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RESEARCH ARTICLE

ECONOMIC ANALYSIS OF ORCHID CULTIVATION IN KERALA

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ABSTRACT

Orchid is a major cut flower grown in Kerala. The present study is an attempt to assess the cost of cultivation and economic viability of orchid cultivation based on the data collected from a sample of 20 growers of Thiruvananthapuram and Ernakulam districts of Kerala. Cost of cultivation using A B C cost concepts showed that cost A or total paid out cost was Rs. 1,25,585. Considering all variable and fixed costs, cost C3 came to Rs. 1,53,868. The average annual returns obtained from a unit of 1000 orchid plants was Rs. 1,06,789. Based on pay-back period, benefit cost ratio, net present worth and internal rate of return, orchid cultivation practiced by growers in the study area was found to be an economically viable proposition.

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INTRODUCTION

Flowers have always been an integral part of human culture. Improved standards of living and growing consciousness to live in an environment friendly and aesthetically rich atmosphere, has led to an increase in the demand of floricultural products worldwide. World floriculture industry is growing at a Compounded Annual Growth Rate (CAGR) of 10.74 per cent (Shelke, 2014). The Netherlands dominates the world export market of floricultural products with a contribution of more than 50 percent to the total export of floricultural products worldwide. Floriculture has emerged as a viable economic option in the diversification of agriculture in India. Enormous genetic diversity, favourable agro climatic conditions, versatile human resources and a fastest growing domestic market, offer India, unlimited opportunities for growth in floriculture sector. Government of India has accorded 100 per cent export oriented status to the floriculture industry. Area under flower cultivation in India is 2,33,000 hectares with a production of 17,29,000 metric tonnes of loose flowers and 76,732 lakh numbers of cut flowers. The total area under floriculture is growing at a CAGR of about 12 percent in India. Marigold is the principal loose flower grown all over the country, followed by chrysanthemum, rose, jasmine etc. Rose ranks first both in production and area of cut flowers followed by gladiolus, tube rose, anthurium, gerbera, orchids etc.

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Leading loose flower producing states are Tamil Nadu, Karnataka and Madhya Pradesh. Leading states with respect to cut flower production are West Bengal, Karnataka and Odisha (NHB, Indian Horticulture Database, 2013). Orchids have received a remarkable position in cut flower industry due to its attractiveness, long shelf life, high productivity, easiness in packing and transportation. Orchids account about 10 per cent of international fresh cut flower trade. The Netherlands is the top most orchid exporting country followed by Thailand (De, 2014). Orchids in India comprises of around 1300 species, out of more than 30,000 species throughout the world. In India orchids are grown in Sikkim, Darjeeling hills of West Bengal, Arunachal Pradesh, Kerala, Karnataka and some parts of Tamil Nadu. Kerala has been identified as the best suited place for cultivation of orchids because of its high humidity, low temperature and plenty of sunlight. Cultivation of orchids have acquired wide acceptance all over the state and today, a number of big and small entrepreneurs are engaged in production and marketing of orchids as cut flowers and potted plants in Kerala. Because of the scarcity of reliable statistics pertaining to the economics of cultivation of orchids in Kerala, this study has been conducted with the objective to bring out a realistic picture of the commercial aspects of orchid cultivation in Kerala.

MATERIALS AND METHODS

Thiruvananthapuram (TVM) and Ernakulam (EKM) districts of Kerala were selected for the study as these two districts were considered prominent with regard to orchid flower cultivation.

From the two districts 20 elite growers having more than five years of experience in cut flower orchid cultivation were selected randomly to study the economics of orchid cultivation. The primary data were collected from selected sample growers through personal interview method using a pre tested interview schedule. The survey was conducted during October 2014 to March 2015. Percentages and averages were used for the interpretation of data on socio-economic characteristics of sample growers and for estimating cost and returns in orchid cultivation. Cost ABC concept of farm management was used to work out the cost of cultivation. Cost A refers to all the expenses actually paid by the growers. Cost B1 includes cost A plus interest on fixed capital and Cost B2 includes Cost B1 plus rental value of own land. Cost C1 and C2 refer to imputed value of family labour plus Cost B1 and B2 respectively. Cost C3 includes Cost C2 plus 10 per cent of value of Cost C2 which represents the managerial input of growers in production. All the costs and returns were worked out for a unit of 1000 orchid plants.

Discounted cash flow techniques were used to find out the economic viability of investment in orchid cultivation. Cash flow stream was discounted at 13 per cent interest rate.

- Pay-back Period: Pay-back period (PBP) is the duration of time in years taken to liquidate the investment.
- Benefit Cost Ratio: Benefit cost ratio (BCR) is the ratio between discounted cash inflows and discounted cash outflows. A ratio above one indicates that the project is viable.

$$BCR = \frac{\Sigma\{B_t/(1+i^t)\}}{\Sigma\{C_t/(1+i^t)\}}$$

Where t = 1……..n years
n = Total number of years of the project
B_t = Benefits in t^{th} year
C_t = Costs in t^{th} year
i = Discount rate

- Net Present Worth: Net present worth (NPW) is simply the present worth of net cash flow stream. A project having positive net present worth is considered as viable.

$$NPW = \Sigma\left(\frac{B_t - C_t}{(1+i^t)}\right)$$

Symbols are same as mentioned earlier

- Internal Rate of Return: Internal rate of return (IRR) is the discount rate which makes the net present worth of cash flow equal to zero. If internal rate of return is above the opportunity cost of capital a project is considered as feasible.

RESULTS

Cost of cultivation

Monopodial orchids such as Aranthera, Arachnis, Aranda, Terete vanda etc. which do not require shade are cultivated in TVM in open field conditions as cut flower orchids. Shade required orchids like Dendrobium, Phalaenopsis and Mokara are cultivated in pots, under shade structures in EKM. Cost of establishment of shade structures in EKM was worked out to Rs. 54,629 and establishment cost of artificial support for monopodials in TVM was computed as Rs. 37,186. At the overall level, cost A was worked out to Rs. 1,25,585 of which cost of planting material constituted 80 per cent, followed by hired labour (7 per cent). Planting material was the important contributor to total paid out cost (Cost A) in both the locations and its share was highest in EKM (85 per cent) compared to TVM (76 per cent). Cost A for TVM was 5.05 per cent higher than the Cost A for EKM. Hired labour was the main contributing factor for this difference. Share of hired labour to total paid out cost was 12 per cent in TVM, while it was only 2 per cent in EKM.

Majority of the growers employed permanent labourers in their farms in TVM whereas in EKM, hired labour was only used at the time of potting and planting. Cost B1, B2, C1, C2 and C3 were respectively Rs. 1,30,909, Rs. 1,31,878, Rs. 1,38,911, Rs. 1,39,880 and Rs. 1,53,868 at the overall level. In EKM district orchid was mainly grown on terraces or backyards of house premises. Therefore rental value of own land was considered as irrelevant cost component and was not included in cost of cultivation. Thus, Cost B1 and B2 were same in EKM as the rental value of own land was not considered. Even though the total paid out costs (cost A) was higher in TVM, Cost C3 was 6 per cent lower than the Cost C3 estimated for EKM. Difference in Cost C3 was mainly because of the higher involvement of family labour in EKM. Majority of the growers in EKM had small unit size and except for planting and potting, family labour was utilized for all the other operations. Growers utilizing family labour was very less in TVM. Agro-inputs included manures, fertilizers and plant protection chemicals. Annual cost for agro-inputs was estimated as Rs. 1,444 at overall level.

Input wise cost of cultivation of 1000 orchid plants (value in Rs)

Items of cost	TVM	EKM	Overall
Hired labour	15753.65 (12.23)	2212.79 (1.81)	8983.22 (7.15)
Planting material	98473.26 (76.43)	103560.65 (84.66)	101016.95 (80.44)
Media	2799.25 (2.17)	2326.31 (1.90)	2562.78 (2.04)
Agro-inputs	1852.57 (1.43)	1035.45 (0.85)	1444.01 (1.14)
Maintenance	100.32 (0.08)	298.73 (0.24)	199.53 (0.16)
Miscellaneous	861.88 (0.67)	213.12 (0.17)	537.50 (0.43)
Interest on working capital	8388.87 (6.51)	7675.29 (6.27)	8032.08 (6.40)
Depreciation	608.18 (0.47)	5009.06 (4.09)	2808.62 (2.24)
Cost A	128837.99 (100.00)	122331.42 (100.00)	125584.71 (100.00)
Cost B1	132864.09	128953.73	130908.91
Cost B2	134802.51	128953.73	131878.12
Cost C1	133622.60	144198.70	138910.65
Cost C2	135561.01	144198.70	139879.86
CostC3	149117.12	158618.57	153867.84

Returns

Economic life span of orchid was taken as 5 years. All the growers resorted to replanting after 5 years because of the

reduction in quality and quantity of the flower spikes. Annual average production of flower spikes per 1000 orchid plants was worked out to 5958 spikes. Flower production pattern was more or less similar in both the districts.

Annual returns from 1000 orchid plants (value in Rs)

Year	TVM	EKM	Overall
1	31481.64	40250.45	35866.05
2	104632.74	83943.87	94288.31
3	123899.03	105591.43	114745.23
4	153653.23	128892.58	141272.90
5	158956.29	136584.19	147770.24
Total	572622.93	495262.52	533942.72
Average	114524.59	99052.50	106788.54

Measures of investment worth for orchid enterprise

Project worth measures@ 13% Discount rate	TVM	EKM	Overall
Pay Back Period(Years)	2.60	3.39	3.03
Net present Worth(Rs.)	176170.25	99675.06	137897.82
Benefit Cost Ratio	1.88	1.44	1.64
Internal Rate of Return (%)	70	43	55

Gross returns obtained over the economic life of plant showed an increasing trend. Annual average returns obtained from a unit of 1000 orchid plants was Rs. 1,06,789. The average returns obtained in TVM was Rs. 1,14,525, which was 14 per cent higher than the returns obtained in EKM (Rs. 99,053). The higher returns in TVM were mainly attributed to the higher price realized by exporting of flowers. Exporting of flowers was not seen in EKM. The results are in conformity with the results obtained by Steephan (2011) with regard to cost of cultivation and returns.

Annual returns from 1000 orchid plants (value in Rs)

Cash flow analysis

Pay-back period is the period required to repay the initial investment incurred in establishing the orchid enterprise. PBP was found to be 2.60 for TVM and 3.39 years for EKM and on an overall 3.03 years. This indicated that the orchid entrepreneurs were in a position to recover the establishment cost in about 3 years**.** The NPW, indicating cumulative net return at the end 5 years, was found to be Rs. 1,76,170 and Rs. 99,675 for TVM and EKM respectively and on an overall was Rs.1,37,898**.** The higher and positive NPW indicated that the future net returns were worth to compare the present investment and returns. The BCR was estimated to be 1.88 for TVM, 1.44 for EKM and 1.64 at the overall level.

The respective IRRs obtained for TVM, EKM and at overall level were 70, 43 and 55 per cent. BCRs were greater than one, NPWs were positive and IRRs were greater than the opportunity cost of capital in both the locations. It could be concluded that orchid enterprise was an economically viable proposition in both the districts. Orchid cultivation in TVM was found financially more remunerative than EKM as the BCR, IRR and NPW were found to be higher for TVM compared to EKM.

Measures of investment worth for orchid enterprise

Conclusion

Orchid is a perennial crop with an economic life span of five years. Cost of cultivation using A B C cost concepts showed that cost A (paid out costs) was Rs. 1,25,585 of which planting material accounted for 80.44 per cent, followed by hired labour (7.15 per cent). Considering all variable and fixed costs, cost C3 came to Rs. 1,53,868. The average annual returns obtained from a unit of 1000 orchid plants was Rs. 1,06,789. The BCRs were found to be greater than one, NPWs were positive and IRRs were greater than opportunity cost of capital. Orchid cultivation was found to be a fairly profitable agribusiness enterprise in the study area.

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