewnut cultivation practices by them**

S.N.	Characteristic	Variable code	r value
1	Age	X1	-0.0818NS
2	Education	X2	0.1392*
3	Size of land holding	X3	-0.0398NS
4	Farming experience	X4	-0.0605NS
5	Annual income	X5	-0.0671NS
6	Major occupation	X6	-0.0032NS
7	Area under cashewnut cultivation	X7	-0.0637NS
8	Number of cashewnut trees	X8	-0.2605**
9	Age of orchard	X <sub>9</sub>	-0.0959NS
10	Cashewnut yield	X10	-0.2399**
11	Information seeking behavior	X11	0.0183 NS
12	Infrastructure facilities	X12	0.0165NS
13	Risk orientation	X13	0.1597*
14	Economic motivation	X14	-0.1714*
15	Market orientation	X15	0.0429NS
16	Knowledge	X16	0.2594**

NS= Non significant, \*\* = Significant 0.01 level, \* = Significant 0.05 level

*Size of land holding and extent of use of organic cashewnut cultivation practices.*

It is seen from Table that relationship between size of land holding (X3) and extent of use of organic cashewnut cultivation practices (Y) was negative and non- significant. This indicated that the size of land holding did not play a noteworthy role in deciding the extent of use of organic cashewnut cultivation practices.

*Farming experience and extent of use of organic cashewnut cultivation practices.*

It is revealed from Table 19 that the farming experience ( X4) of the cashewnut growers and extent of use of organic cashewnut cultivation practices(Y) by them had negative and non-significant correlation. It proved that the use of organic cashewnut cultivation practices was least influenced by the experience in farming of the cashewnut growers.

*Knowledge and extent of use of organic cashewnut cultivation practices*

Knowledge is the prerequisite for adoption. Therefore, high level of knowledge on organic farming practices would motivate the farmers to take positive decisions on adoption. In this study, significant and positive relationship between knowledge (X16) and extent of use of organic cashewnut cultivation practices (Y) was established which also proves this trend.

*Distribution of the respondents according to their training needs for various practices under preparatory stage of cashewnut cultivation.*

S.N.	Training need area	Respondents (N=200)			
		Most needed	Needed	Not needed	Score
1.	More effective organic cashewnut cultivation package of practices	77(38.50)	93(46.50)	30(15.00)	247
2.	Low cost and time saving methods of converting conventional orchards to organic	90(45.00)	65(32.50)	45(22.50)	245
3.	Location specific cropping system	68(34.00)	101(50.50)	31(15.50)	237
4.	Nursery management practices for organic cashewnut grafts	81(41.00)	72(35.00)	47(23.50)	234
5.	Vermicompost and other compost methods	78(39.00)	74(37.00)	68(34.00)	230

It is seen from the table that more 'effective organic cashewnut cultivation package of practices' (247 score) emerged out as an important training need area for organic cashewnut cultivation, followed by 'low cost and time saving methods of converting conventional orchards to organic' (245 score) under preparatory stage. Further, the cashewnut growers needed training in 'location specific cropping system' (237 score), 'nursery management practices for organic cashewnut

grafts' (234 score) and 'vermicompost and other compost methods' (230 score). Thus, it seems that, by and large, majority of the cashewnut growers need more training for organic cashewnut cultivation than that of improved cashewnut cultivation. The training areas suggested by the large number of growers indicated their interest in organic cashewnut cultivation in the study area. The findings of the present study are similar to the findings of Kulkarni and Raut (1998)

**Constraints:**

## Technological constraints in organic cashewnut cultivation

S. N.	Constraints	Respondents (N=200)	
		Number	Percentage
1	Lack of ready package for organic cashewnut cultivation	168	84.00
2	Extensive prevalence of pest and diseases	136	68.00
3	Inadequate information about organic cashewnut cultivation practices	78	39.00
4	Lack of knowledge	75	37.50
5	Complex technology	70	35.00

It is clear from Table 26 that large majority of the cashewnut growers reported 'lack of ready package for organic cashewnut cultivation' (84.00 per cent) and 'extensive prevalence of pest and diseases' (68.00 per cent) as the important technological constraints in adoption of organic cashewnut cultivation practices.

'Inadequate information about organic cashewnut cultivation practices' (39.00 per cent), 'lack of knowledge' (37.50 per cent) and 'complex technology' (35.00 per cent) were the other constraints.

*Suggestions made by the cashewnut growers for improving extent of use of organic cashewnut cultivation practices :*

S. N.	Suggestions	Respondents(N=200)	
		Number	Percentage
1	Supportive role of the government in marketing, subsidy and loan	168	84.00
2	Assuring availability of quality organic manure with reasonable prices	166	83.00
3	Initial incentives are necessary for converting conventional orchards to organic	164	82.00
4	Training programmes on organic cashewnut cultivation	160	80.00
5	Promotion of biofertilizers and biopesticides for cashewnut	96	48.00
6	Financial support through credit facilities	138	69.00
7	Development of model organic cashewnut plots with institutional support	150	75.00
8	Promoting cropping system approach with inclusion of crops animal husbandry and fisheries as per locality and facilities	130	65.00

The suggestions namely 'supportive role of the government in marketing, subsidy and loan' (84.00 per cent), 'assuring availability of quality organic material with reasonable prices' (83.00 per cent), 'initial incentives are necessary for converting conventional orchards to organic' (82.00 per cent) and 'training programmes on organic cashewnut cultivation' (80.00 per cent) were made by large number of the respondents in order to increase the extent of use of organic cashewnut cultivation practices

Development of model organic cashewnut plots with institutional support' (75.00 per cent), 'financial support through credit facilities' (69.00 per cent), 'special encouragement for organic products by way of adequate premium price incentives' (68.00 per cent) and 'promoting cropping system approach with inclusion of crops, animal husbandry and fisheries as per locality and facilities' (65.00 per cent) were the suggestions given by majority of the cashewnut growers.

**CONCLUSION**

The profile of the organic cashewnut growers in terms of selected personal, socio-economic and psychological characteristics will help extension worker while planning and executing the programmes for development of organic cashewnut cultivation. The study made it clear that the organic cashewnut growers had medium knowledge level, This implies that the extension agencies may guide the organic cashewnut growers for improving their knowledge level. There is need to convince the cashew growers about utility of organic practices through demonstration and training. It was observed that the extent of use of organic cashewnut cultivation practices recommended for soil and water conservation, application of biofertilizers, application of farm yard manure and poultry manure, in situ vermi-composting and use of botanical pesticides was deplorably low. Obviously, these should become the areas of concern for both the research and development agencies. The study has established that some personal, socio-economic and psychological correlates do influence the adoption behaviour of organic cashewnut growers. The study has identified the specific topics on which the organic cashewnut growers need training. Hence, it is essential to provide sufficient opportunities to the growers for indepth training on organic cashewnut cultivation. The constraint analysis revealed that the organic cashewnut growers were



facing mostly the constraints relating to technical knowledge, high cost and non availability of organic inputs, inadequate extension support and infrastructural facilities. The findings in respect of suggestions of the cashewnut growers revealed that the supportive role of the government in marketing, subsidy, loan, input supply and incentives for organic cashewnut cultivation and intensive training programmes needs to be strengthened, which would enable the growers to take up organic cashewnut cultivation at full extent. Organic farming in cashewnut is a viable alternative in the present scenario, as cashewnut orchards are multi resource units in Goa. Cashewnut itself produces huge amount of biomass within the system. So, without depending on out-farm

inputs, it can be easily utilized for the organic cultivation of cashewnut. It will protect the soil, environment and natural predators and, at the same time, will increase the quality of product and health security. The export potential of organic cashewnut is a short-term reward, but restoration of environmental health is the long term reward. This is important for all aspects of life of the people. Strengthening the research extension linkage on organic farming in cashewnut, facilitation of input supply, development of market channels, product diversification strengthening the organic tender apple production as beverage for international market are needed to facilitate the successful adoption of organic farming practices by the cashewnut growers.

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