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Economic Analysis of Cut Flower (Rose and Gerbera) Production under Polyhouse in Jabalpur District of Madhya Pradesh, India

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Authors' contributions

This work was carried out in collaboration among all authors. Author YT designated the study, wrote the first draft of the manuscript. Author PKA performed the statistical analysis and wrote the protocol. Author PRP managed the analysis of the study and the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Flowers are crowning beauty of God's creation. They are inseparable part of human joy and sorrows. It is said that man is born with flowers, lives with flowers and finally dies with flowers.The main objective of the present study was to analyze the cost of production of selected cut flower i.e. rose, gerbera grown under polyhouses in Jabalpur district. From the selected blocks a list of polyhouse cut flower growers were collected with the help of officials of the Joint Director of Horticulture, Jabalpur There are eight cut flowers polyhouse established in the district during last year. The primary data required for the study were collected by personal interview of the respondents. The information on cost and return in production of cut flower were collected personally by the use of well structured interview schedule. The data were collected through selected farmers. This paper examined the cost and return and benefit cost ratio of cut flower cultivation under protected condition. The study revealed that total cost in gerbera and rose production grown on an average 1200 m^2 were Rs 909206 and Rs. 882517, respectively. The

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annual gerbera and rose production on sample polyhouse 409288 nos and 342000 nos flowers respectively which is 108 and 76% higher than the break- even level, Net profit was to the extent of Rs 529868 and Rs 345288 and benefit- cost ratio was 1:85 and 1:61 respectively. Thus, existing production technology yield sufficient profit to the cut flowers growers. huge investment requirement, shortage of trained manpower, price fluctuation, lack of scientific knowledge & training, attack by pest & disease, lack of extension work came out as major financial and technical problems (Wani NI, 2017). There is a need to establish a research and development wing in order to develop better methods of cultivation and optimum use of recommended inputs in floriculture.

Keywords: Economic analysis; cut flower; gerbera; rose cultivation; polyhouse.

1. INTRODUCTION

Horticulture crops are important in determining the nation's economy, as their cultivation and trade are important pillars of farmer's income [1]. Flowers play an essential role in people's celebrations and everyday lives. Gerbera and rose as a cut flower have tremendous demand in domestic and international markets. Due to globalization and increase in per capita income the demand for flowers is increasing both nationally and internationally.

The country is in the process of accelerating the development of its economy through industrialization on the basis of self reliance. This will create employment opportunities and improve the welfare of million of people as well as increase production quantitative and qualitatively to meet offer strong investment opportunities especially for floriculture crop. Karnataka, TamilNadu, Andhra Pradesh, West Bengal [2]. The area under commercial floriculture has witnessed a quantum jump during the last six years [3]. Madhya Pradesh is a land blessed by nature with bountiful resources, manifested in rich biodiversity, diverse soil profile, extremely varied climate and wide ranging topographical variations. About 249 thousand hectares area was under Cultivation in floriculture in 2015-16. Productions of flowers are estimated to be 1659 thousand tonnes loose flowers and 484 thousand tonnes cut flowers in 2015-16. (APEDA).

2. METHODS AND MATERIALS

The Present study is confined to Jabalpur district of Madhya Pradesh, which comprises seven blocks viz. Jabalpur, Panager, Shahpura, Patan, Majholi and Kundam. Four blocks namely Jabalpur, Panager, Shahpura and Kundam where Polyhouses are established were selected purposively. From the selected blocks a list of polyhouse cut flower growers were collected with the help of officials of the Joint Director of Horticulture, Jabalpur There are eight cut flowers polyhouse established. Thus eight active farmers were considered for this investigation in order to fulfill the stated objective.

2.1 Data Collection

The primary data required for the study were collected by personal interview of the respondents. The information on cost and return in production of cut flower were collected personally by the use of well structured interview schedule. The data were collected through selected farmers.

2.2 Estimation of Cots and Incomes

Net value of the produce and cost involved were estimated. Cost of variables inputs such as labour, ploughing, seed, fertilizer, irrigation, hoeing, pesticide and fixed costs such as interest on fixed capital, depreciation charges, rental value of land, and interest on working capital were calculated.

Gross Margin

GM= TR - VC

Where

GM= Gross Margin
TR= Total Revenue
VC= Variable Cost

Net Income

NI=TR-TC

Where

NI= Net Income
TR= Total Revenue
TC= Total Cost [4]

For estimating net income total cost was subtract from total revenue. Total cost includes variable cost plus land rent and water charges.

Benefit Cost Ratio: It is defined as the amount received in the shape of profit on the costs of one rupee. The BCR was computed by this method.

BCR=TR/TC

Where

BCR= Benefit Cost Ratio
TR = Total Revenue
TC = Total Cost [5]

3. RESULTS AND DISCUSSION

3.1 General Information about the Polyhouses and the Produce

All polyhouses were naturally ventilated. The growers opined the life period of the planting material for roses as 4 - 5 years. Almost all the polyhouses were constructed between 2011-2013. 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.

3.2 Establishment Cost of Polyhouse

As shown in Table 2, the average costs of construction of polyhouse were Rs.21.56 lakhs. The highest cost proportion of this cost is accounted for by polyhouse structure, which accounts for 62.44 percent (Rs.13.46 lakh) of the total establishment cost. Before transplanting land preparation cost share 2.50 per cent in the total. The other items of cost included irrigation systems, red soil for field preparation, equipments, Packaging units etc. The average expected life of all the erected structures considered to be 15-20 years.

Study by Waghmare and Shandage [6] also revealed similar results where 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.

The estimated cost of erection of these polyhouses were estimated and depicted in Table 3, the average cost of cultivation of gerbera and rose were worked out Rs. 9.09 lakh and Rs. 8.82 lakh, respectively. The total fixed cost shared 65 per cent in gerbera and 62 per cent in rose cultivation. The major items of fix cost involved depreciation on asset, rental value of land, interest on fixed capital. In the total variable cost shared 35 percent for gerbera and 32 per cent for rose cultivation. The major items of variable cost involved, Hired human Labour, Planting material charge, Plant Protection etc.

Table 4 illustrates the economic analysis of cut flower per year. Gross return per year was high of the gerbera Rs. 168217 followed by rose i.e. Rs. 1422720. Net income of gerbera and rose cultivation were Rs. 772967 and Rs 540203, respectively. Benefit cost ratio was greatest of the gerbera (1.85) then rose i.e. 1.61.

Study by Waghmare and Shandage Deshmukh et al. [7] also revealed similar results where Cost Benefit ratio of Gerbera production has been calculated. It is calculated by dividing total input (present worth) by Total output. it is revealed that the maximum B:C ratio (2.94) was observed. The maximum net profit per sqm (Rs.624/-) was found.

3.3 Constrains

The farmers were asked to elicit the problems faced by them relating to the various aspects of cultivation of the major cut flower crops in the study region. The constraints related to production were reported by the respondents which have been presented in Table.

Table 1. Average establishment cost of polyhouse (1200 m^2)

S. No.	Particulars	Cost	Percentage
1	Land development	54558	2.50
2	Red soil	1,50000	6.95
3	Green house structure	1346400	62.44
4	Store room/packaging units	256800	11.90
5	Irrigation system	294000	13.64
6	Sprayers and equipments	54456	2.52
	Total	2156214	100.0

Table 2. Cost (Rs/1200 m^2) of cultivation of rose and gerbera under polyhouse

S. No.	Particulars	Gerbera		Rose	
		Cost	Percentage	Cost	Percentage
1.	Hired human Labour	115200	12.8	138240	15.66
2.	Planting material charge	54600	5.6	23400	2.65
3.	Seed bed preparation	12084	1.3	13260	1.50
4.	Fertilizer	24600	2.7	30480	3.45
5.	Electricity charges	18048	2.0	19224	2.17
6.	Plant Protection	60540	6.76	75048	8.50
7.	Interest on working capital	34208	3.76	33560	4.07
	Total variable cost	319280	35.26	335610	38.0
8.	Depreciation	196710	22.8	196710	22.28
9.	Rental value of land	328200	35.0	291600	33.04
10.	Interest on fixed capital	65016	6.94	58597	6.63
	Total Fixed cost	589926	64.74	546907	61.97
	Total cost	909206	100	882517	100

Table 3. Costs and return (In Rs) of cultivation of rose and gerbera under polyhouse

S. No.	Particulars	Gerbera	Rose
1.	Number of plants in polyhouse	6500	6200
2.	Number of flowers per plant/Month	5-6	4-5
3.	Total annual production	409288	342000
4.	Sale price per flower (Rs.)	4.11	4.16
5.	Gross return	1682173	1422720
6.	Total cost	909206	882517
7.	Net return	772967	540203
8.	Benefit cost ratio	1.85	1.61

Table 4. Constraints of cut flower production

S. No.	Particulars
1	High price of planting material
2	Non availability of quality planting Material
3	Scarcity of skill human labour
4	Huge investment requirement
5	Pest and disease attack
6	Price fluctuations

The production constraints faced by the farmers are presented in the Table 5. The common production constraint expressed that the high cost of structure like polyhouse, price fluctuations of flower, scarcity of skill labour locally and non availability of planting materials, post harvest facilities are some of the major constrains to the producers of cut flower.

Study by Sudhagar [8] also revealed similar results where The major problems faced in the production of cut-flowers as indicated by the hi-tech growers included huge investment in cut-flower production (reported by 83.63 per cent of the respondents), irregular supply of electricity required for irrigation (reported by 81.81 per cent), scarcity of labour (reported by 74.54 percent), non-availability of quality indigenous planting material (according to 67.27 per cent).

4. CONCLUSION

Growing statice cut flower is profitable business as return are double than cost. The result of our study revealed that total cost of cultivation of the gerbera was more i.e. (Rs 909206) followed by rose cultivation (Rs. 882517), respectively. The annual production of flower of gerbera and rose were 409288 nos and 342000 nos, respectively. The net income for gerbera was more (Rs. 772967) followed by rose (Rs. 540203), respectively. The finding of our study shows that BCR of gerbera was 1.85 fallowed by rose 1.61. The results of our finding show that farmers earn more revenue as compared to farmers. Government of India has identified floriculture as a sunrise industry and accorded it 100% export oriented status. Owing to steady increase in demand of flower, floriculture has become one of the important commercial trades in agriculture. Hence, commercial floriculture has emerged as

hi- tech activity taking place under controlled climatic conditions inside polyhouse. Commercial floriculture is becoming important from the export angle. Indian floriculture industry has been shifting from traditional flowers to cut flowers for export purpose. The liberalized economy has given an impetus to the entrepreneurs for establishing export - oriented floriculture under controlled protected climatic conditions. There is bright prospect for the expansion of area under cut flowers in the coming year.

5. RECOMMENDATIONS

There is a need to establish a research and development wing in order to develop better methods of cultivation and optimum use of recommended inputs in floriculture. This would be helpful in enhancing the production of cut flowers at relatively less cost. This would in turn, increase the income of growers as well as surplus produce for export purpose. An efficient extension programme is a bridge between research and farm. So there is a need to initiate a well equipped extension service programme to extend valuable guidelines to the producers of flowers.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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