

Original Research Article

<https://doi.org/10.20546/ijcmas.2019.802.029>

Economic Analysis of Production of Cut Roses under Polyhouses in Western Maharashtra

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ABSTRACT

Keywords

Economic analysis,
Polyhouses, Cut
roses

Article Info

Accepted:

04 January 2019

Available Online:

10 February 2019

Floriculture industry in India is in a boom in recent years. Maharashtra is the leading state in India for cut roses consumption and export. The study is based on data collected from 30 producers growing cut roses in polyhouses around Pune city for the year 2013-14. The average cost of erection of polyhouse (0.24 ha.) was around Rs.23.13 Lakhs. The average cost of cultivation of cut roses was worked to Rs. 5.97 lakh and it was decreased across the size group of polyhouses. The major items of cost involved were hired human labour, planting material, fertilizers, plant protection chemicals and bed preparation. The average profit realized was Rs.10, 25417 with B:C ratio 1.72. The average cost of marketing was estimated to Rs.18.60/bundle. The winter season produce had reaped the maximum prices, whereas exported produce fetched more prices. In export, Channel-III (Cut roses producer – Importer- Wholesaler- Retailer- Consumer) proved to be more efficient. The farmer should adopt the production technology in such a way that maximum produce should be available for marketing during 25th January to 10th February in order to reap the benefit of maximum prices.

Introduction

Greenhouses in India are being used to grow vegetables and flowers all the year round. In Maharashtra, high-tech floriculture is increasing rapidly particularly in Western Maharashtra. The most conspicuous development around Pune city is the increasing entries of major players using capital-intensive techniques and bringing techno-revolution in the floriculture trade. The polyhouse technology now a day has become very popular in and around Pune city. More than 60 per cent polyhouses in the State are concentrated around Pune city. The

Maharashtra Floriculture Development Board (MFDB) is operating with its head quarter at Pune. Economic analysis of such capital intensive technique is useful for taking decisions regarding its viability as an agribusiness. Therefore, an attempt has been made in this paper to analyze the situation of production and marketing of cut roses grown under polyhouses.

Materials and Methods

As per recent statistics available with the Directorate of Horticulture, Govt. of Maharashtra, Pune, the total area under the

polyhouse cultivation in the state is 190 ha. Of this area, 120 ha (63.16 %) is in Pune district; which is concentrated in Maval, Haveli, Shirur, Mulashi, Rajgurunagar and Ambegaon tahsils of the district. The cut flower selected for the study was roses. The relevant data pertaining to the year 2011-12 were obtained with the help of designed questionnaires by personal interview method. A sample of 30 polyhouse owners growing of cut roses will be drawn through systematic random sampling, 10 each from small (up to 0.10 ha.), medium (0.11 to 0.20 ha.) and large (0.21ha. and above). Tabular method of analysis was employed for analysis of data besides the use of standard concepts. The efficiency of marketing channels was estimated by using Acharya's marketing efficiency formula.

Results and Discussion

General information about the polyhouses and the produce

Two types of polyhouses were observed i.e. GH –1 naturally ventilated (67 per cent) and GH-2 partially controlled (33 per cent). The growers opined the life period of the planting material for roses as 4 - 5 years. Almost all the polyhouses were constructed between 2008-2011. The cut rose flowers had the keeping quality up to 8-9 days. The produce was grown on raised beds with drip irrigation system. Nearly 94 per cent harvesting was made with regular cuttings and 6 per cent on need basis.

Establishment cost of polyhouses

The estimated cost of erection of these polyhouses were estimated and depicted in Table 1. The average costs of construction of polyhouses were more than 23.13 Lakhs. It is more than Rs. 9.84 Lakhs, Rs. 18.85 Lakhs and Rs.40.61 Lakhs, respectively for small

(0.10 ha.) medium (0.19 ha.) and large (0.43 ha.) size groups. It can be inferred that the per unit average cost of erection of polyhouses do not vary greatly with the size of polyhouses. The G.I. material was used as a framework and, therefore, the framework cost shared about 50 – 53 per cent in the total cost. The other items of cost included cost towards polyfilm, shed net, systems for irrigation, spraying, fertigation, labour and other related costs. The average expected life of all the erected structures considered to be 20 years. The Government has provided 25 per cent subsidy on total cost of erection of polyhouses. Thus, average cost of erection of polyhouse was worked to Rs. 17.32 lakhs. The figures for the small, medium and large size polyhouse were Rs.7.38, 14.14 and 30.45 lakhs, respectively.

Cost of cultivation

As could be seen from Table 2 that the average cost of cultivation of cut roses were worked to Rs.5.97 lakh. It was Rs.2.70 lakh for small sized polyhouse, Rs.4.55 Lakh for medium sized polyhouse and Rs.10.66 lakh for large sized polyhouse. The Cost 'A' shared 58 to 62 per cent to the total cost of cultivation for cut roses. The major items of cost involved hired human labour, planting material, fertilizers, plant protection chemicals, bed preparation, depreciation and interest on working capital. In the Cost B, both the items i.e. rental value of owned land and interest on fixed capital together shared 25 to 36 per cent of the total cost. The family labour shared 4 to 16 per, it was more in small sized groups while less in large sized groups.

The cost of cultivation of small size group in relation to others was higher. Small size group involved intensive input use in terms of fertilizer, planting material irrigation and plant protection chemicals. The imputed cost in the case of large sized group increased due

to more use of shed net and high quality polyfilm.

Profitability of polyhouses

The per unit price realized for all the size groups of polyhouses of cut roses was more than their respective per unit cost of production. The production cost per unit was less in large sized group while more in small size group of polyhouses. The B:C ratio since workout to more than unity for all the size group, it could be inferred that there is economy of scale in cost of production of cut roses. The magnitude of B:C ratio was the highest for large size group of polyhouses (2.08). The cut roses produced in large size polyhouses were more of grade- I quality, as greater than 60 per cent produce was exported and fetched higher prices as compared to other groups. The profitability could be enhanced by producing still higher quality produce (Table 3).

Marketing of cut roses

The grading is more important for high-tech produce because it directly reflects on the price. It was observed that all the growers follow the grading as per the grade specifications. For all types of produce, the corrugated rolling paper type of packaging was followed. More than 50 per cent growers sold their produces in Mumbai market, seventy per cent produce was sold through commission agents, 25 per cent through retailers and remaining 5 per cent through local sale. The intermediates charged 10 per cent commission.

Marketing channels in the study area

There are three main marketing channels existed in the area for cut roses.

Channel-I Cut roses producer – Commission Agent- Wholesaler- Retailer- Consumer

Channel-II Cut roses producer – Exporter- Wholesaler- Retailer- Consumer

Channel-III Cut roses producer – Importer- Wholesaler- Retailer- Consumer

The disposal pattern through these channels is depicted in Table 4.

Channel-I is the preferred for the Mumbai and Pune market in the study area. Nearly 50 per cent of the produce is disposed through Channel-I.

Channel-II is preferred channel by the cut roses producers for export of their produce through agencies dealing in the export of cut roses. The exporter collects the cut roses from the producer's field and they export it in bulk quantity. Nearly 40 per cent of the produce is disposed through Channel-II. Channel-II is found to be the prominent channel for export of cut roses in the area.

Channel-III is a direct export channel where the grower sells his produce to different countries. Nearly 10 per cent of the produce is disposed through Channel-III.

Cost of marketing

As depicted in Table 5, among the various components of marketing cost, the commission of the intermediaries was the major one sharing 36- 41 per cent in the total cost of marketing for all the cut roses.

The cost of grading and packaging in a single unit shared 27 per cent and the cost of transportation shared 30- 32 per cent.

On an average, the marketing cost for bundle cut roses (containing 40 flowers) in the size class of polyhouses ranged in between Rs.18.60. The cost of marketing decrease across the size class of polyhouse

Efficiency of marketing channel

Efficiency of the existing marketing channels was studied in order to analyze the most effective channel for marketing of cut roses in the study area.

Table 6 shows the efficiency of the market channels. The marketing efficiency of Channel-I was found to be 0.27, while that of Channel-II was 0.36 and Channel-III was 0.38. The Channel-III was most efficient as compared to other two channels. Channel-I was mainly used for disposal of produce to Pune and Mumbai market; while Channel-II and Channel-III were used for export of produce. In export, Channel-III proved to be

more efficient, but the producers commonly using Channel-II due to simplicity.

Price variation in cut roses

The average price received for cut roses was the lowest in monsoon season. The winter season had influenced the higher prices for the produce. The producer realizes maximum prices when cut roses was ready for marketing during the period of 25th January to 10th February to catch the demand for valentine day. The export market paid the higher prices for the produce followed by Mumbai market and Pune market. As a logic, the Grade-I produce had positive influence on the price received (Table 7).

Table.1 Average cost of polyhouse erection (Rs.)

Sr. No	Particulars	Size Group of polyhouse			Overall (N=30)
		Small (N=10)	Medium (N=10)	Large (N=10)	
	Average area (ha.)	0.10	0.19	0.43	0.24
1	Framework	512350	1013100	2027100	1184183
	%	52.05	53.73	49.91	51.25
2	Polyfilm	147820	317300	780050	415056.7
	%	15.02	16.83	19.21	17.96
3	Shed net	34360	96110	228570	119680
	%	3.49	5.10	5.63	5.18
4	Facility unit	9240	22050	72180	34490
	%	0.94	1.17	1.78	1.49
5	Labour cost	118380	216414	462900	265898
	%	12.03	11.48	11.40	11.51
6	Other cost	162190	220724	490505	291139.7
	%	16.48	11.71	12.08	12.60
	Total cost	984340	1885698	4061305	2310448
		100	100	100	100
	Subsidy 25%	246085	471424.5	1015326.25	577611.9
	Net cost	738255	1414274	3045979	1732836

Table.2 Share of individual cost item in the total cost of cultivation of roses (%)

Sr. No.	Particulars	Size Group of polyhouse			Overall
		Small	Medium	Large	
1	Hired H. L.	8.49	9.83	9.43	9.39
2	Machinery	1.19	0.94	1.07	1.06
3	Bed (APP)	4.05	4.45	3.90	4.06
4	Fumigation	0.35	0.31	0.36	0.35
5	Plant Material(App)	3.33	3.67	3.81	3.70
6	Fertilizer	17.94	20.29	19.73	19.60
7	Irrigation	2.04	2.07	1.83	1.92
8	Pl. Protection	9.98	9.18	8.66	8.99
9	Land revenue	0.15	0.17	0.11	0.13
10	Depreciation	6.86	7.72	7.02	7.17
11	Interest on WC	3.26	3.52	3.36	3.38
12	Cost A	57.64	62.13	59.28	59.76
13	Rental value	22.15	24.34	33.08	29.21
14	Interest onFC	3.66	4.14	3.40	3.63
	Cost B	83.45	90.61	95.76	92.59
	Family labour	16.55	9.39	4.24	7.41
	Cost C	100.00	100.00	100.00	100.00
	Cost C	270636	455963	1066255	597618

Table.3 Profitability of cut roses in polyhouse cultivation (Rs)

S.No.	Particulars	Size Group of polyhouse			
		Small	Medium	Large	Overall
1	Output (No)	157561	277971	647655	361062
2	Cost of cultivation	270636	455963	1066255	597618
3	Cost of marketing	80820	131241	290638	167566
4	Cost of production	351456	587204	1356893	765184
5	Production cost /unit	2.23	2.11	2.10	2.00
6	Gross returns	392327	725504	2214980	1025417
7	Net returns	40871	138300	858087	345753
8	Average Price/unit	2.49	2.61	3.42	3.00
9	Profitability/ unit	0.26	0.50	1.32	1.00
10	B.C. ratio	1.45	1.59	2.08	1.72

Table.4 Disposal of cut roses through different channels

Channel	Quantity disposed	
	Qty (No.)	%
Channel -I	546468	50.45
Channel -II	439375	39.64
Channel -III	107344	9.91
Total	1083187	100

Table.5 Average cost of marketing. (Rs./ bundle of flower)

Sr.No.	Particulars	Size Group of polyhouse			Overall
		Small	Medium	Large	
1	Grading and packaging	5.60 (27.38)	5.10 (27.16)	4.90 (27.03)	5.00 (27.10)
2	Transportation	6.50 (31.74)	6.20 (32.60)	5.30 (29.42)	5.70 (30.60)
3	Commission	7.60 (37.03)	6.80 (36.26)	7.40 (40.95)	7.30 (39.10)
4	Other expenditure	0.80 (3.86)	0.80 (3.98)	0.50 (2.60)	0.60 (3.20)
5	Total	20.50 (100.0)	18.90 (100.0)	18.00 (100.0)	18.60 (100.00)

Table.6 Efficiency of marketing channels for cut roses (Per flower)

Sr.No.	Particulars	Channel-I	Channel-II	Channel-III
1	Price received by grower	2.47	5.85	6.25
2	Marketing cost	1.52	2.85	2.85
3	Price paid by consumer	4.35	11.25	12.25
4	Net market margin	1.88	5.40	6.00
5	Marketing efficiency	0.27	0.36	0.38

Table.7 Price Variations in roses (Rs./ No.)

Sr. No.	Particulars	Size Group of polyhouse						Overall	
		Small		Medium		Large		Quantity	Price
		Quantity	Price	Quantity	Price	Quantity	Price		
1	Season								
	i) Winter	63200	3.15	125645	3.36	263335	3.85	150727	3.30
	%	40.111		45.20		40.66		41.75	
	ii) Summer	34650	2.95	56780	3.14	175580	3.22	89003	3.00
	%	21.99		20.43		27.11		24.65	
	iii) Monsoon	59711	2.61	95545	2.81	208740	2.82	121332	2.73
	%	37.90		34.37		32.23		33.60	
	Total	157561	2.9	277971	3.13	647655	3.35	361062	3.02
2	Market								
	i) Mumbai	55365	3.25	148136	3.4	121415	3.2	108305	3.30
	%	35.14		53.29		18.75		29.99	
	ii) Pune	76346	2.77	78830	2.88	104700	2.92	86625.3	2.86
	%	48.45		28.36		16.17		23.99	
	iii) Export	25850	4.12	51005	4.25	421540	4.85	166132	4.75
	%	16.41		18.35		65.09		46.01	
	Total	157561	3.16	277971	3.41	647655	4.23	361062	3.86
3	Grade								
	i) G-1	34663	3.25	76720	3.85	421650	4.45	177678	4.29
	%	23.02		27.60		65.10		49.21	
	ii) G-II	60150	3.07	103405	3.45	204050	3.65	122535	3.50
	%	39.95		37.20		31.51		33.94	
	iii) G-III	62748	2.15	97846	2.35	21955	2.32	60850	2.28
	%	41.68		35.20		03.39		16.85	
	Average	--	2.76		3.17		4.12	361062	3.36

It is concluded that, the average size of polyhouse was 0.24 ha. The average cost of erection of polyhouse was 23.13 Lakhs. It is Rs. 9.84 Lakhs, Rs. 18.85 Lakhs and Rs. 40.61 Lakhs, respectively for small (0.10 ha.) medium (0.19 ha.) and large (0.43 ha.) size groups of polyhouses. The average cost of cultivation of cut roses was Rs. 5.97 lakhs and it decreased across the size group of polyhouse. The major items of cost were hired human labour, planting material, fertilizers, plant protection chemicals, rental value and interest on fixed capital due to heavy investment. The average cost of marketing was estimated to Rs. 18.60/bundle. Commission of the intermediaries was the

major component of marketing cost. All the size group of polyhouses was in profit. The season, market place and grade influenced the market price of cut roses. The winter season had influenced the higher prices for the produce, exported produce fetched more price. In export, Channel-III proved to be more efficient.

Suggestions

Since the growers are commercial, they should produce more quantities of Grade-1 produce and export more quantity and sale in winter season in order to catch the higher price benefit.

Farmer should adopt the production technology in such a way that maximum produce should be available for marketing during 25th January to 10th February in order to reap the benefit of maximum prices.

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How to cite this article:

Waghmare, M.N. and Shendage, P.N. 2019. Economic Analysis of Production of Cut Roses under Polyhouses in Western Maharashtra. *Int.J.Curr.Microbiol.App.Sci.* 8(02): 234-241.
doi: <https://doi.org/10.20546/ijcmas.2019.802.029>