An economic analysis of production and marketing of jasmine in Madurai district of Tamil Nadu

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ABSTRACT

The study was conducted in Madurai district of Tamil Nadu and the selection was mainly based on the dominance of the jasmine crop in the district. A sample of 120 jasmine growers was selected randomly from Thirumangalam and Thiruparankundram Taluks of the district. The per acre establishment cost of jasmine garden was found to be Rs 22,653.45 during the first year. The average maintenance cost was worked out to be Rs 33,335.50 per acre for all the age groups of gardens and the average total cost of cultivation was Rs 42,576.88 per acre which constituted variable (Rs 33,505.10) and fixed (Rs 9,071.78) cost. The average yield of flowers obtained was 7,452 kg per acre. The average net return over total cost of cultivation was Rs 69,203.12 per acre. Two marketing channels were identified in which the producer's share in consumer's rupee was the highest in channel-II (84.30%). The major constraints confronting the cultivators were incidence of pests and diseases, high commission charges, violent price fluctuations and non-existence of well developed marketing system. Hence it was recommended that adoption of recommended cultivation practices and provision of adequate credit would help in expanding area and also increasing productivity of jasmine besides strengthening marketing system.

Keywords: Jasmine; production; marketing cost; producer; consumer; share; constraints

INTRODUCTION

Flowers have their own importance since ancient times and are being used for decoration, worshiping as well as for satisfying the aesthetic feelings. In recent years the floriculture is emerging as a market demand driver activity throughout the world and considered as a potential money-spinner. The global floriculture trade has been growing continuously at the rate of 10 per cent per annum (Harisha 2017).

There has been a tremendous increase in the area and trade of jasmine in India due to certain socio-economic factors viz changes in social values of people, increase in population, standard of living and the importance of flowers during auspicious occasions. The estimated area under flowers in the country is about 65,000 ha. India's 'flower power' continues to bloom with the country emerging as the second largest grower of flowers around the world surpassed only by China. About 2,33,000 hectares across the country were used for floriculture producing 17,29,000 MT of loose flowers and 76,732 lakh cut flowers. Andhra Pradesh leads in loose flowers production with 2,24,410 MT cultivated over 34,850 hectares followed by Karnataka at 2,07,500 MT cultivated in 29,700 hectares and Tamil Nadu with 3,12,970 MT grown in 28,700 hectares (Senthilkumar 2017).

Among the flowers, jasmine is the important flower crop of Tamil Nadu. The flowers harvested in the state are exported to neighbouring countries like Singapore, Sri Lanka, Malaysia and the Middle East. The major jasmine cultivating districts of Tamil Nadu are Madurai, Dindigul, Salem, Tirunelveli, Virudhunagar and Trichy. This sector generates higher income and employment opportunities especially for women.

Though the annual demand for flowers is growing at a rate of 25 per cent, India's share in international market of flowers is negligible (Bhuyan 2015). The constraints in cultivation of jasmine were already addressed by Jyothi and Raju (2003) and Sivaramane et al (2008). The details on feasibility of jasmine cultivation need to be considered and hence an effort was made to detect the cost and returns of jasmine in Tamil Nadu. The objectives of the study were to find out the cost of production and returns from jasmine garden, analyse the marketing cost incurred by the producers and intermediaries and know the constraints in production and marketing of jasmine.

METHODOLOGY

Madurai district of Tamil Nadu was selected purposively as it is one of the major growers of jasmine in the state. Thirumangalam and Thiruparangundram Taluks were selected on the basis of highest area under jasmine. The village-wise information relating to area under jasmine was obtained from the office of the assistant director of horticulture of the respective Taluks. The top four villages having the highest area under jasmine were selected from each Taluk and from each village 15 jasmine growers were selected at random and the total sample size was 120. The primary data pertaining to the crop were collected by pre-tested schedule through personal interview method. Average and percentage analyses were carried out to work out the cost of cultivation, returns, marketing cost incurred and constraints in production and marketing.

RESULTS and DISCUSSION

Establishment cost of the jasmine garden

The establishment cost per acre of the jasmine garden was estimated by considering the quantity of inputs and labour used, current market prices and age of gardens prevailed in the study area. The labour and material costs constituted main items of the establishment cost. It can be observed from Table 1 that the average per acre establishment cost incurred by the jasmine farmers was Rs 22,653.45 out of which the labour and material costs accounted for 34.11 and 29.45 per cent respectively. The average labour and bullock pairs used per acre were 139.28 man days and 4.62 bullock pair days respectively. The other costs including land revenue, rental value of land, depreciation and interest on fixed and worked capital constituted 36.44 per cent. Among the labour costs, maximum of 10.33 per cent of cost was incurred towards weeding followed by 7.96 per cent on trenching and pitting, 5.20 per cent on irrigation and operation of water channels, 4.07 per cent on application of manures and fertilizers, 3.66 per cent on land preparation and only 0.65 per cent on gap filling. Of the total material costs incurred, the cost on planting material was found to be high constituting 12.36 per cent. The findings are in line with the observations of Guledgudda (1996). The other costs involved were costs on FYM and neem cake (9.12%), fertilizers (5.16%) and plant protection chemicals (2.80%). The rental value of land and interest on working capital constituted 13.07 and 11.22 per cent respectively.

Maintenance cost of jasmine in different age group gardens

Maintenance cost was the recurring cost incurred after the establishment of plants ie from second year onwards. The maintenance cost included the expenditure towards the use of labour and other material inputs per year for different age groups of plants. The operation-wise and resource-wise maintenance cost of jasmine garden is shown in Tables 2 and 3. It can be observed that the average total maintenance cost ranged from Rs 33,335.50 in second year to Rs 39,693.00 in fourth and subsequent years. During the third year it was Rs 37,643.00.

In the operation-wise average cost of maintenance, harvesting alone constituted about 80 per cent which was followed by weeding, irrigation, manures and fertilizers, plant protection and pruning charges. Among the resource-wise maintenance cost nearly one third of the cost was incurred in labour. It increased from 73.12 in second year to 78.58 during fourth and subsequent years. This was followed by manures and fertilizers, plant protection chemicals and irrigation cost. The increase in annual maintenance cost was due to effect of increase in cost of variable inputs. The result are in accordance with the findings of Shedage and Borude (1992) and Subrahmanyam (1989).

Total cost of cultivation of jasmine garden

The total cost involved in jasmine garden during second, third and fourth and subsequent years is given in Table 4.

Variable cost: The variable cost involved in cultivation of jasmine was about three-fourth of the total cost involved. It increased from Rs 33,505.10 during second

Table. 1. Establishment cost of jasmine garden (per acre)

Component	Number of man days	Bullock pair days	Amount (Rs)	Percentage
Labour cost				
Land preparation	7.32	4.62	830.00	3.66
Trenching and pitting	21.65		1,082.50	7.96
Manure and fertilizers application	12.46	-	923.00	4.07
Filling pits and planting	11.55	-	577.50	2.55
Irrigation and preparation of water channels	23.60	-	1,180.00	5.20
Gap filling	2.93	-	146.50	0.65
Weeding	46.81	-	2,340.50	10.33
Spraying of plant protection chemicals	12.96	-	648.00	2.86
Total	139.28	4.62	7,728.00	34.11
Material cost				
Planting material (800 cuttings)	-	-	2,800.00	12.36
Farm yard manure + neem cake (6.89 tonnes)	-	-	2,067.00	9.12
Fertilizers (19:19:19) (13 kg)	-	-	1,170.00	5.16
Plant protection chemicals	-	-	634.98	2.80
Total material cost	-	-	6,671.00	29.45
Other costs				
Land revenue & other items	-	-	142.60	0.63
Rental value of land	-	-	2,960.90	13.07
Interest on fixed capital excluding land	-	-	2,540.90	11.22
Interest on working capital	-	-	1,537.95	6.79
Depreciation	-	-	1,072.10	4.73
Total (C)	-	-	8,254.45	36.44
Total cost (A + B + C)	-	-	22,653.45	100.00

Table 2. Operation-wise maintenance cost of jasmine (Rs/acre)

Component	Year		
	Second	Third	Fourth and subsequent
Weeding	2,460.50 (7.38)	3,172.50 (8.43)	3,663.00 (9.23)
Manures and fertilizers	1,163.00 (3.49)	1,206.00 (3.20)	1,206.00 (3.04)
Irrigation charges	1,828.00 (5.48)	1,800.00 (4.78)	1,785.00 (4.50)
Plant protection	681.00 (2.04)	687.50 (1.83)	730.00 (1.84)
Pruning charges	203.00 (0.69)	288.00 (0.76)	291.50 (0.73)
Harvesting	27,000.00 (81.00)	30,489.00 (81.00)	32,044.50 (80.73)
Total	33,335.50	37,643.00	39,693.00

Figures in parentheses are per cent values

Table 3. Resource-wise maintenance cost of jasmine (Rs/acre)

Component	Year		
	Second	Third	Fourth and subsequent
Labour cost	24,374.50 (73.12)	28,169.00 (74.83)	31,190.00 (78.58)
Cost of manures and fertilizers	5,775.00 (17.32)	6,184.00 (16.43)	6,047.00 (15.23)
Cost of plant protection chemicals	3,030.00 (9.09)	3,134.00 (8.33)	2,300.00 (5.80)
Cost of irrigation	156.00 (0.47)	156.00 (0.41)	156.00 (0.39)
Total	33,335.50	37,643.00	39,693.00

Figures in parentheses are per cent values

year to Rs 39,862.60 during fourth and subsequent years. Among these the cost incurred on harvesting constituted above 60 per cent of the total variable cost. This was followed by weeding, irrigation, manures and fertilizers, plant protection and pruning charge and land revenue.

Fixed cost: It included rental value of land, apportioned establishment cost, interest on fixed capital and depreciation. The annual fixed cost accounted for Rs 9,071.78 per hectare. Among all the fixed costs incurred, the rental value of land constituted the highest share during all the years. This was followed by establishment cost, interest on fixed capital and depreciation cost.

Therefore it can be observed from the data that the total cost incurred for jasmine garden in the second year was Rs 42,576.88 and increased to Rs 46,257.38 in the third and Rs 48,934.38 in the fourth and subsequent years.

Costs and return structure for jasmine in different age groups

The unit cost of production and returns from jasmine garden are furnished in Tables 5 and 6. Table 5 shows that the unit cost of production per kg of jasmine flowers was Rs 5.21 during the second year, Rs 4.63 during the third year and Rs 4.94 during the fourth and subsequent years of production. The average gross income from the jasmine garden during second, third and fourth and subsequent years was Rs 1,11,780.00, 1,66,860.00 and 1,54,020.00 respectively as shown in Table 6. The net income was found to be the highest amounting to Rs 1,20,602.62 in the third year with a gross income per rupee of investment at Rs 3.60. This was followed by Rs 1,05,085.62 in the fourth and subsequent years and Rs 69,203.12 in the second year.

Marketing of jasmine flowers

Marketing functions: The marketing process of jasmine in the study area involved assembling, packing, transportation and selling functions. Better packing always helped in maintaining the quality and in reducing the losses during transit on account of spoilage. Packing of flowers was generally done in gunny bags having a capacity of 30 to 40 kg flowers. They were sprinkled with cold water or the bags containing flowers were dipped in cold water to keep the flowers fresh till they reached the hands of the commission agents.

Almost all the flowers of jasmine from the study area were sent to flower markets by buses. The commission agents cum wholesalers arranged for the sale of flowers in these markets for which they charged a commission of 12, 12.5 and 13.00 per cent of the sale proceeds from the producer-seller in the respective markets (Mattuthavani and Villapuram).

Marketing channels

There were two marketing channels through which jasmine was marketed in the study area:

Channel-I: Producer - Retailer - Consumers
Channel-II: Producers - Commission Agents cum Wholesalers - Retailers – Consumers

Marketing cost incurred by the producers in the sample markets

Data on marketing cost incurred by the producers in the sample markets are presented in Table 7. In Mattuthavani market under Channel-I the significant item of cost was the commission charges which accounted for 82.45 per cent (Rs 300.00/q) and 82.97 per cent (Rs 256.47/q) in channel-II. The next important item was the transport cost which accounted for 16.52 per cent (Rs 60.12/q) and 16.38 per cent (Rs 50.65/q) in channel-I and Channel-II respectively. The packing charges estimated were 1.03 and 0.65 per cent respectively for channel-I and Channel-II respectively.

Similarly in Villapuram market the major item of cost was the commission charges costing 82.25 per cent (Rs 289.59/q) and 91.63 per cent (Rs 280.62/q) in channel-I and Channel-II respectively. Transport cost accounted for 16.75 and 7.39 per cent followed by packing cost of 1.00 and 0.98 per cent in respective channels.

Cost incurred by the market intermediaries

In Mattuthavani market on an average total marketing cost incurred by the wholesaler was Rs 29.02 per quintal of jasmine and the significant item of the cost was transportation charges contributing to the extent of Rs 15.01 (51.72%) per quintal of jasmine followed by the losses due to spoilages (Rs 8.19/q) (Table 8). The other expenses incurred were miscellaneous charges, packing charges, loading and unloading charges, tax and license fee and interest on operating capital together which accounted for Rs 5.82 per quintal. The same phenomenon was observed in the case of retailers also. The major item of the cost was transport cost that accounted for Rs 16.20 and

Table 4. Total cost of cultivation of jasmine garden (Rs/acre)

Component	Year		
	Second	Third	Fourth and subsequent
Direct cost			
Weeding	2,460.50 (5.78)	3,172.50 (6.96)	3,663.00 (7.49)
Manures and fertilizers	1,163.00 (2.73)	1,206.00 (2.61)	1,206.00 (2.46)
Irrigation charges	1,828.00 (4.29)	1,800.00 (3.89)	1,785.00 (3.65)
Plant protection	681.00 (1.60)	687.50 (1.49)	730.00 (1.49)
Pruning charges	203.00 (0.48)	288.00 (0.62)	291.50 (0.60)
Harvesting	27,000.00 (63.41)	30,489.00 (65.91)	32,044.50 (65.48)
Land revenue	142.60 (0.33)	142.60 (0.31)	142.60 (0.29)
Total direct cost (A)	33,505.10 (78.70)	37,185.60 (80.39)	39,862.60 (81.46)
Indirect cost			
Establishment cost	959.93 (2.25)	959.93 (2.07)	959.93 (1.96)
Rental value of land	2,960.90 (6.95)	2,960.90 (6.40)	2,960.90 (6.05)
Interest on fixed capital	2,540.90 (5.97)	2,540.90 (5.45)	2,540.90 (5.19)
Interest on working caital	1,537.95 (3.62)	1,537.95 (3.32)	1,537.95 (3.14)
Depreciation	1,072.10 (2.52)	1,072.10 (2.32)	1,072.10 (2.19)
Total indirect cost (B)	9,071.78 (21.30)	9,071.78 (19.61)	9,071.78 (18.54)
Total cost of cultivation (A + B)	42,576.88 (100.00)	46,257.38 (100.00)	48,934.38 (100.00)

Figures in parentheses are per cent values

Table 5. Unit cost of production

Year	Total cost of cultivation (Rs/ha)	Yield of flowers (kg/ha)	Cost of production (Rs/kg)
Second	42,576.88	7,452	5.21
Third	46,257.38	9,270	4.63
Fourth and subsequent	48,934.38	9,060	4.94

Table 6. Returns from Jasmine garden (Rs/acre)

Component	Year		
	Second	Third	Fourth and subsequent
Gross income	1,11,780.00	1,66,860.00	1,54,020.00
Cost of cultivation	42,576.88	46,257.38	48,934.38
Net income	69,203.12	1,20,602.62	1,05,085.62
Gross income per rupee of investment	2.63	3.60	3.15

Table 7. Marketing cost incurred by the producers in the sample markets (Rs/q)

Component	Mattuthavani market				Villapuram market			
	Channel-1		Channel-2		Channel-1		Channel-2	
	Amount	%	Amount	%	Amount	%	Amount	%
Packing cost	3.75	1.03	2.00	0.65	3.55	1.00	3.00	0.98
Transportation cost	60.12	16.52	50.65	16.38	58.97	16.75	22.64	7.39
Commission charges	300.00	82.45	256.47	82.97	289.59	82.25	280.62	91.63
Total	363.87	100.00	309.12	100.00	352.11	100.00	306.26	100.00

14.12 per quintal in channel-I and channel-II respectively followed by spoilage which accounted to Rs 9.12 and 10.22 per quintal respectively.

In the case of Villapuram market the average total marketing cost incurred by the wholesaler was Rs 42.74/q out of which the major item of cost was transportation cost which accounted for Rs 19.62/q followed by spoilage cost which accounted to Rs 10.52/q. In this market the retailer in channel-I incurred major cost on transportation (Rs 14.80/q) followed by spoilage charges (Rs 12.12/q) and the average total marketing cost accounted to Rs 33.84/q. Whereas the same was observed for retailer in channel-II and the major cost was the transportation cost which accounted for Rs 15.50/q followed by spoilages (Rs 11.56/q) and the total average cost accounted for Rs 34.65 per quintal of the total marketing cost.

Producer's share in consumer's rupee in jasmine marketing

In Mattuthavani market two channels were identified in which under channel-I the producer's share in consumer's rupee was Rs 68.91 and it was highest of Rs 84.30 in Channel-II. The retailer purchased flowers from the producer through wholesaler and sold to the consumer. In the process retailer incurred cost of Rs 29.96 and 31.02 per quintal in channel-I and channel-II respectively. The marketing margin of retailer in channel-I and channel-II was Rs 650.23 and 350.65 respectively. The consumer's price in channel-I was 5,223.81 and in Channel-II was Rs 4,402.58/q (Table 9).

Problems in production and marketing of jasmine flowers

All the jasmine farmers expressed severe pests and diseases as the major problem in production of jasmine flowers. Scarcity of water and insufficient availability of hired labour during peak seasons were also the major problems which were expressed by the farmers.

Table 10 points out at the rankings of marketing problems of the commission agents. The competition (69.28 mean score) and finance (69.12 mean score) were the major problems faced by commission agents. The third important problem was the seasonal variation

Table 8. Cost incurred by the market intermediaries (Rs/q)

Component	Mattuthavani market			Villapuram market		
	Wholesaler	Retailer Channel-I	Retailer Channel-II	Wholesaler-I	Retailer Channel-I	Retailer Channel-II
Transport cost	15.01 (51.72)	16.20 (52.22)	14.12 (47.13)	19.62 (45.91)	14.80 (43.50)	15.50 (44.73)
Packing cost	1.80 (6.20)	1.10 (3.55)	1.20 (4.01)	1.92 (3.74)	1.00 (5.56)	1.05 (4.39)
Loading and unloading	1.20 (4.14)	1.65 (5.32)	1.20 (4.01)	1.92 (4.49)	1.00 (2.94)	1.05 (3.03)
Wages	-	2.00 (6.45)	-	1.96 (4.59)	-	1.58 (4.56)
Spoilage charges	8.19 (28.22)	9.12 (29.40)	10.22 (34.08)	10.52 (24.61)	12.12 (35.63)	11.56 (33.36)
Tax and license fee	0.40 (1.38)	0.66 (2.10)	0.65 (2.17)	0.76 (1.78)	1.25 (3.67)	1.96 (5.63)
Rent	-	-	0.50 (1.67)	2.10 (4.91)	1.50 (4.41)	1.22 (3.52)
Interest	0.27 (0.93)	0.30 (0.97)	-	1.40 (3.28)	0.26 (0.76)	0.27 (0.78)
Miscellaneous cost	2.15 (7.14)	-	2.08 (6.94)	2.86 (6.69)	3.53 (3.53)	-
Total	29.02 (100.00)	31.02 (100.00)	29.96 (100.00)	42.74 (100.00)	33.84 (100.00)	34.65 (100.00)

Figures in parentheses are per cent values

Table 9. Producer's share in consumer's rupee in jasmine marketing (Rs/q)

Component	Mattuthavani market	
	Channel-I	Channel-II
Producer's share in consumer's rupee	68.91	84.30
Marketing cost		
Producer	363.87	309.12
Wholesaler	29.02	-
Retailer	29.96	31.02
Sub-total	422.85	340.14
Marketing margin		
Wholesaler	550.50	-
Retailer	650.23	350.65
Sub-total	1,200.73	350.65
Consumer's price	5,223.81	4,402.58

Table 10. Marketing problems in jasmine of the commission agents

Constraint	Total score	Mean score	Rank
Finance	3,426	69.12	II
Price fluctuation	2,637	52.74	IV
Seasonal variation	2,752	55.04	III
Competition	3,464	69.28	I
Market preparation	2,479	49.58	VI
Assembling	2,333	46.66	VII
Perishable in nature	2,590	51.80	V
More wastage	2,085	41.70	VII
Credit sale	1,779	35.58	XI
Lack of storage facilities	1,773	34.66	XII

(55.04 mean score) which affected the business of the commission agents. The problem of price fluctuation closely connected to the preceding problem was ranked as the fourth major problem faced by them. Perishability of the flowers was given the fifth rank as a problem in marketing based on the responses of the agents. Market preparation was at the sixth place in the list of problems. Assembling, wastage and credit were least important problems with the rankings of seventh, eighth and ninth respectively.

CONCLUSION

The growth of jasmine although experienced a decline in the area the productivity had increased and lead to the increase in production rather than the area which calls for intensive efforts to increase the area under jasmine. There is a need to educate the jasmine cultivators to use the required level of these resources in order to increase the per unit production and quality of flowers. Jasmine cultivation is found to be more profitable hence the farmers may be advised to establish jasmine orchards by availing bank finance facilities.

A proper marketing facility through cooperative network will go a long way in bringing better returns to the jasmine cultivators. There should be a provision for comprehensive, reliable and quick market information system to the jasmine producers. This calls for revitalizing the existing floriculture growers cooperative marketing and processing society for the advantage of jasmine cultivators. Government should develop an appropriate postharvest technology for export of jasmine flowers.

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