Economics of Coconut Cultivation in Kasaragod District of Kerala-A Micro Analysis

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Introduction

The coconut sector plays a pivotal role in sustaining the agricultural economy of Kerala. In the recent past, the competitiveness of coconut in relation to other commercial crops of the State had declined and farmers called for Government intervention to ensure fair prices. One of the decisive factors to be considered for fixing support price and formulating related policies is the cost of production. Most of the earlier attempts on estimating the cost of production of coconut were based on either the bearing phase of the crop alone (Latha Bastine & Abdul Razak, 1991) or the experimental data from research stations (Das, 1984; CPCRI, 1985). However, for a representative and precise estimate, the data should be collected from a sufficciently large sample comprising of different growth stages of the crop. To meet this end, a pilot sample survey was carried out during 1995 in the Kasaragod district of Kerala and results are presented in the following.

Material and Methods

The Kasaragod district has two community development blocks. From each block one village was selected at random. The selected villages were Kunjathur from Manjeswar block and Kalanad from Kasaragod block. The selection of coconut holdings were made as follows: First ten survey sub-division numbers were selected at random by using the village records. Next, a cluster of five coconut gardens (with a minimum of 10 coconut palms) was formed in and around the selected survey points. Data on quantities of input and output of coconut cultivation from these holdings for the agricultural year 1994-95 were collected by personal interview using a pre-tested questionnaire during September-November, 1995. The interview schedule was prepared to seek information on general particulars, asset position, social contact and input-output data of coconut cultivation for different stages of the crop. The sample holdings were then post stratified according to operational holding size viz., 'marginal' (upto 0.2 ha), 'small' (0.21-1 ha) and 'big' (>1 ha) and also according to three growth stages viz., 'first'(1st year of planting), 'second' (pre bearing phase) and 'third' (bearing phase). Holdings with more than one growth stages were considered repeatedly.

To work out the cost of production, first the cost A_1 was estimated as per the guidelines of CACP (Directorate of Economics and Statistics, 1990). Since coconut is cultivated mainly by small and marginal farmers, the value of owned family labour is also added to the Cost A_1 to estimate the cost of cultivation. The A_1 costs for the prebearing years were added to obtain the establishment cost. On the basis of the economic life of the crop and using a discount rate of 14 per cent, the annuity value of the establishment cost along with its compound interest was arrived. Annuity value was then added to the annual maintenance cost of the bearing phase to obtain the cost of production at yearly basis. The annual income from usefructs was deducted from the yearly cost and divided by the number of nuts harvested per year, to arrive the cost of production per nut.

Results and Discussions

The selected villages were observed to be similar in terms of geographical, topographical, socio-

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economic, land holding and cultivation pattern of coconut. The data from the sample holdings of the two villages were therefore pooled together for analysis. The number of holdings considered for estimating quantities of input/output in different growth stages and holding size classes are shown in *Table 1*. The villages were having better irrigation facilities and 77 per cent of the gardens having bearing palms in the sample were irrigated subject to water availability. The land holding pattern based on the sample indicated that 62.5per cent were marginal, 31.2per cent small and 6.3per cent big. The average holding size was found to be 0.16, 0.38 and 1.2 ha respectively for marginal, small and big farms.

It was inferred from the farmers that irrigation is provided invariably during the first year of planting. Thereafter it is restricted according to the availability of water. Ground water forms the major source of irrigation and most of the farmers depend upon electricity as the source of energy. The average labour cost was Rs. 85 per man day and Rs. 3/- was charged by the climber/palm/harvest. The pre-bearing phase of the crop under irrigated situation is approximately 7 years and the economic life is taken as 60 years.

Cost of cultivation

The average cost of cultivation of coconut at different growth stages of the crop with respect to the three holding size classes and their weighted average for the region are shown in *Table 2* separately for rainfed and irrigated conditions. The estimates for the rainfed situation were only for categories that were represented by the sample. In all the stages, the cost of cultivation was found to be increased with the size of holdings. Comparison of cost of cultivation under irrigated conditions among different size of holdings indicates that big farmers, with adequate capital facilities use more of inputs like organic manures and chemical fertilizers and realize higher cost of cultivation. Among all the categories of sample farmers, the cost of cultivation was found to be maximum during the established phase of coconut followed by the first year of planting. Any financial assistance in the form of subsidy or low interest bank loans to the farmers at these stages will therefore have greater significance. This is also indicative of the requirement of raising income generating subsidiary crops during the juvenile phase of the crop.

It may be observed from *Table 2* that the total cost under rainfed was only half to that under irrigation; the difference is more (about one third) with regard to labour charges (including family labour). Beside less labour use, organic manure application was also less under rainfed cultivation. Chemical fertilizers were found to be not applied under rainfed farming as was reported by Latha Bastine & Abdul Razak (1991).

Among the cost components, labour accounted for about 60 to 70per cent of total cost in all the stages of coconut cultivation, followed by harvesting charges during the third stage and cost of planting materials in the first stage. During the first stage, operations such as levelling, pegmarking and bunding, planting and irrigation requires maximum share of labour, while in the second and third stages, basin opening and manuring and irrigation utilizes maximum share of labour. The average labour (including family labour) for the first stage under irrigated farming by the marginal, small and big farmers were estimated as 110,115 and 116 mandays respectively. Estimated labour requirement for the second stage were 84,89 and 90 and for the third stage 90,101 and 97 in the order. Corresponding estimates for the third stage under rainfed condition were 28,34 and 37 man days/ha. While the marginal and small farmers depended on family labour (42% and 31%), big farmers were totally depended on hired labour. Under the socio-economic conditions of Kerala in which the hired labour is not only costly but also scarce, marginal farmers who employs maximum share of family labour were advantageous as compared to big farmers.

The average annual cost of

cultivation as estimated from the sample for marginal and holdings were Rs. 14400, 9900 and15400 respectively. The respective estimates for small holdings were Rs. 14600,10400 and 16200 and for big holdings Rs. 15100,11300 and 16500 in the order. The weighted average cost of cultivation for the region were Rs. 14500,10400 and 16000 respectively for the first, second and third stage of coconut cultivation.

Cost of Production under Irrigated condition

Estimation of the cost of production was restricted only to irrigated gardens since the sample gardens under rainfed condition do not have palms in first and second stages of coconut cultivation. Based on the details of cost of cultivation, the cost of production was estimated following the annuity method as described in the previous section. In the case of marginal farms, the establishment cost (upto seven years of planting) along with the compound interest accrued thereon was Rs.1,32,365 and corresponding annuity value Rs.11,169. The cost of production (after deducting the value of usefructs), on yearly basis, was then obtained as Rs. 25,069/ha; when expressed as per nut basis, it was Rs. 2.33/nut. The estimate for small holdings was Rs. 26,362/ha (Rs. 2.31/nut) and for big holdings Rs. 27,408/ha (Rs. 2.25/nut) and their weighted average was Rs. 26,234/ha (Rs. 2.37/nut). A comparative analysis of the cost of production among different categories of land holdings indicates that though the average cost of cultivation was more for big farmers as compared to small and marginal, their cost of production per nut was lower. This is mainly due to competitiveness through higher productivity due to better adoption of improved management practices.

By taking Rs. 3.50 as the farm gate price of coconut, the net return was estimated as Rs. 11,000,12,100 and 13,600/ha respectively for marginal, small and big holdings and the average net returns for the region was Rs. 11,1000/ha *(Table 3)*. The big farmers realized more returns despite a higher cost of production because of high productivity.

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Table 1. Classification and Description of Sample Holdings

Holding size classes	Number of holdings in growth stages			Average holding size (ha.)	No.of palms/ ha.	No.of nuts/year	
	First	Second	Third			Irrigated	Rainfed
Marginal(M)	6	9	43*	0.16	214	10700	8132
Small (S)	3	4	21*	0.38	197	11426	6304
Big (B)	1	1	5*	1.20	187	12155	6545

*Except 13 Marginal, 6 Small holdings and 2 big holdings, all are irrigated.

Table 2. Estimated Average Cost of Cultivation of Coconut under Irrigation (Rs/ha)

(Figures in parantheses correspond to rainfed cultivation)

Cost component	First Stage				Second Stage				Third Stage			
	M	S	B	A*	M	S	B	A*	M	S	B	A*
Seedlings	3225	2955	2805	3108	-	-	-	-	-	-	-	-
Organic fertilizers	484	517	561	501	1290	1182	1403	1579	1613 (1590)	1478 (1485)	2104 (1814)	1895 (1007)
Chemical fertilizers	-	-	-	-	300	500	800	393	800	1180	1030	933
Hired human labour	2125	4420	9860	3587	2890	4165	7650	3594	2975 (1275)	4250 (1360)	8245 (3145)	3703 1477)
Hired machinery	-	-	200	20	-	-	-	-	-	-	-	-
Harvesting Charges	-	-	-	-	-	-	-	-	3838 (3244)	3516 (3030)	3338 (2846)	3706 (3145)
Family labour	7225	5355	-	5942	4250	3400	-	3704	4760 (1105)	4355 (1530)	-	4336 (1121)
Misceslaneous*	1335	1346	1669	1372	1119	1145	1490	1168	1382 (781)	1421 (895)	1733 (1020)	669 (808)
Total***	14400	14600	15100	14500	9900	10400	11300	10400	15400 (8000)	16200 (8300)	16500 (8800)	160000 (7600)

*Weighted Average for M, S and B

**Miscellaneous expenses includes land revenue and other taxes, power charges for irrigation and depreciation on implements and farm buildings and 5% of the value of working capital

***Rounded values

Table 3. Economic Analysis of Irrigated Coconut Gardens (Rs./ha)

S.No.	Particulars*	Farmers category			
		Marginal	Small	Big	Average
01	Maintenance cost	15400	16200	16500	16000
02	Annuity value	11200	11700	12400	11600
03	Gross cost	26600	27900	28900	27600
04	Gross return	37600	40000	42500	38700
05	Net return	11000	12100	13600	11100

*Rounded values