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An economic analysis of marketing cost, marketing margin, value chain and monetization value of castor in Tamil Nadu

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ABSTRACT

The study was undertaken on value chain analysis of castor in Salem district of Tamil Nadu. The major challenges of this study are financial constraints and non availability of value addition of castor inforamtion. The study mainly focuses on the trend's issues from producer to consumer, throwing light on the price margins of different actors involved in the total castor value chain. Thalivasal and Macheri block was selected in Salem district. Three villages from Thalivasal block namely Kamakapalayam, Sitheri and Thiyaganur; Three villages from Macheri block, namely Vellar, Pukkampatti and Olaipatti, was selected purposively. From each village, 30 castor growers. This will constitute 180 castor growers and 60 traders; 60 consumers were selected randomly. It was found that the total costs incurred on castor cultivation were around Rs. 34,910/- per hectare. The net income was Rs. 65,090/- per hectare. Farmers were able to secure a net benefit-cost ratio of 1.86. However, four channels are prevailing in the study area, the predominant one is Producer to Trader to Oil Mill. The margins received by the traders and processors are found to be about Rs. 1,46/- and Rs. 1,471/- per quintal, respectively. The value of castor oil and castor cake extracted was found to be Rs. 7,179/- from one quintal of castor seed. Further, the cost of seed/raw material and cost of value addition/qt., raw castor seed was calculated to Rs. 4,803/-, and therefore the sum of value addition/qt., to Rs. 2,376/- Regulated market at Salem was not used for the marketing of castor seed in the study area, revitalize existing market yards because it is far away from the production point. There is a need to promote castor oil extracting mills and encourage new market networks, like contract farming arrangements must be improved in the study area. The total quantity of Castor YRCH 1 hybrid seeds sold from TCRS, Yethapur, for the period from August 2019 to August 2020 was 15141 kg with the monetization value of Rs. 59.43 crores.

Keywords: *castor, value chain, marketing costs, marketing margin, returns, marketing efficiency, b-c ratio, monetization value.*

Introduction

India produces 8.5 lakh tonnes of castor seed annually, and accounts to more than 60 per cent of the entire global production. On account of the unlimited industrial applications, castor oil enjoys demand all over the world. The current consumption of Castor Oil and its derivatives in the domestic market is estimated at about 300,000 tonnes. India is also the biggest exporter of castor oil and its derivatives at 87 per cent share of the international trade in this commodity. The oil content of the castor an average of 47 per cent. In the area of recurring drought and irrigation water deficit, castor augurs well for, drought prone areas and areas of limited irrigation possibilities. Salem district is one of major producers of Castor in the state. Almost all the castor beans are goes to oil extraction domestic and international market by huge factories and small-scale industries associations like small scale industries alone is involved in oil extraction in Salem and Erode. Price fluctuation and middlemen are major drawbacks for farmers. Having studied the importance of castor in the district, it would be worthwhile to, analyze the value chain of such an important crop of the district. It is in this context; this study on Value Chain Analysis of Castor in Salem district with the following objectives.

1. To assess the cost and return of castor cultivation in Salem district;
2. To study the castor value chain; and
3. To suggest suitable measures to improve the efficiency of castor value chain.

Sampling and Methodology

Multi-stage random sampling pertains to the selection of the blocks followed by villages. Thalivasal and Macheri block was selected in Salem district. Three villages from Thalivasal block, namely Kamakapalayam, Sitheri and Thiyaganur; Three villages from Macheri block, namely Vellar, Pukkampatti and Olaipatti were selected purposively. From each village 30 castor growers. This will constitute 180 castor growers and 60 traders; 60 consumers were selected randomly.

Analytical Tools and Techniques

Both conventional and functional analyses were employed to analyze the data and to arrive at the valid conclusions.

Cost Concepts

The cost concepts, Commission for Agricultural Costs and Prices (CACP) were used to estimate the cost of cultivation and to derive the farm efficiency measures.

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The cost concepts viz., cost A1, cost A2, cost B and cost C are used in the present study and are derived as below:

Cost A1: This cost includes value of hired human labour, owned and hired bullock labour, owned and hired machinery services, seeds, FYM, fertilizers, plant protection chemicals, depreciation on farm machinery, land revenue and interest on working capital.

Cost A2: Cost A1+ rent paid for leased in land. In the recent study all farmers are owner
cultivators. Hence cost A1 and cost A2 are one and the same.

Cost B: Cost A1/A2 + rental value of owned land + interest on fixed capital

Cost C: Cost B + imputed value of family labour. It gives the total cost of cultivation

Farm Income Measures: These are the returns over different cost concepts. Different income measures are derived using the cost concepts. These measures include gross income, net income and benefit - cost ratio. The following formulae were used.

Net Income = Gross Income – Cost C
Benefit - Cost Ratio = Net Income / Cost C

Producer's Share in Consumer's Rupee: It is the price received by the producer as a percentage in the consumer's price. If Pc is a consumer's price and PF is the producer's price then the producer's share in consumer's rupee (Ps) is expressed as follows.

$$Ps = \frac{PF}{Pc} \times 100$$

Marketing Margin

This is the difference between the total payments (cost + purchase price) and receipts (sale price) of the middleman (j^{th} agency).

a. Absolute margin of the i^{th} middleman (Ami)
(Ami) = PRi – (PPi + Cmi)
b. Percentage margin of the i^{th} middleman (P mi)

$$(Pmi) = \frac{PRi - (PPi + Cmi)}{PRi} \times 100$$

Where, PRi = Total value of receipts per unit (sale price)
PPi = Purchase value of goods per unit (purchase price)
Cmi = Cost incurred on marketing per unit
The margin thus calculated include the profit of the middleman and the returns which accrue to him for storage, the interest on capital and overhead, and establishment expenditure.

Total Cost of Marketing

The total cost incurred on marketing, either in cash or in kind by the producer-seller and by the various intermediaries involved in the sale and purchase of commodity till it reaches the ultimate consumer was computed as follows:
C = CF + Cmi + Cm2 + Cm3 + ……..+ Cmn
C = Total cost of marketing of the commodity,
CF = Cost paid by the producer from time the produce leaves the farm till he sells it
Cmi = Cost incurred by the i^{th} middleman in the process of buying and selling the product

Marketing Efficiency (Acharya Approach)

According to Acharya, an ideal measure of marketing efficiency, particularly for comparing the efficiency of alternate markets/channels is
MME = FP ÷ (MC + MM)
Where,
MME = Modified Measure of Marketing Efficiency
FP = Price received by the farmer
MC = Marketing Costs
MM = Marketing Margins

Price Spread

It was calculated by taking the difference between the price paid by the consumer and the price received by the producer for an equivalent quantity of farm produce.

Results and Discussion

Costs and Returns of Castor Cultivation

The profitability of any enterprise can be determined by costs and returns. In the present study, the costs are discussed under two heads, *viz*., variable costs and fixed costs. A perusal of Table 1, revealed that the total costs incurred on castor cultivation were around Rs. 34,910/- per hectare of which operational costs accounted to Rs. 28,322/- (81%) and fixed costs were Rs. 6,588/- (19%). The major expenditure share of variable costs includes human and bullock labour occupying more than 80 per cent of the total.

Table 1. Cost of Cultivation of Castor

S. No	Particulars	Costs	Percentage
	Operational costs	28322	81
1	Human labour	11900	34
2	Bullock labour	2700	8
3	Machine labour	1250	4
4	Seed	1500	4
5	Farm yard manure	3000	9
6	Fertilizers	2908	8
7	Pesticides	3500	10
8	Interest on working capital	1564	4
	Fixed costs	6588	19
1	Rental value of owned land	5000	14
2	Depreciation	1100	3
3	Interest on fixed capital	488	2
	Total cost (Rs)	34910	100

Accordingly various income measures viz., gross income, net income and benefit cost ratio were worked out and presented in Table 2.

Table 2. Farm Income measures of Castor Producers

S. No	Particulars	Costs (Rs/ha)
1	Gross income	100000
2	Total Cost of cultivation	34910
3	Net income	65090
4	Benefit Cost Ratio	1.86

Higher the net income, more successful the farm business. The net income among the selected farmers was Rs. 65,090/- per hectare. Farmers were able to secure a net benefit cost ratio of 1.86 i.e., receiving Rs.1.86 additionally for every rupee invested in castor cultivation.

Castor Value Chain

In the study area, Castor farmers do not receive remunerative prices for their produce in spite of the developments in agricultural marketing system in India.

Marketing Channels

Before proceeding to analyze the value chain, it would be essential to have an idea of the existing marketing channels in the selected village. It is observed during the survey that cent per cent of the farmers were sell their produce to the trader at Salem, which is situated nearly 38 kms away from the study area. Although the majority of the farmers depend on only one channel i.e., farm produce is sold to private organizations, yet the existing marketing channels in the study area are:

Channel 1	Producer → Trader → Oil Mill
Channel 2	Producer → Commission Agent → Trader → Oil Mill
Channel 3	Producer → Commission Agent → Oil Mill
Channel 4	Producer → Regulated market yard → Oil Mill

Though four channels are existing in the village, the predominant one is Producer → Trader → Oil Mill. Although the remaining channels are existing but they are almost eligible redundant. Hence for the present study mostly preferred one was considered.

Price Spread and Producer Share in Consumer's Rupee

It inferred from the Table 3, the existing channel i.e., Producer to Oil Processor and to end consumer, the producer's share in the consumer's rupee worked out 46 per cent. The margins received by the traders and processors are found to be about Rs. 1,46/- and Rs. 1,471/- per quintal, respectively. In this context, if proper marketing arrangements are carried to facilitate the contracts with farmers, the share of farmers in the value addition would necessarily increase. The sale price of one quintal of main product i.e., Consumer's purchase price, was worked out to be Rs. 7,400/- where as for the by-product, the same was Rs. 7,79/-.

Economics of Value Addition

It was noted from the Table 4 that the major value addition for castor in the study area was being the extraction of castor oil after processing, for which the by-product obtained was castor cake. If the castor seed of one quintal is crushed, we obtain about 42 litre of castor oil and 57 kgs. of castor cake, approximately. The value of castor oil and castor cake extracted was found to be Rs. 7,179/- from one quintal of castor seed. Further, the cost of seed/raw material and cost of value addition/qt. of raw castor seed was calculated to Rs. 4,803/- and therefore the sum of value addition/qt, to Rs. 2,376/- Since the oil extraction units are of small scale in nature in this district, the cost on value addition realized was quite high and this can be reduced by increasing the capacity of the existing firms thereby reducing the long run average costs, so that large scale economies can be realized.

Advantages of Private Market Channel

The advantages of private market channel were also studied and the findings are presented in the Table 5. It could be inferred from the table, that cent per cent of the beneficiaries reported that traders were provide credit facilities whenever necessary. About 97 per cent of the beneficiaries stated that nearness to the village, hence transportation costs are less followed by confidence on the traders and less quantity of produce because of small size land holdings (64 per cent, 57 per cent) respectively.

Reasons for not selling in Government Organization

The reasons for not selling the produce in the market yard were also ascertained from the castor growers and presented in the Table 6. Cent per cent of the farmers were opined that regulated market yard is far away nearly 30 kms, leading to high transportation costs, followed by lack of accommodation facilities to stay if the produce is not sold and incurred higher commission charges (93 per cent, 77 per cent) respectively.

Table 3. Price Spread, Margins and Producer's Share in Consumer's rupee of Castor Oil

S. No		Particulars	Oil processor (Rs/Qt) Main Product	Percent to final price received
1		Net price received by producer/cultivator	3367	46
2		Expenses incurred by the producer		
	A	Loading & unloading charges	7	0.09
	B	Transportation cost	5	0.07
	C	Bagging costs	6	0.08
		Sub total	18	0.24
3		Producers' sale price/Trader purchase price	3385	46
4		Marketing costs incurred by trader		
	A	Fixed costs	2	0.03
	B	variable costs inclusive of transport costs	117	1.58
		Sub total	119	1.61
5		Trader's margin	146	1.97
6		Trader sale price/processor purchase price	3650	49
7		Marketing costs incurred - processor		
	A	Cost of extraction	89	1.20
	B	Fixed costs +Variable costs + storage + transport	1190	16
		Sub-total	1279	17
8		Processor's margin	1471	20
9		Total marketing costs	1416	19
10		Total marketing margins	1617	22
		Sale Price of Processor	6400	86
		Margin by Other industrial users such as painting industry etc.	1000	14
11		End user's/Consumers purchase price	7400	100
12		Producers share in consumer's rupee	46	-

Table 4. Value Addition of Castor Seed by processing for Castor Oil

Quantity of castor seed used (Qt)	Value of castor seed (Rs) D	Castor oil produced (Lt)	Value of castor oil produced (Rs) A	Castor cake produced (kg)	Value of castor cake produced (Rs) B	Total Value of castor oil and cake (Rs) A+B	Cost of value addition Rs/Qt C	Value addition per quintal [Rs] (A+B)-(C+D)
1	3367	42	6400	57	779	7179	1436	2376

Table 5. Advantages of Private Market Channel

S. No	Particulars	Response	Percentage
1	Traders were providing credit facility whenever necessary	70	100
2	Nearness to the village, hence transportation costs are less	68	97
3	Confidence on the traders	45	64
4	Less quantity of produce because of small size land holdings	40	57

Table 6. Reasons for not selling in Government Organization

S. No	Particulars	Response	Percentage
1	Regulated market yard is far away nearly 30 kms leading to high transportation costs	70	100
2	Lack of accommodation facilities to stay if the produce is not sold	65	93
3	High Commission charges	54	77

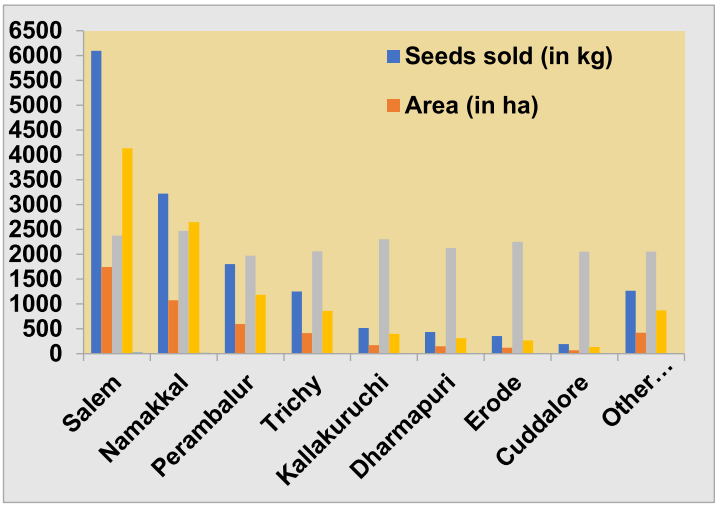
Monetization value for Castor YRCH 1 hybrid

The monetization value has been worked for Castor YRCH 1 hybrid seed supplied from TCRS, Yethapur for the period from August 2019 to August 2020. It could be observed from the table 7, the total quantity of Castor YRCH 1 hybrid seeds sold from TCRS, Yethapur for the period from August 2019 to August 2020 was 15141 kg with the monetization value of Rs. 59.43 crores.

It will obviously evident from the Table 7, Castor YRCH 1 hybrid seed cultivation spread all over in the Salem, Namakkal, Perambalur, Trichy, Kallakurichy, Dharmapuri, Erode and Cuddalore districts of Tamil Nadu.

Table 7. Area, Production, Productivity and Monetization value of Castor YRCH 1 Hybrid in Tamil Nadu for the period from August 2019 to August 2020

S. No	Name of the District	Seeds sold (kg)	Area (ha)	Average Productivity (kg/ha)	Production (ton)	Monetization value (Rs. in crore)
1	Salem	6094	1741	2375	4135	22.74
2	Namakkal	3221	1074	2470	2652	14.59
3	Perambalur	1802	601	1975	1186	6.52
4	Trichy	1250	417	2062	859	4.73
5	Kallakuruchi	517	172	2300	396	2.18
6	Dharmapuri	439	146	2125	311	1.71
7	Erode	353	118	2250	264	1.45
8	Cuddalore	196	65	2050	134	0.74
9	Other [minor Dist.]	1270	423	2050	867	4.77
	Total/Ave	**15141**	**4757**	**2184.1**	**10806**	**59.43**



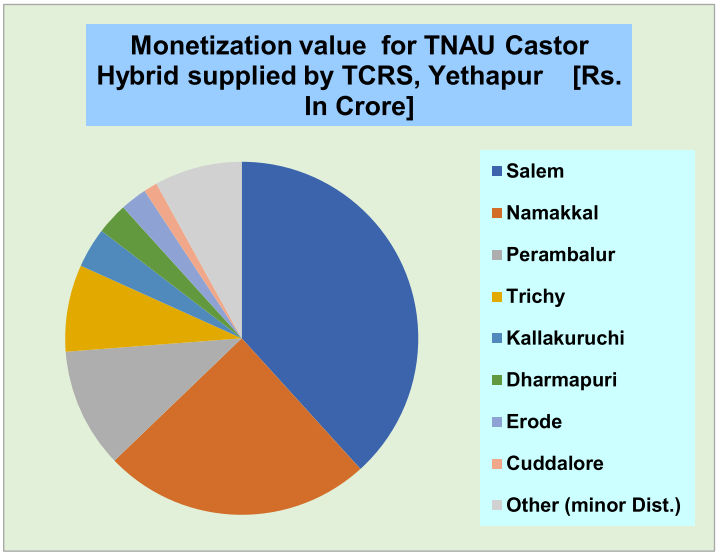


Fig. 1&2. Area, Production, Productivity and Monetization value of Castor YRCH 1 Hybrid in Tamil Nadu for the period from August 2019 to August 2020

Conclusions

The net income among the selected farmers was Rs. 65,090/- per hectare. Farmers were able to secure a net benefit cost ratio of 1.86 i.e., receiving Rs.1.86 additionally for every rupee invested in castor cultivation. Though four channels are existing in the village, the predominant one is Producer → Trader → Oil Mill. The producer's share in consumer's rupee was Rs. 46/- which is low and major share was being obtained by the middlemen, wherever farmer has less marketable surplus. For the manufacturing of crude castor oil after meeting the expenses of raw material and other costs value addition worked out to Rs. 2,376/- per quintal. Regulated market at Salem not used for the marketing of castor seed in the study area, revitalize existing market yards because it is far away from the production point.

There is a need to promote castor oil extracting mills in Thalaivasal and Macheri because at present, Salem is the only place with oil extraction facility. The high cost of processing per unit of produce i.e., Rs. 4,803/- per quintal, was due to non-realization of large-scale economies. This can be mitigated by encouraging buyback arrangements and training youth to handle large quantities of castor seed and process for castor oil. Creating awareness in the farmers about the value addition so that they bargain for a better share in the consumer's rupee. Identification and encouragement of rural entrepreneurs by training them in other value-added technologies, as castor has multiple uses and different end users, like paint manufacturing, soap industry uses and other products are needed. This will increase the farmer's due share in value addition process as domestic demand picks up and initiative from the industry becomes possible to have contract farming arrangements. Government's initiative is needed to create castor oil industrial park in Salem by encouraging the private partnership to setup other related industries to castor.

The total quantity of Castor YRCH 1 hybrid seeds sold from TCRS, Yethapur for the period from August 2019 to August 2020 was 15141 kg with the monetization value of Rs. 59.43 crores.

Scope of the Study

The results of this study might be helpful for the castor farmers, processors to get higher remunerative prices. The castor industry also plan their production pattern accordingly. The policy makers also make a decision to promoting castor economies.

Conflict of the Interest

There is no conflict of interest involved in this study.

Acknowledgement

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