

Production and Marketing of Cut flower (Rose and Gerbera) in Hosur Taluk.

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ABSTRACT: Floriculture is a fast emerging and highly competitive industry. With the continuous introduction of new cultivators and new crops, cultural techniques are changing and hence new products are developing. Ornamental crop culture technology is improving with the availability of equipment and there is a sea change in the trend of consumers. A new generation of growers is coming forward to employ modern technology for maximizing production and offer quality produce for consumer acceptability, thus fetching a better price. It has emerged as a lucrative profession with the much higher potential for returns compared to other agri-horticultural crops.

Keywords: Cut flower, Floriculture, Gerbera, Rose Cultivation

I. INTRODUCTION

Flowers are inseparable from the social fabric of human life. Flowers being adorable creation of God, befits all occasions, be it at birth, marriage or death. In the past, flowers were not of much economic importance. One would grow flowers to fulfill his or her aesthetic desire. At times, flowers were offered for sale to meet the special requirements of people. With the passage of time drastic changes have come about in the life style of people leading to commercialized cultivation of flowers. Today, flower plants are no longer meant for only window garden but play an important role in the decoration of the living houses and office establishments.

The science and art of commercial floriculture has been recognized as an economic activity with the potential for generating employment and earning valuable foreign exchange. In several countries of the world, floricultural products are amongst the main export items of agricultural origin. For any country to diversify its agricultural base geared towards export, the ornamental crop industry presents one of the most interesting and viable options. The aesthetic value of flowers and ornamental plants, their use in social events, overall satisfaction in working with them and high income generating power are attracting modern entrepreneurs to invest money in the floriculture industry. The demand for flowers and ornamental plants for different needs like religious, official ceremonies, parties, house decoration, weddings, funerals, etc, is on the rise. This demand for fresh flowers and plants is increasing world-wide over the coming years.

The recent liberalization policy of the Government of India has given Phillip to commercialized agriculture particularly horticultural crops. Growing of flowers is in vogue in India since long time. Nevertheless, growing of cut-flowers has emerged as an important industry mainly to cater to the needs of the demand in the overseas market. It is being viewed as a high growth industry in our economy. There is a tremendous transformation in our floriculture sector mainly due to the entry of corporate who are producing cut-flowers to meet the emerging demand in the developed countries for floricultural products. The Government of India has also identified floriculture as a niche area with vast potential for export. There are many incentives given by the Government for setting up of floricultural units as Export oriented units (EOUs).

International Scenario And Trade

About 305,105 ha area was under flower production in different countries of the world, of which the total area in Europe was 44,444 ha, North America 22,388 ha, Asia and Pacific 215,386 ha, the middle East and Africa 2,282 ha and central and South Africa 17,605 ha. Flowers grown under protected greenhouses in different countries around the world total 46,008 ha. India has the maximum area under ornamental crops (88,600 ha) followed by China (59,527 ha), Indonesia (34,000 ha), Japan (21,218 ha), USA (16400 ha), Brazil (10285 ha), Taiwan (9.661 ha), The Netherlands (8,017 ha), Italy (7.654 ha), the united Kingdom (6,804 ha), Germany (6,621 ha) and Colombia (4,757 ha). Globally more than 145 countries are involved in the cultivation of ornamental crops and the area under these crops is increasing steadily. The production of flower crops has increased significantly and there is a huge demand for floricultural products in the world, resulting in growing International Flower Trade. The world consumption of cut flowers and plants is increasing and there is a steady annual increase of 10 to 15 per cent in all importing countries. Due to globalization and its effect on income,

there is growing per capita floriculture consumption in most of the countries. In case of developed countries, the consumption of flowers is closely linked with GNP per capita income and urban population.

Indian scenario and trade

India is bestowed with diverse agro-climatic and ecological conditions, which are favourable to grow all types of commercially important flowers generally found in different parts of the world. It also enjoys the best climate in selected pockets for floriculture during winter months. India is in an enviable position to become a leader in the world floricultural trade because of the prevailing congenial location, overall favourable climate of liberalization and globalization and also specific incentives by the government and floricultural development. Specific and authentic quantitative data are not available for existing production and area under floriculture in India. According to the horticulture production year book 2001 of national horticultural board, an area of 88,600 ha during 1999-2000 was under floriculture in India with production of 5.09 lakh MT of loose flowers and 680.6 million number of cut flowers. Loose flowers were grown in 73,536 ha of land. Flowers are grown under open cultivation and also under protected cultivation. In the polyhouses, mainly roses are grown for export. Other exotic flowers like carnations, gerbera, orchids, lily and other bulbous flowers are now increasingly produced commercially both for export and domestic market. Floricultural exports from India during 1997-98 was Rs. 81.20 crore, Rs. 96.60 crore in 1998-99, Rs. 105.15 crore in 1999-2000 and Rs. 190.63 crore in 2000-01. In spite of this increase in India exports, its share in the international flower trade has not increased during 1995 to 2000 and has remained at around 0.35 per cent. There were more than 300 Export oriented unit in India. The total business of floriculture business in India in 2005 was Rs 8174 lakhs while it increased to Rs10117 lakh by April, in 2007. More than 50 % of the floriculture units are based in south Zone mainly in Karnataka, Andhra Pradesh and Tamil Nadu. The main importing countries of Indian floricultural products in order are The Netherlands, USA, Japan, Germany, Italy, Denmark, Egypt, Singapore, Switzerland, France, Australia, UAE, Belgium and Sri Lanka. During the year 1999-2000, Indian floricultural products were exported to 75 different countries.

Status of floriculture in Tamil Nadu

Tamilnadu is a leading state in area and production of flowers in the country. The area under flower crops was 20,801 ha and the production was 1.24 lakhs million tones of loose flowers during 1999-2000. A large number of flowers like jasmine, tuberose, rose, chrysanthemum, marigold, crossandra, barleria, lily, limonium, alsteoemeria, liatris, freesia, iris, lisianthus, calla, carnation, gerbera and anthurium are commercially cultivated in the state. Many hi-tech units with export tie-ups are there in the state. There are several commercial tissue culture laboratories. The daily average trade of cut flower is over Rs. 2 lakh and loose flower over Rs. 5 lakh in Tamil Nadu itself. Rose is a major commercial cut flower, widely cultivated in different parts of the world. It belongs to the family *rosaceae* and a member of the genus *Rosa*. For production of cut flowers, Rose is extensively cultivated in native to Asia, with smaller numbers of species native to Europe, North America, and northwest Africa. Netherlands was ranked the number one supplier of Rose (739 million stems) to European Union, followed by Colombia (591 million stems), Spain (308 million stems), Kenya (303 million stems), Israel (125 million stems and turkey (107 million stems). Maximum area under carnation cultivation is in Colombia (1,868 ha) and other countries in order are Japan (602 ha), Israel (350 ha), Poland (278 ha), The Netherlands (217 ha), the USA (214 ha), France (210 ha), Italy (150 ha), Spain (150 ha) and Kenya (115 ha). Production of Rose cut flowers in India is negligible. These flowers are mostly grown under cover in Nasik, Pune, Hosur, Kodaikanal, Kalimpong, Ooty, Darjeeling, Bangalore, Solan, Palampur, Shimla, Srinagar, Delhi, Ludhiana and Calcutta). Area under Rose cultivation in Tamil Nadu state is estimated at 15 ha with production of 22 lakh cut flowers at an estimated value of Rs. 70 lakhs

The genus *Gerbera* was founded by the pre-Linnean botanist, Gronovius and was named in honour of German naturalist, Traugott Gerber, who traveled Russia in 1743. In the family Asteraceae (Compositae), this group at present comprises 45 species, native to tropical Asia and Africa. About 7 species were recorded in India, distributed in the temperate Himalayas from Kashmir to Nepal at altitudes of 1,300 to 3,200 meters. Gerbera is a very attractive, commercial cut flower crop and marketed in the International florists trade in huge quantities. These plants are grown through out the world in a wide range of climatic conditions. The Netherlands produces 420 million stems of gerbera per year which is valued at 145 million Netherlands guilders. Area under gerbera cultivation in Tamil Nadu is estimated at 25 ha with production of 53 lakhs cut flowers at an estimated value of Rs. 15 lakh. In recent years the area under gerbera and Rose is fast increasing around Hosur and Bangalore because of high profits. As far as the productivity is concerned there is a lot of scope for increasing the productivity and profit through adoption of the latest improved production and marketing technologies. There is a need to generate information regarding production and marketing aspects, the profile of cut flower growers and the constraints in production and marketing of cut flowers.

II. HOSUR PROFILE

The Tamil Nadu has been divided into seven Agro climatic zones based on different Climatic Conditions viz, Western Zone, Southern Zone, North Eastern Zone, North Western Zone, Delta Zone, High Rain Fall Zone and Hilly and Tribal Zone. Hosur occupies the Fourth Zone called as “North Western Zone”. The area under flower crops was 2723 ha and the production was 18454 Metric tones of Total flowers during 2010-2011, whereas the area under Rose was 536 ha and the production was 3161 Metric tonne.

III. OBJECTIVES OF THE STUDY

- 1) To assess the production costs, returns and profitability of high-tech floriculture in Hosur.
- 2) To study the marketing pattern of cut flowers by farmers
- 3) To document the production and marketing constraints and problems encountered by high-tech floriculture units in Hosur.

IV. SCOPE OF THE STUDY

Floriculture in India comprises both traditional and modern flower crops. Most traditional flowers are grown in open fields while modern flowers are grown under protected conditions. The traditional flowers grown in the open include chrysanthemum, jasmine, crossandra, rose, tuberose, aster, marigold, champaka, etc. A large number of small and marginal farmers as well as small traders (forming the unorganized sector) are seeking out a living in the sector compared to hi-tech floriculture. The traditional flowers are grown in all districts of the state. The traditional floriculture is still predominant in the state in terms of area and production. However, there are a few exceptions to this general practice in TamilNadu. For instance, roses (as cut flowers) are also grown by small and marginal farmers under open conditions, while traditional flowers like chrysanthemum are grown by large growers under poly-house conditions. The chief flowers grown under greenhouse conditions are rose, gerbera, carnation, bird of paradise and anthurium. The present study is focused on the hi-tech floriculture in Hosur.

V. METHODOLOGY

The study was conducted in the Hosur taluk of Tamil Nadu. This chapter deals about the material and methodology followed in conducting the research under the following sub headings

Locale of the Study

In Tamil Nadu state, Hosur is having maximum area under gerbera and Rose cultivation and ranks first in area and production. The growers are scattered throughout the Hosur taluk. So, the whole district was selected purposively as locale of the study.

Selection of Respondents

In Hosur taluk, a list of farmers cultivating gerbera and Rose was prepared separately. Forty Rose growers and Twenty gerbera growers were selected for the present study, which constituted the total sample of 60 cut flower growers. Among 60 cut flower growers 16 had cultivated both gerbera and Rose.

Marketing Pattern Followed by the Respondents

The marketing pattern of the respondents was studied by asking them to indicate then nature of marketing, which included where, when, to whom and through which channel, they sell their produce of cut flowers of Rose and gerbera. Responses obtained from the farmers were expressed in frequencies and percentages

Constraints faced by the Respondents

The constraints faced in cultivation and marketing of Rose and gerbera cut flowers by the farmers of the study area were listed out during pre-test and also in consultation with the extension personnel of State Department of Horticulture. Based on the responses obtained from the gerbera and Rose growers, frequency and percentages were calculated for each constraint faced by the growers.

Costs of and returns from cut-flower production

The average costs incurred and returns realized in the production of the prime cut-flowers namely Gerbera, and Rose grown under greenhouse condition have been worked out and are presented as under.

Per – acre Establishment Cost of Gerbera

Particulars	Cost (Rs. in lakhs)	Percentage to total
i) Land development	3.13	10.53
ii) Green house structure	14.7	49.49
iii) Store room/ grading hall/ Packaging units	1.25	4.21
iv) Sprayers	0.48	1.62
v) Irrigation and misting system	3.12	10.51
vi) Planting materials	7.02	23.64
Total	29.7	100.00

Per acre Yield and Return from Gerbera

Number of plants in Greenhouse	26,000
Number of flowers per plant/year	32
Total yield/year (No's)	8,32,000
Sale price per flower (Rs.)	2.25
Gross returns (Rs. in lakhs)	18.72
Cost of cultivation(Rs. in lakhs)	11.12
Net returns (Rs. in lakhs)	7.6

Cost of Cultivation of Gerbera Production (0.1ha)

Sl.No	Particulars	Unit	Quantity	Amount	Per cent (%)
1	Hired Human Labour	Man Day	257.50	20,600	2.01
2	Machine Labour	Hr	5.00	1250.00	0.12
3	Plants	No	6000	1,80,000	17.53
4	Red Soil	Bras	100	1,20,000	11.69
5	Construction Of Poly House			1,50,000	14.61
6	Manures FYM Rice Husk	Bras	25	30,000	2.92
		Ton	5	20,000	1.95
7	Fertilizers	Kg	-	10,650	1.04
8	Plant Protection	-	-	40,000	3.89
9	Drip Irrigation	-	-	1,20,000	11.69
10	Land Revenue	-	-	0.00	0.00
11	Interest on Working Capital	-	-	76.175	7.42
12	Depreciation	-	-	11,385	1.10
13	Cost A (1-11)	-	-	7,80,060	75.97
14	Rental Value of Land	-	-	1,94,120	18.91
15	Interest on Fixed Capital	-	-	48,200	4.69
16	Cost B (12-14)	-	-	10,22,380	99.58
17	Family Human Labour	Man day	54.50	4,360	0.42
18	Cost C (15-16)			10,26,740	100.00

Cost and Return of Gerbera Production

Sl.No	Particular	Unit	Quantity	Amount (Rs)
1	Gross returns	Boxes	600	11,72,466
2	Cost A	-		7,80,060
3	Cost B	-		10,26,740
4	Cost C	-		3,92,406
5	Farm Business income	-		1,50,086
6	Family labour income	-		1,45,726
7	Net profit	-		1.14
8	Output-input ratio	-		1,711.23
9	Per box cost of production	-		

Total Production , retention and marketed Surplus of Gerbera

Sl.No	Particular	Quantity	
		No of flowers	Boxes
1	Total production	2,40,000	600
2	Retentions	2000	5
3	Marketed Surplus	2,38,000	595

Quantity Marketed through different marketing Channels

Sl.No	Channels	Quantity	
		No of flowers	Boxes
1	Channel I	78,000	195
2	Channel II	1,60,000	400

Marketing Cost of Gerbera grower (per box)

Sl.No	Channels	I	II
1	Grading and packaging charges	23.13 (12.78)	47.46 (15.33)
2	Packing material cost	27.52 (15.20)	56.43 (18.23)
3	Transport charges	39.74 (21.95)	87.50 (28.27)
4	Storage charges	15.97 (8.82)	32.77 (10.59)
5	Commission charges	74.67 (41.25)	85.33 (27.57)
	Total Marketing Cost	181.03 (100.00)	309.49 (100.00)

Price Spread of Gerbera in Different Channels (per Box)

Sl.No	Particulars	Channel I	Channel II
1	Net price received by producer	1866.8 (77.78)	1996.67 (62.40)
2	Expenses incurred by producer on marketing	181.03 (181.03)	309.49 (9.67)
3	Purchase price of wholesaler	-	2306.16 (72.07)
4	Marketing cost of Wholesaler	-	150.00 (4.69)
5	Margin of wholesaler	-	225.00 (7.03)
6	Purchase price of retailer	2047.83 (85.33)	2681.16 (83.79)
7	Marketing cost of retailer	120.00 (5.00)	196.34 (6.13)
8	Margin of Retailer	232.17 (9.67)	322.5 (10.08)
9	Consumer's price	2400.00 (100.00)	3200.00 (100.00)

Per Acre establishment cost of Rose

Particulars	Cost (Rs. in lakhs)	Percentage to the total
i) Land development	0.45	0.96
ii) Green house structure	19.27	40.92
iii) Cold storage structures	4.25	9.03
iv) Grading & Packaging units	2.42	5.14
v) Irrigation system	2.24	4.76
vi) Refrigerated Van	8	16.98
vii) Planting materials	10.46	22.21
Total	47.09	100.00

Per acre Cost of production of Rose

Particulars	Cost (Rs. in lakhs)	Percentage to the total
A. Fixed costs		
Interest on capital (@14% p.a.)	4.07	16.45
Amortized establishment cost of structure & planting material	4.16	16.81
Depreciation of equipment	2.75	11.11
Total fixed cost	10.98	44.37
B. Variable costs:		
Fertilizers & pesticides	1.52	6.14
Electricity charges	0.82	3.31
Labour cost	1.87	7.55
Interest on working capital @ 12% p.a.	1.43	5.78
Domestic marketing charges	0.23	0.94
Grading and packing	1.05	4.24
Freight charges	4.02	16.26
Commission	0.3	1.21
Export marketing charges	0.29	1.19
EEC Cess	2.23	9.01
Total variable costs	13.76	55.63
Total annual costs (A+B)	24.74	100

Per acre Yield and Return from Rose

Description	Exports	Domestic sales	Total
Yield (lakh stems)	3.84	1.63	5.47
Price(Rs./Spike)	8.7	2.65	
Gross Returns(Rs.lakhs)	33.408	4.32	37.73
Total Costs(Rs. lakhs)	--	--	24.74
Net Returns(Rs. lakhs)	--	--	12.99

Constraints and Suggestion in production and Marketing of Gerbera and Rose Constraints

1	Price Fluctuation in Market Value
2	High Labour Charge
3	High Cost of fertilizers
4	High tax on poly house ,soluble fertilizers and gerbera plants
5	Irregular Power Supply
6	High VAT

Production Constraints faced by Hi-Tech-Floriculture Units

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), poor harvest during the rainy season (opined by 63.63 per cent) and pest and disease attack on crops (reported by 47.27 per cent). With regard to marketing, the prominent constraints expressed by the sample growers included, seasonality in demand (reported by 96.36 per cent of the respondents), frequent power cuts affecting irrigation of the standing crop, adequate cold storage facilities (reported by 81.81 percent) and price fluctuations (54.54 per cent). Almost all the growers opined that there should be an exclusive flower market in Bangalore on modern lines with all requisite infrastructure facilities. The need for developing general infrastructure and setting up of cold storage facilities was expressed by the majority, i.e., 89.09 percent and 83.63 per cent respectively of the sample respondents. Adequate Government support for export promotion and improving the facilities and competitiveness at the IFAB were suggested by 58.18 per cent and 45.45 per cent respectively of the sample growers

Problems faced by Hi-tech Floriculture Units (n=30)

Sl.No	Particulars	Percent of growers reporting
	Problems	
I	Relating to production	
1	Huge investment requirement	91.66
2	Non-availability of quality indigenous planting Material	86.66
3	Scarcity of labour	75.00
4	Irregular supply of electricity	100
5	Pest and diseases attack	53.33
6	Poor harvest during rainy season	63.03
II	Relating to Marketing	
1	Price fluctuations	54.54
2	Seasonal demand	96.36
3	Absence of organised retail markets	85.45
4	Lack of adequate cold storage facilities	74.00
III	Suggestions	
1	Establish adequate cold storage near the retail Markets	100.00
2	Develop overall infrastructure for floriculture	83.00
3	Adequate Government support for export Promotion	75.00

Constraints faced by Wholesalers

Sl.No	Particulars	Number of wholesalers reporting	Percentage to the total
A	Constraints:		
I	Lack of infrastructure		
1	Storage	8	80
2	Transportation	6	60
3	Packaging materials	6	60
4	Grading	7	70
II	Non-availability of good quality flowers		
5	High price fluctuations	7	70
6	Lack of good varieties	6	60
7	Lack of continuous supply	8	80
B	Suggestions for improvement		
8	Exclusive market place for cut-flowers	8	80
9	Need for cold storage unit near market	10	100
10	Proper grading, packaging and continuous supply	5	50

The main constraints of wholesalers related to lack of infrastructure and non-availability of good flowers. The infrastructural problems comprised inadequate facilities for storage, packing, transportation and grading. Nearly two-thirds of the sample wholesalers pointed out that these problems hampered their wholesale activity. About 80 percent of the wholesalers reported about the problems pertaining to sourcing of quality flowers related to high price fluctuations, 70 percent of them complained of high transport costs, 60 percent reported lack of good varieties, and 50 percent reported lack of quality flowers and irregular supply. The need for a separate market for cut flowers was expressed by all the sample wholesalers. Need for cold storage, grading, packing and regular supply of cut-flowers were expressed by nearly 80 per cent and 60 per cent of the wholesalers respectively. The need for government support in terms of proper policy was felt by about 40 per cent of the sample wholesalers.

Constraint Faced by Wholesaler (n=10)

Constraints Faced By Retailer

The problems of retailers/florists engaged in cut flower business broadly related to procurement and selling of cut flowers. From the below table reveals that More than 93 per cent of the sample retailers/florists engaged in cut flower business reported about wide price fluctuations in the flower prices. Nearly 80 per cent of the retailers surveyed reported about lack of regular supply, while 73.33 per cent complained of quick deterioration in flower quality and 66.66 per cent expressed about lack of new varieties. Majority (86.66 per cent) of the florists/retailers opined that there are lack of regular customers and that there is quite a bit of wastage of flowers as most of them carry on their business on pavements, exposing flowers to outside atmosphere including sunshine, wind, dust, etc. These factors naturally prompt the retailers/florists to charge high prices especially for floral arrangements like bouquets, wreaths, tent decorations, etc., which the consumers of cut flowers consider very exorbitant

Problem Faced by Retailer (n=15)

Sl.No	Particulars	Number of Retailers reporting	Percentage to the total
A	Constraints:		
I	Procurement of cut flowers		
1	Price fluctuations	10	66.66
2	Quick deterioration in quality	12	80.00
3	Lack of new varieties	14	93.33
4	Lack of regular supply	11	73.33
II	Selling of cut flowers		
5	Wastage of flowers	9	60.00
6	Lack of awareness among consumers	10	66.66
7	Lack of regular consumers	13	86.00
B	Suggestions:		
8	Introduce new varieties	14	93.33
9	Development of more customers contacts	11	80.00

Seasonal pattern in arrivals

In order to study the seasonal pattern, seasonal indices were computed in below table. Seasonality was observed for all the cut flowers. For rose the arrivals reached a peak in February followed by another peak in December-January, while they were lowest in March. The Indices of rose arrivals range from 85 to 123. Arrivals reached a peak during January-February for Gladiolus. The seasonal indices for gladiolus arrivals ranged from 17 to 285, the highest being, during February (285) followed by January (215) and the lowest in May (17). The arrivals of anthurium reached a peak in the months of October, November and December, with the seasonal indices of 130, 144 and 132 respectively. The arrivals reached the minimum in the month of March with an index of just 42. The analysis revealed that in general the cut-flower arrivals are higher during November-February season. The rose arrivals were found to be more stable compared to other two flowers.

Indices of Arrivals and Prices for Roses

Indices of rose prices ranged from 62.98 to 153.91, peaking in December and reaching the bottom in March. To sum up, it was observed that the seasonality in cut flower arrivals at IFAB does not vary much. The index for arrivals is higher in the November-February season. The seasonal pattern of prices was more or less similar, with prices being higher during the December-February season.

VI. SWOT Analysis for Hi-tech Floriculture

SWOT analysis for the Indian hi-tech floriculture in Tamil Nadu is attempted below. It must be mentioned here that this analysis is not designed to determine whether an enterprise or industry is “good” or “bad.” It is just a tool used to map the different forces acting on the industry at a given moment.

Strengths: Varied Agro Climate conditions: For the production of flowers climatic conditions are very important. The temperature profile, humidity and abundant sunlight play a very vital role in deciding the quality and quantity of the flowers. The three major hi-tech floriculture Block in Hozur namely dasarpalli, Talli and Madikeri do have salubrious climate for the purpose. Many flower-growing areas of the west have extreme winters with sub-zero temperatures and hardly any sunlight. This results in the seasonality of the flowers and the growth of the flowers throughout the year is not possible. For instance, Europe, the major consumer of cut flowers, confronts adverse cold conditions during the season of peak demand for flowers during December-March. On the contrary, India has varied climate and soil conditions, which are conducive to the production of cut flowers. In south India winters are not severe and there is abundant sunlight. Therefore production of flowers throughout the year is possible. This is the major strength and competitive advantage for India in general and Hosur taluk in particular.

Availability of labour at low costs: Floriculture industry is basically a labour-intensive industry since the plants require 24 hours-a-day care and attention and the protected green houses system needs people to manage the production process at different stages. There is no dearth of unskilled labour in India especially in the rural areas.

Well established infrastructural facilities: For the success of floriculture industry, availability of infrastructural facilities such as steel, aluminum, irrigation system, fertilizers, pesticides, testing labs, air-conditioning and refrigeration equipment are very important. Unlike countries like Zimbabwe and Costa Rica, India has all the above infrastructure facilities and inputs which can help effect a major saving in the project cost.

Weaknesses

Poor airfreight capacity: Currently there is a shortage of air freight capacity especially during the peak period leading to a backlog at the airports. This could be a serious disadvantage for a perishable product like cut flowers. The Government of Karnataka has addressed the problem by upgrading the airport and now the flights to Europe have increased. In the near future, the possibility of floriculturists chartering flights to deliver their cargo expeditiously does not seem too remote.

Exorbitant Air freight cost: Air freight rates for transporting flowers from India are very high. The concessional freight rate of Rs.42/- per Kg. is applicable to plants and seeds, but not to cut flowers and therefore the general rate of Rs. 75/- per Kg, is applicable to flowers. APEDA’s announcement of Rs.10/ - per Kg., freight subsidy showed some silver line in the otherwise cloudy air cargo atmosphere. But almost every sample hi-tech floriculture unit surveyed in the present study has serious complaints to narrate against APEDA’s procedures in this regard. The solution lies in creating volumes and frequency so that better rates can be negotiated with the cargo carriers. This seems quite possible as quite a few floriculture units are coming up in India and the volumes and frequencies are bound to increase resulting in lower freight rates.

Airport infrastructure: Air cargo handling capacity and cold storage facilities for perishables are almost non-existent at the international airports. The government is already taking steps to create cold storage facilities at the airports located near the floriculture zones. Wall-in-cold storage facilities are already operational at Mumbai, Delhi and Bangalore.

Opportunities

There is a vast sustainable opportunity in floriculture because of the following factors:
A growing world market for flowers in which demand exceeds the supply, and the world demand is estimated to grow anywhere between 15 and 25 percent per annum. Demand rising at this pace cannot be completely met by the present major players in the years to come. India can and must grab on such an opportunity. With production in traditionally strong markets (the Netherlands and the US) have reached threshold levels, developing countries like Columbia, Israel, South Africa and Kenya have emerged as the new production centres. Most flowers are grown under protected conditions in covered structures like green houses and poly/glass houses in European and other countries. Due to intense cold, high energy cost, production in these countries is limited during winter months. Thus they have to depend largely on imports to meet their domestic demand as most of the festivals fall during this period when the demand of flowers is at its peak. Against this background India which currently has less than 1 percent share of the world market, has a strong chance of entering the market and creating a strong position for itself.

Most major flower producing countries at present are industrialised countries and are small in area. The land available for cultivation is shrinking in favour of industrialization and infrastructure development. The soaring real estate prices induce farmers to sell their land. The acquisition cost of land is therefore very high and this makes it unattractive to set up floriculture units in these countries. With ample agricultural land at its disposal and driven by the need to diversify its agriculture into more remunerative commercial crops, India has a great opportunity bank upon floriculture.

One of the ways to overcome the problem of unstable export market for the Indian flower growers is to diversify production and not to depend on cut rose production alone. The Indian growers need to explore other high-value product alternatives, such as propagating materials of speciality crops for exporting purposes. This could be achieved through licensing and contractual agreements with foreign collaborators. Having appropriate intellectual property regimes in place will be necessary to help Indian growers in such ventures. Since Indians do not have appropriate intellectual property protection mechanisms for plant materials, foreign breeders are often reluctant to sell new varieties to Indian growers for fear of illegal proliferation through asexual propagation.

Threats

Although there is vast scope for the floriculture industry, steps are necessary to develop the industry to meet the quality requirement of the international flower auction houses. It requires adoption of modern technology and protected environment, which are very costly. India must establish its presence in the market before other countries and capitalize on this opportunity. Some African countries like Ethiopia and Kenya have gone rather aggressive in pushing through hi-tech floriculture at all costs, and they appear to have met with a great success as well. So it is necessary that India watch out these imminent threats and take timely measures to thwart the consequences of such threats.

The days of seemingly cheap labour are not likely to continue in future. Several floriculture units operating in urban fringe areas, especially in the Hosur region, have already started feeling the heat of frequent labour shortage and high attrition rate in view of the wide range of more lucrative urban fringe jobs available now. Even in Madikeri and Talli regions the cut flower growers have reported increasing labour problems particularly in wake of the extensive implementation of the National Rural Employment Guarantee Scheme.

High Cost of Finance:

Floriculture is essentially a capital-intensive industry. With inflation persisting, financial institutions have hardened the rates of interest. As it is, the cost of capital is much higher in India than in the developed countries. So, high interest cost is a disadvantage which threatens to eat into the profits of floriculture units.

Steps to strengthen Hi-tech Floriculture

The hi-tech floriculture industry in Hosur, as also elsewhere, appears to have overcome the initial hick-ups and is about to takeoff. However, its growth calls for concerted efforts to seize the opportunities and tackle the constraints mentioned in the foregoing sections. The critical aspects which need attention are discussed below.

VII. TANFLORA MODEL

In this context *Tanflora Infrastructure Park Ltd.*, a joint venture floriculture project of TIDCO (Tamilnadu Industrial Development Corporation) and M. Naseem Ahmed & Associates, a private-sector floriculture firm, deserves a special mention. Located at a village namely Amudhagondapalli near Hosur, Tamil Nadu - about 45 kms from Bangalore International Air Port, with centralized infrastructure, state-of-the-art post-harvest logistics and marketing facilities provided by Tanflora, flower cultivation here is undertaken by 25 independent growers having 2 hectares of production area each. Total annual production capacity is 70 million roses from 50 hectares (present production level is 30 million per annum). The salient features of the project are: Tanflora made a lay-out on 250 acres of land, developed 50 hectares of production facilities, divided the project into 25 units of 2 hectares each (total 50 hectares) and retained 4 hectares for self production, thus creating the total production facilities to 54 hectares. Besides, Tanflora provides its 25 growers: (i) central packing house - 80000 sq.ft. of fully insulated building to handle and process fresh cut roses, (ii) 19000 sq.ft of CFC-free state-of-the-art cold room, (iii) Tanflora-maintained uninterrupted cold chain with the help of dock shelters and packaging in cold rooms, (iv) infrastructure facilities like roads, drains, water, technical support, one stop shop, laboratory etc., (v) rainwater harvesting facilities with the installed capacity to harvest over 100 million litres, (vi) common fertigation and drip irrigation facilities leading to great economies in the use of water and other inputs, and (vii) on-farm professional expertise and monitoring in the production process round the year. Tanflora is reportedly Asia's largest cut-rose project having wide varieties of quality roses and its capital requirements are met by State Bank of India (Agri Development Branch), Hosur, Krishnagiri District, Tamil

Nadu, in addition to the incentives extended by the APEDA and the National Horticultural Board. Packing, logistics and marketing are undertaken by Tanflora under its brand name. Revenue is shared between Tanflora and the Growers in 25:75 ratio on FOB basis. It is India's first project in Agri Export Zone scheme for cut flowers. It endeavors to develop varietal portfolio as per the market trend in Japan and Europe and facilitates export of roses round the clock. It has even evolved and patented its own special rose variety for international markets namely, *Taj Mahal Rose*, and the same was released on May 8, 2008 in Sydney, Australia. Maharashtra Government has set up a similar floriculture park at Ambe village near Talegaon, in Pune district. This park has given a major boost to the floriculture exports from that state.

VIII. STEPS TAKEN BY GOVERNMENT TO INCREASE FLOWER EXPORTS:

- □The Government of India is working hard at getting the European Community (EC) to reduce the high rate of import duty on Indian Cut Flowers. According to Commerce Ministry, the current rate of import duty is fixed at 20% and 15% according to season.
- To further promote the Floriculture, the Commerce Ministry is contemplating duty exemption on the import of materials for Green House and Tissue Culture Labs considering the huge capital inputs.
- The Government is also working out a Scheme to impart training to the Farmers and Entrepreneurs.
- Setting up of cold storage unit at International Airports.
- The Government is working for an air freight subsidy for export of Cut Flowers and exemption of export oriented units from requirement of customs bonding.
- APEDA is planning to step up Flower exports to West Asia and make an entry into the market in Australia and New Zealand.
- Farmers are allowed to sell even upto 50% of their produce in domestic market.
- The total quarantine procedures have been simplified and made easy for the expeditious clearance, for the import of seeds and planting materials.
- Import permit for flower Seeds and Tissue Culture materials of Plant origin has been waived.
- Import duty on Floriculture planting material has been reduced from 55% to 10%.
- Import duty of Seed development machineries and specified goods for Green House has been brought down from 136% to 25%.
- Import duty on pre-cooling units and refrigerated transport units has been reduced to 25%.
- Floriculture units can avail of the benefits of duty free imports if they export 50% of their production.
- For export of Tissue Culture Plants, and Cut Flowers by air ,subsidy on air freight has been allowed upto a maximum of 25% of the international freight rate.

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