



Improving income from coconut cultivation through farm level value addition - An analysis

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Abstract

The study was conducted during 2009-10 with the objectives to analyze the profile of farm level processors, coconut value addition, constraints faced by them and offer suggestions to farmers adopting minimal processing, direct marketing of tender nuts, copra making, coconut oil/virgin coconut oil, soap and food products. It was found that 63.3 % of the respondents were of middle age group, literate, experienced in coconut value addition for less than 8 years; low income group and 80 % of them were women. Further the entrepreneurship behavior of the respondents were found to be positively and significantly correlated with their credit availed, annual income and investment made. The need for reorientation of training curricula in terms of project preparation techniques, communication/marketing skills etc., is emanated from the study. The value addition obtained per nut was found to vary from Rs. 0.5 to 15 depending on the products. The constraints and suggestions for improving farm level value addition activities are also furnished as perceived by the respondent farmers. The study showed that there is tremendous potential for farm level value addition for utilizing the marketable surplus locally and the benefits to be mutually shared by the coconut growers, with further technology and developmental support.

Keywords: Coconut, constraints, processing, training utility, women

Introduction

Coconut is the livelihood of more than 65 lakh small and marginal farmers and is the base crop of homestead farming system. Coconut is being cultivated in an area of 1.94 million hectares in India (CDB, 2007) with an annual production of 9.4 million tones of copra from 15 billion nuts and contributes over 70000 million rupees to the country's GDP. Kerala accounts for 45 per cent of area and 38 per cent of number of nuts produced in India, i.e., 6054 million nuts per annum (CDB, 2007). Small farms represent a significant proportion of total coconut holdings and current trends in agriculture pose new challenges for their viability and survival. Income from small holdings could not sustain family needs due to low and fluctuating prices of the produce, escalating input cost and low productivity due to the incidence of root (wilt) disease and pests like rhinoceros beetle, red palm weevil, eriophyid mite etc. To meet such challenges

there is a need to improve income by popularizing farm level processing or value addition. Small farms are facing uncertainty and additional risks in today's competitive world. It is necessary to acquire and use risk management tools and possess other management skills. The small farms should seek innovative approaches to survive, like more diversified enterprises and value added activities as well as product and market development (Tubene and Hanson, 2002).

The study reported here explored farm level value addition in coconut such as direct marketing with minimal processing, tender nut as an alternative produce, primary processing for copra and coconut oil, processing to virgin coconut oil and food products and oil based products as an individual or group activity. Skill up gradation training programmes were organized by the Krishi Vigyan Kendra attached to CPCRI, Kayamkulam. The study was taken in this regard with the following objectives:

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- To analyze the profile of micro entrepreneurs in coconut product diversification/value addition.
- To bring out the relationship of the socio economic characteristics with the entrepreneurship behavior.
- To analyze the farm based rural micro enterprises in coconut value addition.
- To document the constraints, technology needs and suggestions

Materials and Methods

The data for the study was collected through face to face interview with 60 respondents selected through purposive random sampling techniques. The respondents were selected from Alleppey, Kollam and Trivandrum districts during 2009-10. Since the respondents have undergone skill upgradation training, the utility of the programme was studied. Utility of the training programme was operationalized as the opinion of the trainees about the usefulness of the training programmes in serving its various purposes as per the selected utility dimensions. Utilities were studied on the three point continuum with 2, 1 and 0 scores following the procedure used by Upadhyay and Hansra (1982) with slight modification. A total of 10 variables have been selected after reviewing relevant literatures and consulting extension experts assuming that they will affect their entrepreneurship behavior. The relationship was brought out using the Pearson Product Moment correlation coefficient. The profile characters like age, educational level, family size, operational land holding, gender, trainings attended, experience in processing activities, annual income, occupation, credit and entrepreneurship behavior were measured using standard tools and techniques. The classification of the demographic characteristics was done with slight modification of the procedure adopted by Meena *et.al.* (2009). The farm level coconut based rural micro enterprises was operationalized as a processing or value addition unit operated and managed by coconut farmers(individual or groups) in their farm with a minimum initial investment of Rs. 10,000. The constraints faced by the rural processors were classified as very much severe, severe and not severe with a score of 3, 2 and 1 and ranked them accordingly.

Results and Discussions

Demographic characteristics of the rural micro entrepreneurs

The demographic characteristics have been presented in Table 1. The results showed that a majority of the respondents (63.33 %) were between 28 to 48 years

old. This age group could engage in the physical activities of nut collection, husk removal, meat separation and other jobs associated. It could be noted that one third of the respondents were above 48 years old. The experiences of this age group also play a role in the conflict solving and fine tuning the group efforts. The women participation in rural coconut processing was 80 per cent, since they could utilize their extra time after routine household activities and earn an income. This aspect could be linked with the occupational status of the respondents also. The employment profile in India as per 1991 census indicated that 81.23 per cent of all economically active women are engaged in agriculture and agro based enterprises (Chabra, 1998). Since majority of the respondents were with experience of less than eight years with fairly high literacy rate the gap in technology provided and capacity building in developing entrepreneurship needs to be bridged with extension strategies like Entrepreneurship Development Programmes (EDP), continuous technology support and after training confidence building and motivation. Cent percent of the respondents availed credit either from institutional or non institutional sources, indicating the need and viability of coconut based rural units in repaying the credit. It was noted in the study that the majority of the women respondents were not willing to avail credit of more than Rs.10, 000 at a time to minimize the risk due to the fluctuating price situation and the income. This finding is supported with the report of Santhi and Muthu(2005). The thrift and credit system of the self help groups enabled the respondents to avail credit and repay conveniently with reserve for revolving fund for regular continuous operation. The demographic characteristics showed that coconut based rural farm level processing units provided income, eligibility for credit, and employment generation more suited as a group activity. (Table 1).

Relationship between entrepreneurship and demographic characteristics of the rural coconut processors

The entrepreneurship behavior of the rural agro processors was found to be either medium (72.34 %) or low (27.66 %) level. This indicated the need for skill up gradation in entrepreneurship among the rural farmers. During the interview sessions the women members opined that they do not want to expand their business beyond a level because of the lesser time availability after attending the household duties and that the risk could be minimized and they will be in the 'safer zone'. The relationships of their entrepreneurship behavior with the socio economic characteristics were given in Table 2.

Table 1. Demographic attributes of rural coconut micro entrepreneurs (n=60)

Demographic characters	Categories	Frequency	Percentage
Age(years)	Young (< 28)	4	6.66
	Middle (28-48)	38	63.33
	Old (> 48)	18	30.00
Gender	Male	12	20.00
	Female	48	80.00
Experience in processing (years)	Low (<2)	24	40.00
	Medium(2-8)	34	56.67
	High (> 8)	2	00.33
Educational level	Illiterate	1	1.67
	Up to primary	8	13.33
	Up to middle class	17	28.33
	Up to senior secondary	28	46.67
	Above senior secondary	6	10.00
Family size	Small(<5)	47	78.33
	Medium(5-8)	11	18.33
	Large(>8)	2	0.33
Average annual income(Rs.)	Less than 30,000	41	68.33
	Between 30,000-60,000	19	31.67
Land holding size	Small	60	100.00
Credit	Institutional	21	35.00
	Non institutional	39	65.00
Occupation	Agriculture	4	6.67
	Labour	16	26.67
	+agriculture/dairy	14	23.33
	Agriculture +dairy		
	Others	6	10.00
Trainings attended	Coconut Production	7	11.67
	Coconut processing	53	88.33

Table 2. Relationship between entrepreneurship and demographic characteristics of the rural coconut processors (n=60)

Sl. No.	Demographic characters	Pearson correlation coefficient ('r' value)	Product Moment
1	Age	0.0144	
2	Education level	0.0778	
3	Occupation	- 0.0567	
4	Farm size	0.1688	
5	Credit availed	0.3354**	
6	Average annual Income	0.2281*	
7	No of yielding palms	0.1740	
8	Adoption of inter crops	- 0.0130	
9	Investment made	0.5158**	
10	Experience in Value addition activities	0.0236	
11	Training programmes attended	- 0.0527	

* Significant at 0.01 level ** Significant at 0.05 level

From Table 2 it could be inferred that age, education, farm size and number of yielding palms are positively correlated and this finding is supported with the report of Santhi and Muthu (2005). Variables such as occupation, adoption of inter crops and training

programmes attended were negatively correlated with their entrepreneurship behavior. This may be due to the fact that major share of the time of the rural farmers with agriculture or labour as the main occupation will be spend for the same rather than for the value addition activities. This is in agreement with the results reported by Khorate and Hardikar (2002). It may also be inferred that the production cycle of the inter crops in coconut gardens require labour and investment throughout the year.

The credit availed was found to be significantly correlated with entrepreneurship behavior since credit availability is a determining factor in developing farm based enterprises in rural areas. This also is an indicator that the policies should be credit friendly to resource poor farmers for the development of agriculture. It is noteworthy that the women SHG's could avail credits with the support of developmental schemes like Kudumbasree, operational in their areas. The investment made in the rural micro enterprise and the average annual income also was found to be significantly correlated with their entrepreneurship behavior. This may be because these two factors may improve their confidence, enable production to the market demand and sustain the production of their products. This is supported with the findings of Santhi and Muthu (2005) in case of income and its relationship.

Utility of the training programmes on coconut value addition and processing

Skill upgradation training programmes forms a vital input in promoting rural agro enterprises in value additions. In these training programmes not only the technical skills but also communication skills, conflict resolution and managerial skills areas important as marketing skills. Hence an analysis of the utility of the training programmes was carried out among the respondents. The data was presented in Table 3.

From Table 3 it is very evident that majority (80.23 %) of the respondents were benefited in technical knowledge gain and skill development from the training programmes, but for taking up the technical knowledge as an economic oriented activity which require good entrepreneurship skills almost half of them could not utilize the trainings offered to them. This indicates reorientation of training curriculum in imparting entrepreneurial skills and equipping them to obtain support from credit organization through preparation, planning and implementation in project mode. One of the noteworthy responses from the table was, 20 % of the respondents could use the trainings attended by them in disseminating the knowledge/skills to the fellow

farmers of their villages. Jeya and Somasundaram (2003) also reported usefulness of training programmes in knowledge/skill gain. The utility of the trainings in terms of getting support from credit organizations (not useful to 68.82 %), technology dissemination (not helpful for 80.48 %), establishing linkages (62.99 % not useful) and social interaction skills (60.57 % needs improvement) were on the lower level as shown in Table 3. The data indicated the need for reorienting training programmes in terms of curriculum and skill development in areas like credit worthy project preparations, linkage establishment, communication/management and marketing skills along with newer technology provision.

Table 3. Utility of the training programmes on coconut value addition and processing

Sl. No.	Dimensions	Response category (percentage)		
		Very much useful/benefited/helpful	Useful/benefited/helpful	Not at all useful/benefited/helpful
1	Usefulness of undertaking economic oriented activities	5.82	43.71	50.47
2	Usefulness in technical knowledge gain	80.23	18.77	0.00
3	Usefulness in skill development	64.20	35.80	0.00
4	Extent of fulfillment of needs	55.00	45.00	0.00
5	Benefitted from interaction among trainees during training	51.33	34.07	14.06
6	Usefulness of training experience in day to day activities	49.82	46.97	3.91
7	Usefulness in getting support from credit organizations in economic support	3.00	28.18	68.82
8	Helpful in organizing similar trainings in their respective villages	8.52	11.00	80.48
9	Helpful in establishing linkages with agencies/entrepreneurs	12.10	24.91	62.99
10	Usefulness in acquiring skills in social interaction of opportunities	9.33	30.10	60.57

Value addition obtained per nut through the interventions

The value addition activities in coconut mainly undertaken by the respondents were selling raw coconut with minimum processing, i.e., husk removal, grading as per local consumer preferences and direct marketing, production of coconut oil from copra produced by sun drying or using small holders copra drier with either husk and shell or shell only as fuel, tender nut direct marketing after harvesting at 7 to 8 months old bunches and minimal processing, coconut based food products like vinegar, coconut beverage, coconut syrup, chutney powder and virgin coconut oil (VCO) preparation, packing, labeling and marketing. The value addition obtained per nut shows

considerable variation from Rs. 0.5 to 15 per nut. The respondents indicated that considerable portion of the marketable surplus produced locally could be processed as quality copra and policy support and market support in procuring the copra on minimum support price (MSP) will benefit the farming community in getting value addition. The data obtained in terms of value addition per nut was furnished in Table 4.

Table 4. Additional value obtained per nut through the interventions

Sl.	Value addition activity	Cost of raw materials/ Other expense	Other expenses	Gross Income	Additional value obtained per nut
1	Mature raw nut-minimal processing	500.00 @ Rs. 5.00/nut	100.00 1	900.00 to 1200.00	0.6 to 1.20
2	Tender nut	600.00 @ Rs. 6.00/nut	400.00 2	1500.00	5.00
3	Copra-coconut oil-500 nut/batch				
	Sun drying	2500.00	655.00	4135.00	1.96
	Smallholders copra drier	2500.00	845.00	3675.00	0.66
	Shell fired copra drier	2500.00	763.00	3673.00	0.82
4	Copra+ coconut oil + coconut water based beverage	2500.00@ Rs. 5.00/nut 25 l coconut water	1215.00 3	4835.00	2.42
5	Coconut water vinegar	10 l coconut water/100 nuts	100.00 4	240.00	1.40
6	Coconut water based syrup or squash	10 l coconut water/100 nuts	300.00 5	1200.00	3.00
7	Coconut chutney powder +(VCO-traditional method)	200 nuts Rs. @ 7.5 /nut (cost of nut)	1800.00 6	6000.00 to 6300.00	13.50 to 15.00
8	Coconut oil based soaps	10 liters coconut oil Rs. 580.00 (150 nuts)	920.00 7	2380.00	6.00

1 (Husk removal (Rs. 60) +transportation(Rs. 40) 2(Rs. 4/nut for climbing, harvesting, transporting and preparing) 3 (Husk removal, breaking, drying, sugar, yeast, bottling, etc) 4 (Sugar, citric acid, packing, labeling, etc) 5(Sugar, ginger, packing, labeling, fuel, etc) 6 (for ingredients, fuel price, labour charges, packing materials) 7 (soap kit, butter paper and labour)

Majority of the rural agro processors opined that if they sell their products directly to the consumers will considerably add to their profits. As resource poor farmers they are skeptical in taking risks by investing more in their rural processing units and direct marketing does not require substantial capital investment or additional requirements from their part. Hence it was inferred from this study that direct marketing with minimal processing is itself a value addition prospect but it requires a change in attitude and aspirations of the farmers. i.e. they should understand that there is a difference between marketing and selling. In this regard the farmers of the coconut clusters could themselves reorient their activities in

marketing their coconuts, tender nuts and other coconut based products.

Features of the farm level value addition units

The general features of the rural coconut processors were also studied. The average number of nuts processed at farm level was 6000 ranging from 4500 to 25,000 nuts per unit engaging average of 6 members (range 4 to 10), providing them with income and employment. The investment made per unit ranged from Rs. 2,500 to 35,000, with an average of Rs. 8,500. The Average income generated per unit per year was Rs. 38,000 (range Rs. 24,000 to 1.3 lakhs). The distance from which raw materials were procured was 7.5 km from the location of units and most of them were near to main road ie. 4.3 km, enabling mobility. Credit availed was subsidy linked for groups and an average of Rs. 25,000 by the groups. The employment generation of these units per year was 40 to 80 man days. The major marketing mode was direct marketing by the rural processors with only 15 per cent of them resort to wholesale or retailers. The clustering of the units could be made for better quality production and income.

Marketing channels - 85 percent of the rural coconut processors resort to direct marketing from their units or home to home sales. The major marketing channels adopted by the groups were furnished as follows.

The popular channel was Producer -Rural agro processors - minimal processing - consumers. In this channel large quantum could be marketed with less margin, fresh products could be provided to consumers and cost for transportation/packing etc could be avoided.

The second marketing channel was Producers-Rural agro processors- nut processing - packing /labeling - consumers. Storage period is less for this channel with maximum profit, fresh produce for consumers, fast recovery of investment and ensures sale of maximum products.

Another marketing channel was Producers - Rural agro processors - nut processing - packing /labeling - retailers - consumers. The micro entrepreneurs perceived that in this channel profit realized reduced by 30 percent, units have to ensure continuous production at steady price rate and must be more quality conscious.

The marketing involving wholesale dealers was Producers -Rural agro processors - nut processing- packing /labeling-wholesalers-retailers - consumers.

For operating in this marketing channel large quantity of production needed with additional

transportation cost of products also. They opined that this is risky with less margin realized and suitable for commercial large scale units.

Constraints perceived by rural coconut processors in adoption

The major constraints expressed by the respondents were furnished in Table 5. The constraints they perceived as most severe were low knowledge level on packing techniques, small size of holding restricting them from value addition of their own produce, high competition from general markets, drudgery involved and low skills in marketing techniques. It could be noted that social taboos, domestic works or group conflicts do not keep them de-motivated since the constraints ranked higher indicated their need for improving entrepreneurship skills in making their units more competitive (Table 5).

Table 5. Constraints perceived by rural coconut processors in adoption

Constraints	Average Score	Rank
Social taboos	1.54	XV
Lack of knowledge on newer products suitable for rural processing/value addition	2.10	X
Low level of knowledge/data on consumer preferences	2.34	VI
Conflicts in group activities	1.59	XIV
Low level of availability of quality raw nut regularly	1.84	XIII
Fluctuating price of coconut	2.27	VIII
High cost of raw materials	2.10	XI
Small land holding size , hence raw nuts to be procured from other farmers, high cost of transportation	2.66	II
Drudgery involved in coconut processing	2.53	IV
Lack of small scale low cost equipments/tools to reduce drudgery	2.25	IX
Low keeping quality of products	1.98	XII
Low level of knowledge/skill on quality packing techniques	2.77	I
Low level of knowledge on marketing strategies	2.50	V
High competition with general markets	2.63	III
Low level of focus or project implementation on processing/ value addition	2.32	VII
Less number of emulative success stories/publicity	2.20	X

Suggestions of the respondents in improving farm based value addition of coconut

The respondents suggested the following for improving the efficiency of rural farm based value

addition units. The suggestions put forward by more than 80 per cent of the respondents were the following.

- Facility or centers for coconut product preparation, packing, labeling and marketing
- Ensuring availability of quality packing material and packing skills
- Periodic updating of knowledge/skill on value addition technologies in coconut
- Activities for popularizing coconut products at Government level
- Contact programmes with coconut farmers groups/ clusters for appraisal of needs
- Simplified credit provision at affordable interest rates and frequencies
- Strengthening of group activities in coconut processing and value addition
- Ensuring availability of simple low cost drudgery reduction equipments/tools
- Common brand name and quality control facilities for domestic marketing
- Popularizing the nutritional and health benefits of coconut and its products
- Designing specific projects and implementation involving relevant stakeholders

The coconut farmers were not able to realize the income potential of coconut despite the advantages of the crop and produces, due to low productivity resulting in small marketable surplus, limited scope for value addition and marketing options. The rural farm based units sell primary products like copra, coconut oil, husked nuts, tender nuts, virgin coconut oil, food product etc but their income was limited due to inadequate access to favorable markets and product development. But it could be seen that the units had market and they are earning good profit and income also. The major constraints include weak policy implementation especially in the case of MSP of copra, inadequate extension services for

technology, entrepreneurial skills, credit and information and markets. The cluster approach of coconut farmers could be strengthened for improving community based procurement, processing and marketing. The research system should also respond with farm level drudgery reduction equipments and product development along with equipping first line extension system with technological input.

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