

Economics of Tuberose Cultivation and its Marketing - A Case Study in Purba Medinipur District of West Bengal

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Abstract

Tuberose cultivation is highly labour intensive and family labour plays a vital role. The cultivation of tuberose provides the farmers a stream of incomes over a considerable period of time during the year. But the existing marketing system with its varying categories of intermediaries is such that the farmers' share in the consumers' price is low. And contrary to this, the market intermediaries are enjoying the larger share in the consumers' price.. Farmers' share decreases with the increase in the length of the chain of the market.

1. Introduction :

In recent years flower cultivation is becoming popular in many parts of our country. West Bengal is one of the important flower producing states in India. In the background of the increasing adaptation of flowers by the farmers it is felt that true nature of the costs of and returns from flower cultivation and its marketing system be analysed to facilitate the growth of flower cultivation . Keeping these in view the present study aimed at (1) analyzing the costs and returns from flower cultivation, (2) identifying different categories of market intermediaries and the marketing channels and (3) finding out the price-spread , marketing efficiency and the percentage share of the farmers as well as the share of the market intermediaries in the consumers' price.

2. Methodology :

Tuberose occupies an important place among the flowers grown in this area. This study analyses the above issues through the empirical investigation of tuberose cultivation in the Kolaghat-Panskura region in the district of East Midnapur in West Bengal. The duration of tuberose crop is seventeen months. It is planted mainly in the month of March of the year. Tuberose plant starts flowering after around four months of planting and thereafter harvesting is done continuously during the next 12 to 13 months. , Cultivators of tuberose flowers sell their production as loose flowers as well as cut-flowers (tuberose- sticks).

Two grampanchayats, having high concentration of flower cultivators, Mysora from Panskura I block and Brindabanchack from Panskura II block, of Purba Medinipur district.were purposively selected. .A list of the total tuberose cultivators in these two grampanchayats was prepared with the help of the panchayat members and the Krishi Proyukti Sahayaks of these two grampanchayats. 40 tuberose cultivators were selected from this list using simple random sampling technique. Selected flower cultivators were classified into four groups based on the total landholding of the farmers. : Group-I (0.01- 0.5 ha), Group-II (0.5-1.0 ha), Group-III (1.0-2.0 ha) and Group-IV (2.01 + ha).

For the purpose of studying the marketing aspects, Deulia, Kolaghat, Keshapat and Panskura flower markets were selected purposively. Among the market intermediaries ten commission agents, eight aratdars, eight wholesalers and ten retailers were selected.

Primary data were collected using well designed schedules during the year 2007-08. Simple Statistical tools like tables, averages, percentages etc. have been used to derive meaningful conclusions. The concepts of costs in the Indian official cost studies namely Cost A1, Cost A2, Cost B and Cost C have been used. Marketing costs refers to the cost of performing the various marketing functions and of operating various agencies. Marketing margin is the net revenue received by a marketing agency. The difference between the price paid by consumer and the price received by the cultivators for an equivalent quantity of tuberose flower represents the price spread. Here, for computing marketing efficiency Shephard's formula has been used.

3. Results and Discussion

3.1 Analysis of production costs, marketing costs and profitability of the cultivators

Table 1 shows that, on an average, the cost of cultivation of one hectare of tuberose flower is Rs. 264,596. This indicates that tuberose flower cultivation is expensive. Among the different groups of farmers, cost of cultivation for tuberose flower is highest (Rs. 279,135/ha) for Group I followed by Group IV, Group II and Group III respectively. Human labour cost is the main component of the total cost, which is Rs. 143,249 and it is 54.14 percent of the total cost of tuberose cultivation. From this Table it is observed that, percentage of labour cost out of total cost is highest (59.37 percent) in case of the farmers belonging to Group IV followed by Group I, Group III and Group II respectively among the four groups of farmers. Family labour plays a vital role in supplying labour in tuberose flower cultivation, it accounts for 31.69 percent of the total cost and 58.53 percent of the total labour cost. Percentage of use of family labour cost out of total cost decreases with the increase in landholding-size. Percentage of use of hired labour in tuberose flower cultivation is 22.45 percent of the total cost and it is 41.47 percent of the total labour cost. Percentage of hired labour cost out of total cost increases with the increase in landholding size. Thus there is intensive use of human labour and specifically family labour in tuberose flower cultivation. Thus it is observed that the tuberose cultivation has the capacity to provide employment on a continuous basis for a good length of period during the year to a large number of labourers. Tuberose cultivation has the potentiality of becoming an important crop in the areas with a high level of disguised unemployment and abundance of family labour

Table 1: Item-Wise Breakup of the Cost of Tuberose Cultivation by Different Groups of Cultivators (in Rs. Per Hectare.)

Items	Group-I	Group-II	Group-III	Group-IV	Overall
	(.01-.5 ha)	(.51-1ha)	(1.01-2ha)	(2.01ha --)	
Land Preparation	2179 (0.78)	2888 (1.09)	2176 (0.83)	2969 (1.1)	2520 (0.95)
Planting Material	19118 (6.85)	21369 (8.1)	27742 (10.63)	19950 (7.37)	23805 (9)
Manures & Fertiliser	33520 (12.01)	27666 (10.49)	28354 (10.87)	23323 (8.62)	28075 (10.61)
Plant protection chemicals	4588 (1.64)	2497 (0.95)	1764 (0.68)	2375 (0.88)	2357 (0.89)

Irrigation	17257	18298	10139	9025	13731
	(6.18)	(6.94)	(3.89)	(3.33)	(5.19)
Total Human Labour	150848	140313	140248	160666	143249
	(54.04)	(53.2)	(53.75)	(59.37)	(54.14)
(a) Hired	28855	46446	59877	135064	59405
	(10.34)	(17.61)	(22.95)	(49.91)	(22.45)
(b) Family	121994	93867	80371	25603	83844
	(43.7)	(35.59)	(30.8)	(9.46)	(31.69)
Rent paid for leased in land	2676	0	0	0	245
	(0.96)	(0)	(0)	(0)	(0.09)
Imputed Rental value of own land	38617	42632	42632	42632	42265
	(13.83)	16.16	(16.34)	(15.75)	(15.97)
Imputed interest on own fixed capital	1147	827	882	1188	916
	(0.41)	(0.31)	(0.34)	(0.44)	(0.35)
Miscellaneous. cost *	9184	7254	6982	8495	7434
	(3.29)	(2.75)	(2.68)	(3.14)	(2.81)
Total	279135	263745	260919	270622	264596
	(100)	(100)	(100)	(100)	(1000)

Note : Figures in the parentheses indicate percentage to total.

* Miscellaneous cost implies land revenue, cesses, other taxes, depreciation on farm implements, depreciation on farm buildings, farm machinery and irrigation structure, interest on working capital, expenses on ropes, repairing of small farm implements etc.

Among the material costs, most important is cost of manures and fertilizer. It is Rs. 28,075 per hectare and it accounts for 10.61 percent of the total cost. Percentage of this cost more or less decreases with the increase in landholding-size. Whereas planting material cost is Rs. 23,805 and it constitutes 9 percent of the total cost. On an average, plant protection chemicals cost is only 0.89 percent of the total cost. Cost of irrigation is also low and it accounts for only 5.19 percent of the total cost of tuberoses cultivation. In an area where labour is abundant and water is scarce resource tuberoses flower cultivation may be a good alternative.

Table 2 shows that on an average, per hectare cost of cultivation using the concept of Cost A₁ is Rs. 137,327, where the farmer contributes land and other resources. Now using the concept of Cost A₂, where rent is paid for leased in land, it is Rs. 137,572 per hectare. Cost of cultivation in respect of Cost B, where imputed rent to be paid to the owned land and imputed interest to be paid on the owned fixed capital are taken into account, is Rs. 180,752 per one hectare of tuberoses flower cultivation. If the imputed cost of family labour is considered in the cost, ie, Cost C, then the cost is Rs. 264,596 per hectare. Farmers marketing cost including the cost of labour used for marketing is Rs. 37,561 per hectare. Cost borne by the farmers upto the point of selling the flowers in the market (ie, total cost) is Rs. 302,157 per hectare of tuberoses flower. This cost varied from Rs. 294,039 for Group III to Rs. 351,990 for Group IV. Cost A₁, cost A₂ and cost B increase with the increase in landholding size of the farmers.

Table 2: Cost of Production and the Cost of Marketing of Tuberose Cultivation and the Returns from it for the Different Groups of Farmers (in Rs. per Hectare.)

Items	Group-I	Group-II	Group-III	Group-IV	Overall
	(.01-.5 ha)	(.51-1ha)	(1.01-2ha)	(2.01ha --)	
1. Cost A1	114700	126419	137034	201200	137327
2. Cost A2	117377	126419	137034	201200	137572
3. Cost B	157141	169878	180548	245020	180752
4. Cost C	279135	263745	260919	270622	264596
5. Farmers' Marketing Cost	40912	30410	33120	81368	37561
Total cost	320047	294155	294039	351990	302157
Gross Return	366829	293281	286616	394250	307026
Surplus Over					
(a) Cost A1	252129	166863	149582	193050	169699
(b) Cost A2	249453	166863	149582	193050	169454
(c) Cost B	209688	123403	106068	149230	126273
(d) Cost C	87695	29536	25697	123628	42429
(e) Total cost	46783	-874	-7423	42260	4868
Return Cost Ratio at					
(a) Cost A1	3.2	2.32	2.09	1.96	2.24
(b) Cost A2	3.13	2.32	2.09	1.96	2.23
(c) Cost B	2.33	1.73	1.59	1.61	1.7
(d) Cost C	1.31	1.11	1.1	1.46	1.16
(e) Total cost	1.15	1	0.97	1.12	1.02
Net Return per one rupee of inve.	0.15	0	-0.03	0.12	0.02
Family Labour Income	153230	113750	102130	77140	108764

Source; Primary Survey.

On an average, gross return is Rs. 307,026 per hectare of tuberose flower cultivation. Gross return is found to be highest with Rs. 394,250 in case of farmers belongs to Group IV followed by Group I, Group II and Group III with Rs. 366,829, Rs. 293,281 and Rs. 286,616 respectively. Gross return of Group IV is high because some farmers in this group sell their flower directly to a distant big market (viz, Kolaghat market) and average production in this Group is somewhat higher than that of other groups of farmers.

Profitability of this crop under consideration has been measured in terms of (i) surplus over cost and (ii) Gross return-cost ratio. These two measures have also been worked out on the basis of Cost A₁, Cost A₂, Cost B, Cost C as well as total cost concept.

Table 2 shows that, on an average, surplus over Cost A₁ is Rs. 169,699 per hectare of tuberose flower cultivation. Surplus over Cost A₂ concept is Rs. 169,454 per hectare. Surplus over cost B concept is Rs. 126,273 per hectare. Surplus over Cost C concept is Rs. 42,429 per hectare. Surplus

over total cost concept. ie, return to management for his managerial functions which also include risk and uncertainty element (net return) is Rs. 4,868 for one hectare of tuberose cultivation. Net return in respect of total cost is highest for the Group I farmers with Rs. 46,783. Gross return-cost ratio at either of cost concepts are found to be more than unity (except at total cost for Group II and Group III), which indicate the profitability of tuberose flower cultivation. On an average, net return to management for his managerial functions is Rs. 0.02 for one rupee of investment in tuberose flower cultivation. Net return per one rupee of investment is maximum for the Group I farmers (Rs. 0.15). On an average, family labour income is Rs. 108,764/hect for tuberose cultivation and marketing. This income decreases with the increase in the size of landholding.

3.2 Analysis of market intermediaries, market channels, price spread and market efficiency

Six types of channels were found in the marketing of tuberose flower in the selected area with the following market intermediaries;

Channel-I : Producer-Aratdar-Wholesaler-Retailer-Consumer.

Channel-II : Producer - Commission agent - Retailer - Consumer.

Channel-III : Producer - Wholesaler - Retailer - Consumer.

Channel-IV : Producer - Aratdar - Retailer - Consumer

Channel-V : Producer - Retailer - Consumer.

Channel-VI : Producer-Consumer.

Marketing cost of tuberose flower incurred by different market intermediaries have been shown in Table 3. It is observed that the marketing cost of retailer is found to be highest (Rs. 11.53 per kg.) followed by producer, wholesaler, commission agent and aratdar with Rs. 3.85, Rs. 2.46, Rs. 2.20 and Rs. 0.19 per kg. respectively. Labour cost (other than labour for loading & unloading) is found to be the most expensive part of the marketing costs incurred by all the market intermediaries including the producers. Labour charge (other than labour for loading & unloading), loading & unloading charge, transportation and spoilage losses are the important items of marketing costs at wholesaler's level. Among all types of the marketing costs incurred by the wholesaler, labour charge (other than labour for loading & unloading) accounts for the highest amount and cost for loading & unloading comes in the second position. In case of retailers and the commission agents, among all types of the marketing costs, spoilage loss is the second important.

Table 3: Marketing Costs of Tuberose incurred by Different Market Intermediaries.(Rs./Kg.)

Items	Overall Producer	Aratdar	Commission Agent	Wholesaler	Retailor
1.Storage	0	0	0	0.18	0.31
	(0)	(0)	(0)	(7.32)	(2.69)
2.Packing	0.19	0	0.11	0.12	0.47
	(4.94)	(0)	(5)	(4.88)	(4.08)
3.Spoilage	0.08	0	0.52	0.27	1.44
	(2.08)	(0)	(23.64)	(10.98)	(12.49)
4.Loading&Unloading	0.07	0	0.25	0.29	0.04
	(1.82)	(0)	(11.36)	(11.79)	(0.35)
5.Market fee/Octroi/ shoprent/commission	0.26	0.03	0.08	0.09	0.63
	(6.75)	(15.79)	(3.64)	(3.66)	(5.46)

6.Labour	2.55	0.12	0.82	0.91	4.68
	(66.23)	(63.16)	(37.27)	(36.99)	(40.59)
7.Transportation	0.23	0	0.19	0.27	0.49
	(5.97)	(0)	(8.64)	(10.98)	(4.25)
8.Miscellaneous	0.47	0.04	0.23	0.33	3.47
	(12.21)	(21.05)	(10.45)	(13.41)	(30.1)
Total	3.85	0.19	2.2	2.46	11.53
	(100)	(100)	(100)	(100)	(100)

Source; Primary Survey.

Note: Figures in the parentheses indicate percentages to total.

Table 4: Marketing Costs of Different Marketing Channels of Tuberose. (Rs.per kg)

Items	Channel I	Channel II	Channel III	Channel IV	Channel V	Channel VI
1.Storage	0.49	0.31	0.49	0.31	0.31	0
	(2.72)	(2.26)	(2.75)	(1.99)	(2.02)	(0)
2.Packing	0.78	0.58	0.78	0.66	0.66	0.19
	(4.33)	(4.22)	(4.37)	(4.24)	(4.29)	(4.94)
3.Spoilage	1.79	1.96	1.79	1.52	1.52	0.08
	(9.93)	(14.28)	(10.03)	(9.76)	(9.88)	(2.08)
4.Loading&Unloading	0.4	0.29	0.4	0.11	0.11	0.07
	(2.22)	(2.11)	(2.24)	(0.71)	(0.72)	(1.82)
5.Market fee/Octroi/ shoprent/commission	1.01	0.71	0.98	0.92	0.89	0.26
	(5.6)	(5.17)	(5.49)	(5.91)	(5.79)	(6.75)
6.Labour	8.26	5.5	8.14	7.35	7.23	2.55
	(45.81)	(40.06)	(45.63)	(47.21)	(47.01)	(66.23)
7.Transportation	0.99	0.68	0.99	0.72	0.72	0.23
	(5.49)	(4.95)	(5.55)	(4.62)	(4.68)	(5.97)
8.Miscellaneous	4.31	3.7	4.27	3.98	3.94	0.47
	(23.9)	(26.95)	(23.93)	(25.56)	(25.62)	(12.21)
Total	18.03	13.73	17.84	15.57	15.38	3.85
	(100)	(100)	(100)	(100)	(100)	(100)

Source : Primary Survey.

Note : Figures in the parentheses indicate percentages to total.

Analysis of marketing costs of different marketing channels of tuberose flower has been shown in Table 4. From the Table-4 it is observed that, the marketing cost is highest (Rs. 18.03 per kg.) in channel-I having three middlemen followed by channel-IV (Rs. 17.84), channel-II (Rs. 15.57), channel-V (Rs. 15.38), channel-III (Rs. 13.73) and channel-VI (Rs. 3.85) respectively. Table-4 also shows that labour charge (other than labour for loading & unloading) is the most expensive item of marketing for all the channels. The next important item is spoilage loss for all channels except channel-VI.

Table 5: Marketing Costs, Margins, Price Spread, Marketing Efficiency in the Marketing of Tuberose in the Different Marketing Channels. (Rs.per kg)

Items	Channel I	Channel II	Channel III	Channel IV	Channel V	Channel VI
1.Net price received by Producer	26.78 (46.01)	29.85 (52.19)	27.05 (46.48)	26.78 (49.4)	27.15 (50.14)	36.15 (90.38)
2.Marketing cost of Producer (except commission charge)	3.85 (6.61)	—	3.85 (6.62)	3.85 (7.1)	3.85 (7.11)	3.85 (9.62)
3.Marketing cost of Aratdar	0.19 (0.33)	—	—	0.19 (0.35)	—	—
4.Profit of Aratdar	0.74 (1.27)	—	—	0.74 (1.37)	—	—
5.Marketing cost of Commission Agent	—	2.2 (3.85)	—	—	—	—
6.Profit of Commission Agent	—	3.85 (6.73)	—	—	—	—
7.Marketing cost of Wholesaler	2.46 (4.23)	—	2.46 (4.23)	—	—	—
8.Profit of Wholesaler	3.69 (6.34)	—	4.34 (7.46)	—	—	—
9.Marketing cost of Retailer/Vendor	11.53 (19.81)	11.53 (20.16)	11.53 (19.81)	11.53 (21.27)	11.53 (21.29)	—
10.Profit of Retailer/Vendore	8.97 (15.41)	9.77 (17.08)	8.97 (15.41)	11.12 (20.51)	11.62 (21.46)	—
11.Consumer Price	58.21 (100)	57.2 (100)	58.2 (100)	54.21 (100)	54.15 (100)	40 (100)
Total Marketing Cost	18.03 (30.97)	13.73 (24)	17.84 (30.65)	15.57 (28.72)	15.38 (28.4)	3.85 (9.62)
Profit / Margins	13.4 (23.02)	13.62 (23.81)	13.31 (22.87)	11.86 (21.88)	11.62 (21.46)	—
Price Spread	31.43 (53.99)	27.35 (47.81)	31.15 (53.52)	27.43 (50.6)	27 (49.86)	3.85 (9.62)
Marketing Efficiency	2.23	3.17	2.26	2.48	2.52	9.39

Note : Figures in the parentheses indicate percentages to total.

Marketing costs, marketing margins, price spread and marketing efficiency of tuberose flower in the existing marketing channels and the price paid by the consumers have been presented in Table 5. It is observed that the net price received by the producers varied from Rs. 26.78 per kg. (46.01 percent of consumer's price) in channel- I to Rs. 36.15 per kg. (90.38 percent of consumer's price) in channel-VI in the process of marketing. Marketing costs varied from Rs. 3.85 per kg. (9.62 percent of consumer's price) in channel-VI to Rs. 18.03 per kg (30.97 percent of consumer's price) in channel-I. The margins appropriated by the intermediaries varied from Rs. 11.62 per kg (21.46 percent of consumer's price) in channel-V to Rs 13.62 per kg (23.81 percent of consumer's price) in channel-II. Price spread varied from Rs. 3.85 per kg (9.62 percent of consumer's price) in channel-VI to Rs. 31.43 per kg (53.99 percent of consumer's price) in channel-I. Price spread in channel - I is highest due to highest marketing cost.

From Table 5 it is also observed that, marketing efficiency is much higher (9.39) in channel-VI having no middleman and it is lowest (2.23) in channel-I having three middlemen. So, channel-VI is more efficient in tuberose marketing. Channel-III (having two middlemen) is efficient than channel - IV (having two middlemen), channel-II (having two middlemen) and channel-V (having one middleman) because marketing cost in channel-III is lower than other. Channel-VI is beneficial to the farmers than other marketing channels.

4. Conclusion :

The cultivation of tuberose flower is very costly. It requires huge amount of human labour that is very expensive, if hired, now-a-days. But if the labour is available in the family (and indeed there exists huge number of family members who are disguised unemployed) , the cultivation of tuberose flower seems to be a lucrative alternative to the existing paddy cultivation., Tuberose cultivation provides a significant income in the form of family labour income. It is a good source of employment in the rural areas.. However as in the cases of other agricultural produces, the producers get a lesser share in consumer's price. And it is observed that the producer's share decreases with the increase in the length of the chain of the market. Actually the intermediaries are taking away a large proportion of the money spent by the consumers.. If proper measures are taken to improve the marketing situation in favour of the producers then tuberose cultivation can play an important role in improving the economic condition of this labour surplus and land scarce families of this area.

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