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A Study of Cashew Production, Marketing and Export Strategies

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Abstract – Cash inflow and outflow of cashew industries in study area Suggestions have been presented in form of strategy for development of cashew production in India as a source of income of Karnataka's peasantry, described in the following manner. India ranks foremost in the world in the production of raw cashew nuts as well as in the export of cashew kernels, with the requirements of the processing sector, India's dependence on imported nuts particularly from the East African countries to feed its processing sector continued for log. With decline in the production and collection of raw cashew nuts coupled with creation of processing capacities in the East African countries India's imports of raw nuts reached critical level and the processing industry came under severe pressure for want of the main raw material. At the same time, Indian Kernels faced increasing competition in major consuming markets such as USA from supplies from countries such as Brazil, China and Mozambique, as also from other edible nuts. The situation called for a pragmatic approach to solve the raw nut shortage problem and to launch a new plan of action for increasing cashew production and productivity in the country. Concentrated efforts towards stepping up raw nut production commenced in the country only during the Fourth Five year plan period (1970-75) and were continued during the Fifth and Sixth plans. These were supplemented by the multi-State Cashew project implemented with financial assistance from the World Bank, in four cashew producing states with effect from September 1, 1980.

Keywords: Cash Inflow, Cashew Industries, Development, Cashew Production, India, Production, Marketing.

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INTRODUCTION

The analysis looked at cashew from an enterprise perspective asking the question of profitability for smallholder farms. Despite the partial nature of the crop budgeting method used, important insights 228 were obtained. Farms across categories held a crop portfolio which included the most commonly grown crops in the study area. The financial analysis show that differences in profitability across enterprises and/or farm categories were driven by differences in crop productivity, but also by differences in labor applied per unit of land. For instance, it was shown that farms in the low LAE category allocated significant labor resources on fields where manioc and peanuts were the most important crops compared to farms in other L-AE categories. This apparent crop orientation was a result of relative scarcity of land in the low farm category which forces farms to more diversification among food crops, rather than concentrating more on cashew as compared to farms in other categories. This finding provides insights about low smallholder farm's risk attitude which result from land constraints and the need to produce sufficient food for the households own consumption. The low levels of labor use observed in sole cashew cropping across smallholder cashew farm categories also provide insights about perceived effects of the current economic conditions on farmer's incentives to take care of existing cashew trees. It seems that the cost of dropping cashew production from the farms crop portfolio by clearing the fields from potential uneconomic cashew trees to allow profitable crops cultivation is high. This explains, in part, farmer's reluctance to get rid of unproductive cashew trees present on much of the household's needed land.

COST-BENEFIT ANALYSIS:

The result of the study on the cost benefit analysis in cashew is presented in this chapter. The study focused on the investment opportunity and resource productivity in cashew cultivation in Uttara Kannada district of Karnataka and considering the importance of this three crop in Indian export basket the export performance of cashew was also analysed.

The cost benefit analysis relates 144 cashew cultivators and their results are presented in the following manners.

a. Socio-economic characteristics of the respondents.

b. Costs in cashew cultivation.

c. Returns from cashew cultivation.

d. Assessment of investment made on cashew gardens.

e. Resource use efficiency in cashew plantation.

f. Optimum replacement age in cashew gardens.

g. Export performance of cashew kernels.

The socio economic characteristics of the sample respondents are presented in the table 1.

Table 1: socio-economic characteristics of respondents

Sl. No.	Particulars	Type of Cashew Growers		
		Marginal	Small	Large
1.	No. Of respondents	28	20	10
2.	Average age of the respondents (Yrs)	53	45	44
3.	Average education Level of the respondents (Standard)	5	8	10
4.	Average size of holding	1	2	5
5.	Average family size (No. Of Children)	4	3	2

The respondents were classified as marginal, small and large farmers. In all there were 144 respondents comprising 48 respondents from each category of cashew growers respectively. The average age of the respondents in general ranged between 44-53 years. The education level of the farmers ranged from five years of schooling t matriculation level. Generally the large farmers were little better in education level then the small and marginal farmers. The family size of the respondents varied between two 2-4 children. Usually with the small family norm noticed among the large farmers.

The average sizes of the holding of the farmers were also recorded. It was 1, 2 and 5 actress per marginal, small and large farmers, respectively. The cashew growers (respondents) viz. Marginal, small and large was differentiated and was separately examined to know their investment cost and returns pattern.

COSTS CASHEW CULTIVATION:

Cashew is a perennial crop with facility of economic returns only from fifth year of plantation and till that time the input used for the resource committed for nurshing the plants and to the period of bearing. The cost incurred in cashew cultivation was studied under two to subheadings i.e. establishment cost and other is maintenance cost. The establishment costs included expenses on farming layouts, digging and filling pits, manure and fertilizer application, planting reading application of plant protection measures, miscellaneous costs (labour costs). The establishment cost also included expenditure incurred on input purchase (material costs) such as manure, fertilizer, seedling and plant protection chemicals. The establishment cost were calculated for 5 years the yielding age of the tree.

Similarly maintenance cost was studied under and miscellaneous divisions-labour, material and miscellaneous. The labour cost included wages, wages paid for manure and fertilizer application, weeding, clearing of dry leaves and picking the nuts. The miscellaneous cost included such items as land revenue, depreciation, interest on working capital, apportioned establishment costs. The establishment costs were calculated for a period of 5 years the gestation period, that is the cost included in planting and maintenance of 5th year.

The details of various costs for marginal, small and large farmers is presented in Table 2 and 3.

Table 2 : Cost of establishment of an acre of cashew plantation of Marginal, Small and Large farmers.

I. Labour Cost

(Cost in Rupees)

Sl. No.	Cost Items	Establishment Years					Total
		1	2	3	4	5	
1.	Layout	80	-	-	-	-	80
2.	Digging & Filling pits	300	-	-	-	-	300
3.	Manure and fertilizer application.	75	70	60	50	50	305
4.	Planting and gap filling	60	20	10	0	0	90
5.	Weeding	150	175	220	275	300	1120
6.	Plant Protection	-	20	25	50	30	125
7.	Miscellaneous	60	-	-	-	-	60
	Total	725	285	315	375	380	2080 (60%)

Table 3: Continued

II. Material cost:

1.	F.Y.M.	Marginal	75	100	150	175	200	700
		Small	80	98	100	100	115	485
		Large	50	75	65	75	100	365
2.		Marginal	20	30	35	40	55	180
		Small	25	30	40	35	40	170
		Large	50	60	75	80	100	365
3.		Marginal	400	51	15	0	0	466
		Small	400	50	30	0	0	480
		Large	500	60	40	0	0	600
4.		Marginal	-	-	10	20	10	40
		Small	-	-	10	20	10	40
		Large	-	-	30	50	100	180
II.		Marginal	495	181	210	235	265	1386 (40)
		Small	505	170	180	155	165	1170 (36)
		Large	600	195	210	205	300	1510 (42)
I + II = Grand Total		Marginal	1220 (35.1)	466 (13.4)	325 (15.1)	610 (17.5)	645 (18.6)	3466 (100)
		Small	1230 (37.7)	455 (13.9)	495 (15.2)	530 (16.2)	545 (16.7)	3255 (100)
		Large	1325 (36.9)	480 (13.3)	525 (14.6)	580 (16.1)	680 (18.9)	3590 (100)

Table 7: Maintenance cost in cashew plantations per acre (in Rs)*

S. N.	Items	Marginal Farmer	% of total	Small Farmer	% to Total	Large Farmer	% to Total
	I. Labour cost						
1.	F.Y.M. Fertilizer application	58	3.3	62.	3.18	65	2.92
2.	Plant Protection measures	40	2.6	46	2.36	38	1.71
3.	Clearing dry leaves	150	9.9	450	23.13	575	25.91
4.	Weeding	190	12.5	200	10.28	205	9.24
5.	Harvesting	602	39.7	578	29.70	600	27.04
	Sub Total	1040	68.7	1336	68.6	1483	66.84
	II. Material Cost						
1.	F.Y.M.	50	3.3	75	3.8	105	4.73
2.	Plant Protection measures	40	2.6	70	3.59	100	4.50
3.	Fertilizer	200	13.2	250	12.85	300	13.52
	Sub Total	290	19.1	395	20.30	505	22.76
	III. Miscellaneous						
1.	Land Revenue	1.50	0.09	1.50	0.07	1.50	0.06
2.	Depreciation	2	0.13	3	0.15	4	0.08
3.	Distributed establishment	80	5.28	60	3.08	65	2.92
4.	Interest on working capital	100	6.60	150	7.7	160	7.21
	Sub Total	183.5	12.1	214.5	11.02	230.5	10.38
	I + II + III Total :	1513.5	100.0	1945.5	100.0	2218.5	100.0

* Annual Average Cost.

It may be seen from these tables that a marginal farmer incurred Rs. 3466 establishment cost which country booted Rs. 2080 and Rs. 1386 as labour and material cost. The small farmers spent Rs. 2080 towards labour cost and include Rs. 1175 as material cost for establishment of cashew gardens. Similarly the large farmers spent Rs. 2080 towards labour cost and Rs. 1510 on material cost. Thus, it may be seen that all categories of farmers marginal, small and large farmers the labour cost for the establishment period (5 years), accounted for 60 per cent of the total cost.

Of the total establishment period of 5 years, the first year are presents The real establishment year and the later years that is 2nd to 5th year the cost is incurred on maintenance. Thus, it may be seen that the cost incurred on first year of establishment alone accounted for 35. 37 and 36 per cent in case of marginal small and large farmers respectively. The cost incurred on the fifth year accounted for highest cost next only to the first year, the farmers spend Rs. 265, Rs. 165, Rs. 300 (marginal, small and large farmers respectively) as material cost in the fifth year. In other words, the farmers, marginal, small and large spent 18, 18 and 18 per cent of material cost respectively in the fifth year of establishment. The establishment cost, labour and material cost from the 2nd and 5th year varied between 13-18 %, irrespective of category of farmers. The farmers incurred slightly more cost in the fifth your year next only to the first year because they applied more inputs by way of farm yard manure and fertilizers. The large farmers spent Rs. 100 on fertilizer which is nearly 50 % more than marginal and small farmers, the marginal farmers spend Rs. 200 towards farmyard manure which is nearly 50 % more than what small and large farmers spent on farmyard manure.

A comparison of establishment cost between marginal small and large farmer revealed that the establishment cost of large farmers (Rs. 3590 for 5 years) was higher by Rs. 124 in case of of marginal farmers and Rs. 335 more than small farmers, in other words, large farmers spent 1.2 and 3.3 % more than marginal and small farmers respectively on establishment inclusive of both labour and material cost.

MAINTENANCE COST:

The maintenance cost referred to the maintenance cost of the cashew garden in any one particular year after the fifth year of establishment of the cashew plantation and the maintenance cost almost stabilises because it includes depreciation cost, land revenue, interest on working capital and apportioned establishment cost as these cost do not vary, however there is room for variation in the maintenance cost on account of use of fertilizer and farmyard manure. The annual average maintenance cost incurred by marginal, small and large farmers for an acre of cashew plantation is presented.

The maintenance cost is classified as labour cost material cost and miscellaneous cost which included land revenue, depreciation, distributed establishment cost and interest on working capital.

The labour cost included wages paid for F.Y.M. fertilizer and plant protection chemical applications as well the wages paid for operations such as clearing the dry leaves, weeding and harvesting (picking of nuts).

RETURNS FROM CASHEW CULTIVATION:

The return from cashew tree is mainly through the harvest of raw cashew nut although cashew Apple is consumed as a fruit, it has no market in view of its high parish ability and unremunerated prices. It is also not popular among the consumers as a fruit. Thus, sale of the raw nuts is the only tangible returns. The yield and returns from the sale of raw nuts is presented.

Table 4: Returns from cashew/acre.

ITEMS		Farmers		
		Marginal	Small	Large
1.	Price per Kg. (Rs.)	24	24	24
2.	Yield (Kg/Acre)	321	310	291
3.	Gross Returns (Rs.)	7704	7440	6984
4.	Annual Maintenance Cost (Rs.)	1513	1945	2228
5.	Net returns (Rs.)	6191	5495	4766

The yield of nuts per acre was better in case of marginal farmers (321 kgs) than in case of small farmers (310 kgs) while it was 291 kgs in case of large farmers. The sale of nuts yielded a gross return of Rs. 7704, Rs. 7440 and Rs. 6984 in case of marginal, small and large farmers respectively. The net returns to them worked out to Rs. 8191, Rs. 5495 and Rs. 4766 respectively.

The average gross return (net return) was higher in case of marginal farmers by Rs. 264 (696) than small farmers and Rs. 720 (1425) more than large farmers.

ASSESSMENT OF INVESTMENT ON CASHEW GARDENS:

The feasibility of investment on cashew gardens was studied using three methods namely Net Present Worth (NPW). Benefit – Cost Ratio (B.C. ratio) and Internal Rate of Returns (IRR). The analysis was done per acre at a discount rate of 16.5 % for all categories of farmers – marginal, small and large growers. The results are presented in Table 5.

Table 6: Evaluation of Investment on Cashew Gardens (Per acre).

S. N.	Measures	Farmers		
		Marginal	Small	Large
1.	B.C. Ratio	2.115	1.843	1.678
2.	Nett Present Worth	7580.14	6480.33	5671.41
3.	Internal Rate of Return	36.04	32.48	27.14
4.	Economic Life (Yrs.)	40	40	40

NET PRESENT WORTH (NPW):

The Net Present Worth of investment gives the sum of difference between the present value of the series of income and costs for the entire economic period of the cashew gardens (40 years). The net present worth was Rs. 7580.14 per acre in case of marginal farmers, Rs. 6480.33 in case of small farmers and Rs. 5671.41 in case of large farmers, the net present worth was positive, hence, the investment in cashew plantation is economically feasible and financially sound. However, the marginal farmers had better Net Worth than small farmers by Rs. 1100 and Rs. 1909 more than large farmers.

BENEFIT – COST RATIO (B.C. RATIO):

The benefit cost ratio elaborates the profitability of each of the alternative investment choices. The return per rupee of investment is indicated by the benefit cost ratio. The B.C., ratio was 2.115, 1.843 and 1.678 in case of marginal, small and large farmers. Thus, the marginal farmers cashew plantations were more profitable than the small farmers and so the small farmers gardens were more profitable than the large farmers. It may be noted that the B.C. ratio more than unity in all categories of farmers and hence investment in cashew plantation was feasible and financially sound.

INTERNAL RATE OF RETURNS (IRR):

The internal rate of returns is more appealing than the other methods of discounted cash flow analysis. It measures the returns that can be obtained by investing the return in cashew plantations. This method gives scope for reinvestment opportunities. The internal rate of returns depends on the extent of net returns obtained in each year over the economic period an more so in the initial years of the economic life period.

The study indicated that the internal rate of retunes was 36.04.32.48 and 27.14 % respectively for marginal, small and large farmers. The marginal farmers had higher internal rate of returns than small and large farmers. However the IRR is greater than 18.5 %, which is the opportunity cost of capital as indicated by the World Bank. Thus, the investment in all the categories of farmers was found profitable. Hence, as per project evaluation criteria the investment on cashew gardens was found to be economically viable.

PRODUCTIVITY OF RESOURCES OF CASHEW CULTIVATION:

The resource use efficiency was studied through the conventional method of fitting of Cobb-Douglas type of production function. However, in the present study, a modified version was employed which incorporates a quadratic terms in the specification of age variable to capture the age, yield profile of the perennial crop. The mode used was able to explain the relationship to a moderate degree. The model includes the marginal factor cost (MFC) or the opportunity cost of the respective resource with the marginal value product (MVP). The results are presented in Table 7.

Table 7: Estimated per acre marginal value product (MVP) and marginal factor costs (MFC).

S. N.	Variables		M.V.P.	M.F.C.	MVP/MFC
1.	Area (acres)	X1	2421.46	1145.4	2.11*
2.	Labour (in Rs.)	X2	1.45	1	1.450
3.	Fertilizer (in Rs.)	X3	3.14	1	3.14*
4.	Plant protection chemicals	X4	11.56	1	11.560

OPTIMUM REPLACEMENT AGE IN CASHEW GARDEN:

In order to know the optimum replacement age in case of cashew gardens, the capital budgeting technique was used in the study. The results are presented in Table 8. The optimum age of replacement that maximizes the returns from cashew orchard over its economic life.

Table 8: Optimum replacement age of Cashew gardens

Year	Net	Discount	Cumulative	Annuity
0	--	--	-3187.13	-4172.20
1	-506.99	-440.87	-3628.00	-2255.57
2	-51.45	-38.90	-3666.90	-1493.27
3	391.51	257.42	-3409.48	-1333.16
4	-693.79	-396.68	-3806.15	-1176.37
5	276.01	-137.23	-3943.38	-1027.23
6	129.18	55.85	-3887.53	387.26
7	521.78	196.16	-3691.38	758.93
8	901.79	294.80	-3396.58	636.22
9	1268.21	360.79	-3035.79	524.90
10	1624.04	401.44	-2634.35	422.59
11	1966.28	422.64	-2211.71	328.85
12	2295.94	429.13	-1782.58	243.21
13	2613.00	424.69	-1357.90	165.18
14	2917.48	412.32	-945.57	-94.26
15	3209.37	394.41	-551.16	-29.95
16	3488.67	372.82	-178.35	28.22
17	3755.37	348.97	170.63	80.71
18	4009.49	323.91	494.61	127.99
19	4251.02	298.70	783.31	170.47
21	4690.31	249.52	1316.56	242.65
22	4900.07	226.39	1542.94	273.09
23	5091.24	204.54	1747.48	300.23
24	5269.82	184.10	1931.58	324.36
25	5435.81	165.13	2096.71	345.79
26	5589.22	147.64	2244.35	364.77
27	5730.03	131.62	2375.96	381.58
28	5858.26	117.01	2492.98	396.39
29	5973.89	103.76	2596.73	409.46
30	6076.94	91.78	2688.52	420.96
31	6167.39	81.00	2769.51	431.05
32	6245.76	71.32	2850.63	439.89
33	6310.54	62.67	2903.50	447.63
34	6363.23	54.95	2958.45	454.39
35	6403.33	48.08	3006.53	454.29
36	6430.84	41.99	3048.52	454.21
37	6445.75	36.60	3085.12	454.20
38	6448.09	31.83	3116.95	454.15
39	6437.83	27.64	3144.59	
40	6414.98	23.95	3168.54	

The standardized net incomes were computed as explained in the methodology employing 16.5 per cent as the discount rate which is the opportunity cost of capital. The highest annuity (standardised income) of 454.39 wa obtained for the 35th year, which indicate that the optimum age of replacement of cashew in Uttara Kannada would be around 35 year at the prevailing input and output price and opportunity cost of capital. The reason being an individual would be indifferent recurring a net accumulated income or an annuity which is the earnings from such accumulated income.

EXPORT PERFORMANCE:

Cashew is an important commodity in the export basket of India earning Rs. 1250 crores in 1994-95. Hence, analysis of world exports of cashew kernels which increased from 49,000 tonnes in 1962 to 102000 tonnes in 1972. Stagnated at around 94,000 tonnes in mid-seventies. A declining trend in the world exports of kernels was however witnessed in the eighties, with 50 % share in world trade. India continues to be the leading global exporter of cashew kernels. Other notable suppliers of cashew kernels to the world market are Brazil, Tanzania, Mozambique and Kenya of these countries exports from Brazil are growing faster. Principal buyers of kernels in the world are USA Canada, Japan, U.K., West Germany and Netherlands. Among these countries U.S.A. is the largest importer.

Notwithstanding higher prices in comparison to other nuts, cashew kernels command marked preference as salted nuts. While demand for slated cashew nut is relatively inelastic, its purchase for use in confectionery and bakery products fluctuates with the change in their prices. Whiter and large sized kernels carry premium price. Prices of cashew which continued to rise in the sixties and early seventies spared further in 1981 and then started declining in 1983. This reversal in the price trend is attributed to bumper crops of competing nuts, uncertainty in respect of timing and quality of purchase by common wealth of independent states (USSR) and complete absence of this country from the market in 1983. However, from 1984 onwards till the current year and price is ever increasing in successive years. Import of fresh cashew kernels is allowed duty free in all major importing countries. There are specific standards applicable to cashew in respect of health, labelling and consumer packing in individual importing markets. Most of the cashew growing countries suffer form such problems as lack of new plantations, ageing of existing tree and attack from pest and disease. Brazil is fast emerging as a major producer next only to India. With World Bank assisted multi state cashew project and other schemes. India is also trying to push up its production of cashew. Mozambique has new plantations which are yielding substantial raw nuts. Tanzania has initiated a national cashew programme to strengthen its production base for cashew nuts. Australia and Philippines are other countries which are taking some interest in the development of cashew production. All these efforts by various cashew producing countries in the world, is slow leading to competition among the exporting countries. India's success to retain and improve its position as a major supplier of Cashew to world markets depends largely on its ensuring regular supplying of acceptable product at reasonable prices Vis-a-Vis competing countries on the one hand and different edible nuts on the other hand. Since India is not likely to get enough supplies of raw nuts from Africa the major source of supply, in the future, India will have to depend mainly on its own production with in the country as many of the African countries are processing raw nuts for exports.

CONCLUSION

The cashew trees are an evergreen tropical fruit crop introduced in India by the Portuguese sailors nearly 400 years age. The cashew tree is widely known for its raw nut which is of economic importance as the cashew kernels fetches substantial foreign exchange by way exports of cashew kernels. The cashew industry employs nearly 3 lakh persons. Mounting imports of cashew kernels have plunged the cashew industry into a crisis even as it is struggling to stay afloat in the global market amid rising price of raw nuts and the threat of withdrawal of export incentives. The employers themselves assess the manpower requirement of the cashew factories as per the need-based technique. The employees are recruited both internally and externally. Internally they are recruited through Lay-off. Externally they are recruited directly at the factory gate and on the recommendations of present employees, relatives and friends. Locally available persons belonging to different caste, creed, religion, sex, are employed in the cashew industry.

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