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Economics & marketing of custard apple: A micro level induce from Kanker district, Chhattisgarh

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Abstract

The study was conducted in "Economics & marketing of custard apple: A micro level induce from Kanker district, Chhattisgarh". Kanker, Charama and Narharapur block of Kanker District. Six Self-Help Groups (SHG's) were engaged in custard apple collection and processing. From each block two SHG's were selected and total 89 respondents were selected by using random sampling technique. The study is based on primary and secondary data. The study revealed that the total operational cost incurred during collection and processing of custard apple by SHG's was found to be Rs.70082.67 during the season, out of which the cost incurred on custard apple purchase cost was found to be Rs.31440, collection of custard apple was found to be Rs.6205.00 and processing cost was found to be Rs.32437.67. Total 3144 kg of custard apple collected, out of which 2224 kg of custard apple was used which constitutes 741 kg of pulp, rest 920 kg were used to sell directly to the consumers. Total return was found to be Rs.166350.00 from both custard apple and pulp. In case of government subsidy and SHG's the total cost was found to be Rs.72916.00 whereas, the net income for SHG's was found to be Rs.96267.33 and its C:B ratio was found to be 1:1.37. In the study area the following marketing channel was found which includes Channel – I (SHG's-FPO-Ice cream making company), Channel – II (SHG's-Consumer) and Channel- III (SHG's-Local Vender). The major constraint was involvement of private sector followed by poor quality of fruit and non-availability of found. In view of constraints following recommendations were required such as involvement of NGO's and other private institute should be encouraged in the area so that SHG's can get maximum benefit through technology transfer and as custard apple is a seasonal crop of 2 months, it is advisable for processors to diversify and include the value addition activities for other fruits of locality like Jamun, mango, etc. This is necessary to make value chain developed by processing units viable.

Keywords: Custard apple, collection and processing, government subsidy, CBR, SHG's

Introduction

"Custard apple" (*Annona squamosa* L.) is the oldest known fruit crop. It, is belongs to the family *Annonaceae*. *Annona* is important fruit in dry land. *Annona* fruitis originated from tropical region of America and widely distributed throughout the tropics and subtropics. The *annonaceae* family comprises of 40 genera and 120 species of which only five of them produce edible fruits. The custard apple is popularly known as Sitaphal in South India. The custard apple crop is distributed in the entire-globe-, due to its suitability to different climatic conditions. The custard apple prefers sandy or light soil although heavy soil with proper drainage. The plant is not exacting much the climate requirements. However, forest tree and rainless flowering season increases yield. The temperature is above 40 °C and low humidity causes the lower yield. The other important features of custard apple are their wider adaptability to soil and climate condition and freedom from pest and disease. Custard apple is consumed as desert but it is also widely used in semi processed and processed products. Custard apple is one of the important fruit crops grown by the farmers of this region from which they release high profits as compared to other crops. There is no specific information available on use of physical inputs and returns from custard apple cultivation. Also there is a need to make cultivators acquaint with the production practices with higher output and profits.

Objectives of the study

1. To study the socio-economic characteristics of selected custard apple Collection & Processing members of SHG's.
2. To estimate of cost of custard apple collection and processing.

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Methodology

The study was conducted in the Kanker district of Chhattisgarh state. The selection of Kanker district was based on the fact that custard apple had been nominated as the "One district-One product" for the state of Chhattisgarh, indicating its potential and the presence of a significant collection of custard apple in the district.

Three blocks were selected purposively for the study: Kanker, Charma, and Narharpur. These blocks were chosen because they had a large number of Self-Help Groups (SHGs) actively engaged in the collection and processing of custard apple.

A total of six Self-Help Groups (SHGs) were involved in custard apple collection and processing, with two SHGs selected from each of the three blocks. In total, 89 respondents were selected for the study using random sampling techniques.

The data collected for the study included both primary and secondary data. Primary data refers to information collected directly from the field through surveys, interviews, and observations. On the other hand, Secondary data refers to existing data from various sources such as government reports, research studies, and publications.

Analytical Tools

The total cost of collection and processing were two divided into-

1. Establishment cost
2. Operational cost

1. **Establishment cost:** The establishment cost, which includes the cost of various equipment and machinery, is

governed by the government. In the case of custard apple processing, some of the essential equipment and machinery may include. Custard apple pulping machine, vacuum packing machine, deep freezer (capacity 300L.) other necessary small equipment (Crete, wt. machine, tray, hand gulps) etc.

2. **Operational costs:** The operational costs incurred seasonally for the collection and processing activities in the Self-Help Groups (SHGs) involved in custard apple can include various variable costs. These costs typically include cost of custard apple purchased, transportation, labor, loading & unloading, electricity, Packing & printing costs and miscellaneous.

Total cost (Rs.) = Total fixed cost + Total variable cost

Gross income (Rs.) = Total collected custard apple (kg) Market Price of the custard apple and Pulp

Net income (Rs.) = Gross income – Total cost

$$\text{Output Input Ratio} = \frac{\text{Gross Return}}{\text{Total Cost}}$$

$$\text{Benefit Cost Ratio} = \frac{\text{Net return}}{\text{Total Cost}}$$

$$\text{The Garret's ranking method} = \frac{R_{ij}-0.5}{N_j} \times 100$$

Result and Discussion

Socio-economic characteristics of selected custard apple Collection & Processing members of SHG's

Table 1: General attributes of selected custard apple Collection & Processing members of SHG's

S. No.	Particulars	No. of respondent	Percent
		(Frequency <i>f</i>)	
1	Total number of Respondent	89	100%
A. Family Members			
1	Male	227	48.19%
2	Female	244	51.81%
B. Social Groups			
1	Other backward caste	26	29.21%
2	Scheduled caste	12	13.48%
3	Scheduled tribes	51	57.31%
C. Age			
1	Up to 30 year	22	24.73%
2	30 to 60 year	62	69.66%
3	Above 60 year	5	5.61%
D. Occupation			
1	Collection & Processing Custard apple	44	49.45%
2	Private service	5	5.61%
3	Other business (Agriculture)	40	44.94%
E. Education			
1	Illiterate	21	23.61%
2	Primary school	39	43.82%
3	Middle school	13	14.60%
4	High and Higher secondary school	14	15.73%
5	Graduate and Post graduate	2	2.24%
	Literacy %	68	76.40%
F. Experience in Collection & Processing of Custard apple			
1	Less than 1 years	6	6.74%
2	2 to 5 years	27	30.33%
3	More than 5 years	56	62.93%

From table 1 there are 89 members in SHG's. Their family members consist of 51.81% female and 48.19% male. On basis of social group 57.31% ST, 29.21% OBC and 13.31% SC. On basis of age 69.66% (30-60 years), 24.73% (<30 years) and 5.61% (>60 years). On the basis of occupation 49.45% work as collection and processing custard apple, 44.94% as other business and 5.61% as private service. On basis of their education 43.82% primary school, 23.61% illiterate, 15.74% high and higher secondary school, 14.60% middle school and 2.24% graduate and post graduate. On the basis of experience in collection & processing of custard apple 62.93% more than 5 years, 30.33% 2 to 5 years and 6.74% less than 1 years.

It is crucial to focus on skill development and training programs, providing vocational training and financial literacy. It would be valuable to leverage their expertise and create platforms for knowledge sharing. Providing support and training for members interested in other business activities or private services can help expand their economic prospects and reduce dependency on a single occupation.

Cost of collection and processing of custard apple

Table 2: The Establishment cost this cost is governs by the government

S. No.	Name of equipment	Quantity	Price (Rs.)
1	Custard apple Pulping machine	1	1,10,000.00
2	Vacuum packing machine	1	90,000.00
3	Deep freezer (capacity 300L.)	1	1,20,000.00
4	Other necessary small equipment (Crete, wt. machine, tray, hand gulps)	-	20,000.00
	Total cost		3,40,000.00

The Kanker Valley Fresh Custard Apple Project aims to support the self-help groups (SHGs) involved in the custard apple value chain by providing them with essential equipment and materials at no cost. The project's objective is to enhance the processing and marketing capabilities of SHGs, ultimately benefiting their livelihoods and promoting economic growth in the region.

Table 3: Cost of collection and processing of custard apple by SHG's

S. No	Particulars	Rate (Rs.)	Quantity (No.)	Value (Rs.)
A.	Collection Cost			
1	Custard apple purchase cost	10Rs./kg	3144 Kg	31440.00 (83.52)
2	Labor cost	(130Rs/Day)	16.00	2080.00 (5.53)
	a. Total labours	2 labour/day		
	b. Total collection day	8		
3	Transportation	(Rs.)		3285.00 (8.73)
4	Loading and Unloading	(@4Rs/crate)	210.00	840.00 (2.23)
	Operational Cost			37645.00 (100)
B.	Processing Cost			
1	Labor cost	130Rs/Day	190.00	24700.00 (76.14)
2	Electric bill	(Rs.)		1051.00 (3.24)
3	Packing & Printing cost	(5Rs./polythene)	741.00	3705.00 (11.42)
4	Room rent	1941.67/Month	1941.67	1941.67 (5.98)
5	Miscellaneous	(Rs.)		1040.00 (3.22)
	Operational Cost			32437.67 (100)
I	Total operational cost (A+B)			70082.67

Cost of Collection

The total collection cost for custard apple was Rs.37645, out of which major cost was purchase cost Rs.31440 followed by transportation cost Rs.3285, labour cost Rs.2080 and loading and unloading cost Rs.840.

Cost of Processing

The total processing cost was 32437.67, out of which major cost was labour cost Rs.24700 followed by Packing & Printing cost Rs.3705, room rent Rs.1941.67, electric bill Rs.1051 and Miscellaneous cost Rs.1040.

Table 4: Return of collection and processing of custard apple by SHG's in Study area

Return			
Collected Custard Apple Grade	Sale Price(kg)	Weight(kg)	Total Return
A Grade Custard apple (Weight >300 gram for Direct Marketing)	60Rs./Kg	920.00	55200.00 (29.26)
B C & D Grade Custard apple for Pulping	150Rs. /Kg Pulp	2224.00 (741kg pulp)	111150.00 (70.74)
		Total 3144 kg	166350.00 (100)

A Grade Custard Apple: Rs. 55,200.00, B, C & D Grade Custard Apple (Pulp): Rs. 111150.00. Total Return: Rs.55200.00 + Rs.111150.00 = Rs.166350.00.

It is important to note that the total collected weight is 3144 kg, with the A grade custard apple accounting for 920.00 kg and the B, C & D grade custard apple for pulping accounting

for 2224.00 kg. The percentages in parentheses represent the proportion of each category's weight in relation to the total weight collected.

Table 5: Gross return, net returns B:C and Output-Input ratio of SHG's and Government

S. No.	Particulars	SHG's
I	Cost of Establishment Value addition & Processing unit (Fixed cost)	340000.00
II	Depreciation @0.83%P.M.	2833.33
III	Total Operational Cost for SHG's (Variable cost)	70082.67
IV	Total cost	72916.00
Return		
(A)	Gross income for SHG's	166350.00
(B)	Net income for SHG's (A-III)	96267.33
(C)	Output-Input Ratio for SHG's (A/III)	2.37
(D)	C:B Ratio for SHG's (B/III)	1:1.37
(E)	Output-Input Ratio from total cost (A/IV)	2.28
(F)	C:B Ratio from total cost (B/IV)	1:1.32

The SHGs have a gross income of Rs.166350.00 and a net income of Rs.96267.33. The output-input ratio for the SHGs is 2.37, indicating that for every unit of operational cost incurred; the SHGs generate 2.37 units of income. The C:B ratio for the SHGs is 1:1.37, implying that for every unit of variable cost, the SHGs earn 1.37 units of net income.

When considering the total cost (including fixed and variable costs), the output-input ratio is 2.28, meaning that for every unit of total cost, the SHGs generate 2.28 units of income. The C:B ratio from the total cost is 1:1.32, indicating that for every unit of total cost, the SHGs earn 1.32 units of net income.

These financial ratios provide insights into the profitability and efficiency of the SHGs' operations in the custard apple collection and processing unit.

Marketing channel of custard apple and value-added product

Channel – I: SHG's – FPO - Ice cream-making company

Channel – II: SHG's - Consumer

Channel – III: SHG's - Local vendor

Based on the study, the Self-Help Groups (SHGs) use three different marketing channels to dispose of their custard apple and value-added pulp. Here is the breakdown of the percentage of SHGs adopting each channel:

- Channel I:** Approximately 64.40% of the SHGs use this channel to dispose of their produce. The specific details or characteristics of this channel were not provided in the information given.
- Channel II:** About 29.26% of the SHGs adopt this channel for disposing of their produce. Again, specific information regarding the characteristics of this channel is not provided.
- Channel III:** Around 5.34% of the SHGs utilize this channel to dispose of their custard apple and value-added pulp. The details or features of this channel are not mentioned.

It is worth noting that the information provided does not elaborate on the distinct features, advantages, or specific

activities associated with each marketing channel. However, based on the given percentages, it can be inferred that Channel I is the most commonly used channel among the SHGs, followed by Channel II and then Channel III.

Table 6: Constraints by SHG's

Sr. No.	Particulars	Percent	Rank
1	Private Traders involve	95.60	I
2	Non-availability of funds	39.16	III
3	Lack of transportation with cold storage facilities	26.66	V
4	Shortage of storage facilities	27.16	IV
5	Poor quality of fruits	85.35	II

Private traders may dominate the market, leading to challenges for SHGs in accessing fair prices and establishing direct market linkages. The non-availability of funds may restrict the expansion of SHG activities and their ability to overcome various operational challenges. Custard apples are perishable fruits that require appropriate temperature-controlled storage during transportation to maintain their quality. Poor quality, it can affect their competitiveness and market acceptance. Factors such as improper handling, inadequate post-harvest practices, and lack of quality control measures can contribute to poor fruit quality.

Suggestions

As custard apple is a seasonal crop of 2 months, it is advisable for processors to diversify and include the value addition activities for other fruits of locality like Jamun, mango, etc. This is necessary to make value chain developed by processing units viable. Cold storage facilities should be established in the study area to promote the business. Involvement of NGO's and other private institutes should be encouraged in the area so that SHG's can get maximum benefit through technology transfer. Encourage partnerships between financial institutions and the fruit industry to improve access to loans and financial support.

Conclusion

The returns of SHG's collection and processing in Kanker district. Gross returns were calculated for SHGs. The total operational cost of collection and processing were Rs.70082.67. The gross returns for SHG's were Rs.166350.00; SHG's net returns from collection and processing were estimated to be Rs.96267.33. The Output-Input ratio for SHG's was 2.37. The Benefit-Cost Ratio for SHG's C:B Ratio for SHG's were 1:1.37. For government cost for SHG's cost of custard apple collection and processing was calculated at Rs72916.00, gross return was Rs.166350.00, net return Rs.96267.33, B:C ratio 1:1.32 and was Output-Input ratio was 2.28.

In conclusion, the custard apple collection and processing activities conducted by the SHGs in Kanker district generated significant gross returns and positive net returns. The output-input ratio and benefit-cost ratio further indicate the efficiency and profitability of these activities. The government's support in terms of cost investment also yielded positive returns. These findings highlight the success and potential of the SHGs' efforts in custard apple collection and processing, both in terms of financial viability and government support.

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