CHAPTER I

INTRODUCTION

Flowers have always been an integral part of Indian culture and society. With globalization and free market economy, floriculture has attained an industrial status and has gained tremendous momentum in the last few years. However, this sector is still in a nascent stage of development and accounts for a negligible share in the global exports. Floriculture is a viable and profitable alternative for the new generation of farmers. By recognizing its full potential, India has a fair chance of attaining a strong position on the World floriculture platform.

1.1 Background and Rationale of the Project

Karnataka is a major floriculture State in the Country with 22,340 hectares of area under floriculture accounting for 14% of Country's total area and a production of 169, 120 metric tones of loose and 5550 Lakh number cut flowers accounting for 20% of loose and 13% of cut flower production of the Country. The state has the highest area under modern cut flowers, and 40 flower growing and exporting units. The country's first flower auction centre is located in Karnataka.

Karnataka has tremendous prospects in floriculture. On the export front, its performance has been commendable. Karnataka contributes a major portion of exports at Rs. 1 billion. The conducive climate prevailing in the 6 agro-climatic regions spread across 10 Zones in the state is responsible for the flourishing status of floriculture in the country. The growth of this crop in the state is also highest compared to other food crops as well as horticultural crops.

However, the growth within the state has not been uniform across the districts. Some districts/regions have been dominating in the coverage of area, production and productivity and some have lagged behind in the cultivation of flowers. If we

examine the trends over a period of time, we find a decline in both area and production compared to previous years. Karnataka has been very consistent in floriculture development in the Country and has played a lead role. Decline in its contribution both in area and production is a matter of concern.

Though floriculture is flourishing both in India as well as in the State, it has not made any remarkable breakthrough in the domestic and international floriculture markets due to various constraints. The investments in this sector and per capita consumption of flowers is also considerably low when compared to other developed countries like Western Europe, Japan and USA. In other words, the vast potential in the country has not been fully tapped.

As far as domestic floriculture is concerned, it is constrained by lack of awareness about its potential, lack of quality planting material, weak infrastructure support, lack of post harvest facilities, lack of good markets, exploitation by middlemen, weak database, and absence of information on income generation and employment generation and export barriers. It is also viewed that a majority of the flower growers belong to small and marginal farmers' category, facing many problems.

Therefore, an attempt has been made to highlight these issues and identify the problems and prospects of this sector. The Study suggests appropriate measures for tackling the problems of the growers and improving the floricultural industry.

Since Karnataka has been one of the States leading in floriculture in the Country with tremendous potential and commendable performance, it has been selected for the present Study.

1.2 Objectives

- To assess marketing efficiency of the selected flowers.
- To conduct price spread analysis through major channels
- To study the commodity flow pattern
- Broad survey of grading, standardization, packaging, finance, transportation, wholesaling and retailing of the selected flowers.
- To identify the constraints and suggest suitable measures
- To explore the potential for Public Private Partnership in Infrastructure development.

1.3 Scope

- The study would analyze the existing reports and data on the subject and generate additional primary data through interviews with stakeholders involved in marketing at the various stages of the marketing chain. In particular, the study would include important flowers specific to the district/region of the state.
- The Study would assess the relative importance of different marketing channels, current marketing arrangements, and significant changes likely to occur for major products.
- Regarding marketing arrangements in place, the report would include

I. An assessment of the marketing chain from production to consumers for marketing arrangement.
II. The description of the available marketing facilities
III. An evaluation of price formation and a description of the present dissemination of information on prices to producers.
IV. Produce profiles for the top commercial Flowers in terms of price, quality, seasonality, demand and future prospects.
V. Explore the potential for Public Private Partnership in Infrastructure development.
VI. Case studies of marketing innovations and improvements
VII. Assessment of the marketing constraints of farmers.

VIII. Identification of market opportunities for farmers.

CHAPTER 2

REVIEW OF LITERATURE

2.1 Floriculture in India

Floriculture deals with cultivation, marketing and arranging of flowers and foliage plants. Flowers and ornamental plants have gained an important position in present day society. In fact, flowers have become symbolic to express human sentiments on occasions of social functions, wedding, birthdays etc. In past, flowers were grown outdoors only and their quality and quantity was very much limited by the season. But with the expansion and growth of cities, civilization and social activities, the floriculture industry has developed to meet the increasing demand for flowers and ornamental plants.

Commercial floriculture includes cut flowers, flowering plants, bedding plants and foliage plants. Bedding and garden plants consist of young flowering plants (annuals and perennials) and vegetable plants. Commercial cut flowers are cultivated in green houses, shade houses and outdoors. The floriculturists have to manipulate environmental factors to produce marketable flowers or foliage pots out of season. Cut flowers are cultivated on the ground beds or on raised 4 feet wide benches. Water temperature, light and essential elements are controlled entirely or partially.

India has a long tradition of floriculture. The offering and exchange of flowers on all social occasions, in places of worship and their use for adornment of hair by women and for home decoration have become an integral part of human living. With changing life styles and increased urban affluence, floriculture has assumed a definite commercial status in recent times and during the past 2-3 decades particularly. Appreciation of the potential of commercial floriculture has resulted in the blossoming of this field into a viable agri-business option.

Being endowed with diverse agro climatic conditions, India holds an advantageous position in the horticultural map of the World. Such conditions permit production of a wide range of temperate and tropical flowers, almost all throughout the year in some part of the country or other.

India is the largest producer of Coconut, Cashew, tea and spices and second largest producer of fruits and vegetables in the World. India has also made noticeable advances in production of flowers. Floriculture is estimated to cover an area of 161,000 ha with production of 870,000 metric tones of loose and 4342 million cut flowers(Indian horticulture database 2008).

The area under cut flowers has increased in recent years, so has the product range. The major flower growing states are Karnataka, Tamil Nadu and Andhra Pradesh in the South, West Bengal in the East, Maharashtra in the West and Rajasthan, Delhi and Haryana in the North. It must, however, be mentioned that it is extremely difficult to compute the statistics of area in view of the very small sizes of holdings, which very often go unreported.

In the case of production also, the estimates could be at variance from the actual figures as some of the flowers like rose, chrysanthemum, and tuberose are used both as loose flowers and with stem.

More than two thirds of this large area is devoted for production of traditional flowers, which are marketed loose e.g. marigold, jasmine, chrysanthemum, aster, crossandra, tuberose etc. The area under cut flower crops (with stems) used for bouquets, arrangements etc. has grown in recent years, with growing affluence and people's interest in using flowers as gifts. The major flowers in this category are rose, gladiolus, tuberose, carnation, orchids, gerbera, chrysanthemum etc.

A suitable agro climatic condition has been the primary production factor that encompassed the desired comparative advantage for India in terms of reduction in cost of establishment and production of cut flowers.

The locational advantage in terms of closeness to International markets helped the Indian growers to access markets like the Netherlands, Japan, Singapore and Australia between September and February, the peak winter season in traditional cut flower producing areas (Attawar 1995).

Although the cultivation of modern flowers like hi tech roses, gerberas, carnations, gladiolus, orchids and anthuriums has better income and employment prospects (Gajanana and Subrahmanyam, 2000a, 2000b, 2001; Sudha, 2001), the capital intensive nature of their cultivation and the presence of a number of uneconomically sized farms have, in fact, preserved the cultivation of traditional flowers under open field conditions, such as cultivation of rose, chrysanthemum, marigold, crossandra, aster and tuberose, especially for domestic markets.

Inspite of the long and close association with floriculture, the records of commercial activity in the field are very few. The information on the area under floriculture and the production generated is highly inadequate. As commercial floriculture is an activity which has assumed importance only in recent times, there are not many large farms engaged in organised floriculture. In most part of the country flower growing is carried out on small holdings, mainly as a part of the regular agriculture systems.

Rose is the principal cut flower grown all over the country, even though in terms of total area, it may not be so. The larger percentage of the area in many states is used for growing scented rose, usually local varieties akin to the Gruss en Tepelitz, the old favourite to be sold as loose flowers. These are used for offerings at places of worship, for the extraction of essential oils and also used in garlands. For cut flower use, the old rose varieties like Queen Elizabeth, Super Star, Montezuma, Papa Meilland, Christian Dior, Eiffel Tower, Kiss of Fire, Golden Giant, Garde Henkel, First Prize etc. are still popular. In recent times, with production for export gaining ground in the country, the latest varieties like First Red, Grand Gala, Konfitti, Ravel, Tineke, Sacha, Prophyta, Pareo, Noblesse. Virsilia, Vivaldi etc. are also being grown commercially.

Gladiolus is the next most important cut flower crop in the country. Earlier it was considered a crop for temperate regions and its growing was restricted to the hilly areas, particularly in the north eastern region, which still continues to supply the planting material to most parts of the country. However, with improved agronomic techniques and better management, the northern plains of Delhi, Haryana, Punjab, Uttar Pradesh, as well as Maharashtra and Karnataka have emerged as the major areas for production of gladiolus.

Tuberose, a very popular cut flower crop in India is grown mainly in the eastern part of the country i.e. West Bengal, and also in northern plains and parts of south. Both single and double flower varieties are equally popular. Tuberose flowers are also sold loose in some areas for preparing garlands and wreaths.

The other main cut flower item is orchid. Its production is restricted mainly in the north-eastern hill regions, besides parts of the southern states of Kerala and Karnataka. The main species grown are Dendrobiums, Vanda, Paphiopedilums, Oncidiums, Phalaenopsis and Cymbidiums.

Among the traditional crops grown for loose flowers, the largest area is under marigold, grown all over the country. In most parts of the country only local varieties are grown for generations. African marigolds occupy more area as compared to the small flowered French types. Jasmine flowers in view of its scent are also very popular as loose flowers and for use in garlands and *Veni* (ornament for decoration of hair by women). The major areas under this crop are in Tamil Nadu, Karnataka in South and West Bengal in East. The varieties are mainly improved clones of *Jasminum grandiflorum,* J*. auriculatum* and J*. sambac*. The chrysanthemum, particularly the white varieties are much in demand as loose flowers during the autumn period of October-December when other flowers like jasmine, tuberose are not available for use in garlands etc. Among other traditional flowers grown in large

areas are crossandra in southern states of Tamil Nadu, Karnataka and Andhra Pradesh and aster in Maharashtra.

Marketing of cut flowers in India is very unorganized at present. In most metropolitan cities, with large market potential, flowers are brought to wholesale markets, which mostly operate in open yards. A few large flower merchants generally buy most of the produce and distribute them to local retail outlets after significant mark up. The retail florist shops also usually operate in the open on-road sides, with different flowers arranged in large buckets. In the metros, however, there are some good florist show rooms, where flowers are kept in controlled temperature conditions, with considerable attention to value added service.

The packaging and transportation of flowers from the production centres to the wholesale markets at present is very unscientific. The flowers, depending on the kind, are packed in old gunny bags, bamboo baskets, simple cartons or just wrapped in old newspapers and transported to markets by road, rail or by air. The mode of transportation depends on the distance to the markets and the volume. Mostly, flowers are harvested in the evening time and transported to nearby cities by overnight trains or buses. In recent years, the government has provided some assistance for buying refrigerated carriage vans. A large number of export oriented units have built up excellent facilities of pre-cooling chambers, cold stores and reefer vans and their produce coming for domestic market sales are thus of very good quality and have longer vase life and command higher price.

In view of the unorganized set up, it is difficult to estimate the size of flower trade, both in terms of volume and value. It is in the period of the last five years or so that this business has really boomed in India, which is reflected in the number of new florist outlets in all cities and increase in the public's purchase of flowers as gifts. This would put the current trade at several times the earlier estimate. India's floriculture business is worth Rs. 9 billion. While Karnataka contributes a major portion of exports at Rs. 1 billion, Delhi accounts for over half of the domestic market at Rs. 4 billion.

The loose flowers (traditional crops like marigold, jasmine etc.) are usually traded by weight. The average price of different flowers in major markets varies considerably depending on the period of availability. The net returns to the growers depend on the packaging and transportation costs. The cut flowers with stem have a limited overall market in terms of volume. The share of cut flowers has almost doubled from 30 to 60% in the last decade.

The value of cut flower export from India has increased several times during the last five years. With more export oriented units coming into operation, exports are likely to grow further in the coming years. The major share of the export trade is for roses, in addition to orchids, gladiolus etc. The major markets are Europe (Holland, Germany and U.K.) and Japan. The exports of roses to Japan, have really picked up in the nineties from Rs. 360 million in 1993-94 to Rs. 6090 million in 1995-96.

Production of cut flowers for exports is also a thrust area for support. The Agricultural and Processed Food Products Export Development Authority (APEDA), the nodal organization for promotion of agri-exports including flowers, has introduced several schemes for promoting floriculture exports from the country. These relate to development of infrastructure, packaging, market development, air freight subsidy etc. The 100% Export Oriented Units are also given benefits.

The production for exports at present has suffered due to a few constraints. While our growers have been successful in producing world class quality at low cost, high air freight rates, low cargo capacity available, imposition of import duties, inadequate export infrastructure etc. have reduced their competitiveness.

India has a long floriculture history and flower growing is an age old enterprise. What it has lacked is its commercialization. In spite of a long tradition of Agriculture and Floriculture, India's share in the international market for these flowers is negligible. During the last ten years, taking advantage of the incentives offered by the Government, a number of Floriculture units were established in India for producing and exporting flowers to the developed countries. Most of them were

located near Mumbai, Bangalore and Delhi and obtained the technical know-how from Dutch and Israeli Consultants.

2.2 Floriculture in Karnataka

Karnataka is a major floriculture growing State in the country**.** The state has the highest area under modern cut flowers, and 40 flower growing and exporting units. The country's first flower auction centre is located in Karnataka. Karnataka has a land area of 22,340 hectares under floriculture in the year 2007-08 with a total production of 169, 120 metric tones of loose and 5550 Lakh number cut flowers. It plays a lead role in the cut flower exports from the Country.

Bangalore is one of the largest flower trading centre in the Country catering to the marketing of flowers for southern states, especially Karnataka and Tamil Nadu.

In 2003 The International Flower Auction Bangalore (IFAB), the operating company controlled by growers, has taken over the operations of the flower auction centre run by the State-owned Karnataka Agro Industries Corporation (KAIC).

The geographical area of Karnataka is 190.50 lakh ha of which, an area of 130.27 lakh ha comes under the cultivable area, constituting 68.38% of the geographical area for the year 2005-06. Out of the total cultivable area, 17.25 lakh hectares were covered under horticulture (*Horticultural Crop Statistics of Karnataka State At A Glance 2006 -07*). Horticultural area in the State accounts about 13.24% of the total cultivable area. Out of 17.25 lakh ha of the total horticultural cropped area, 7.65 lakh ha (44.35%) come under Garden/Plantation Crops; 4.12 lakh ha (23.88%) under Vegetables; 2.78 lakh ha (16.12%) under Fruits; 2.45 lakh ha., (14.20% under Spices and 0.25 lakh ha (1.45%) under Commercial Flowers, including the area under the Medicinal & Aromatic plants.

Accordingly, the total horticultural production in the State during the year 2005-06 at 130.26 lakh tons. Detailed production figures stand at 47.36 lakh tons (36.36%) with respect to Fruit Crops; 70.15 lakh tons (53.85%) w.r.t., Vegetable Crops; 6.04 lakh (4.64%) w.r.t. Spice Crop; 4.69 lakh tons (3.60%) w.r.t. Garden/Plantation Crops and 2.02 lakh tons (1.55%) w.r.t. crops coming under commercial Flowers, including the area under the Medicinal and Aromatic Plants(*Horticultural Crop Statistics of Karnataka State At A Glance 2006 -07*).

Due to the introduction of the high yielding varieties through improved technology, and also due to commercialization, the productivity of horticultural crops has improved. Recently, efforts are being made by the Government of Karnataka, to boost-up the agricultural exports, mainly of Horticultural produce like fruits, vegetables and flowers, through the effective Agricultural Policy.

Karnataka State occupied 4th place in respect of total Area in the Country contributing 14% area to total Area, 2nd place in respect of total Production of loose flowers contributing 19.5 % production at all India level and 3rd position in production of cut flowers contributing 13% in all India production. This is a clear indication that Karnataka State is in fore-front in the field of Floriculture. However, after examining the trends over last 3 years, we find a decline in both area and production compared to previous years (Indian Horticulture Data base 2008).

2.3 World Scenario of Floriculture

World trade on floriculture produces like cut flowers, ornamental plants, flowering plants, flower seeds and plantlets has gained tremendous momentum. It is estimated at $100 billion. It has reportedly been growing at the rate of 15% per annum. Developed countries account for more than 90% of the total world trade in floriculture products. Many countries, particularly the developed ones, are importing flowers to meet their internal demand. European countries (Germany, France, Italy, Holland, U.K), Japan and United States are the major importers of flowers. The other importers like Switzerland, Sweden, Denmark,

Belgium, Middle-east countries etc. also import a sizable amount of cut flowers. Among the exporters, Netherlands continue to be the World leader in the export of floriculture products, with a lion's share of 70% followed by Columbia and Israel with 12% and 6% share of the global floriculture trade.

Rose has the largest share in the global flower market. Netherlands tops the list of countries that produces rose followed by Italy and USA. Countries like Israel and Spain are also not far beyond. Every year, nearly 100 new varieties of roses are introduced in the market.

In recent past, Israel has come up as the biggest grower of flowers, using modern agro-techniques like glass-house culture, drip irrigation, liquid pesticides & fertilizers application along with drip irrigation channels, tissue culture. It may be mentioned that the roses of Israel are adjudged to be the best in the World. Inspite of *such* a huge market potential of floriculture produce, India's contribution has not been encouraging.

Presently, the largest market for cut flowers is in Europe which is dominated by Netherlands. It is a highly competitive market in which India is a late entrant and with many African and Latin American Countries having an edge due to an early presence. Market access is not easy as it has to be secured through entry in auctions which is difficult because of non transparent quota restrictions on import through virtual cartelization of Dutch Producers.

The market is available only for a restricted period of four months from November to March/April 2009 when productions are severely hampered in Europe due to extreme winter conditions.

India's Export of floriculture has increased from Rs. 299.41 Crores (USD Million 67.63) in 2005-06 to Rs. 649.83 Crores (USD Million 144.15) in 2006-07 (Apeda Export Statement). Statistics by APEDA reveal that the export of

floricultural products from India during 2007-08 came down by over 40% in comparison to 2006-07. This down turn is not only due to the hardening of the rupee against the dollar, but the inability of the flower exporters to innovate, diversify and keep in tune with the dynamics of the global floriculture market.

However, the saving grace for the flower exporters is that the loss at the export front during 2007-08 has been made up by the growing demand and doubling of sale of the flowers in the domestic market. Currently, the States of Karnataka, Maharashtra and Andhra Pradesh account for much of the cut flower exported. However, they are facing stiff competition from African countries which have now started exporting to the Middle East as well. High freight rates add to the crisis. Freight rate in India is 50 to 70% higher than of Kenya, India's closest competitor in cut flower market.

Indian floriculture products account for only around 0.18% of the global trade in flowers and serious efforts are being made to capture at least one per cent of the total market. Moreover, many upcoming floricultural export units are forced to get the entire green house technology meant for cultivating high quality cut flowers aimed at export abroad at a very high cost, adding to the already huge initial capital outlay on the project (India News and Feature Alliance, November 2008).

India has immense potential for floriculture. With all the public and private initiates, Indian floriculture industry may undergo major changes in the future. Karnataka has a lead role to play in the floriculture development of the Country.

CHAPTER 3
METHODOLOGY

3.1 Identification of the Problem and Research Objectives

Over the past few years, floriculture has blossomed into a commercially viable agribusiness venture both for domestic and export demand. Floriculture is a viable and profitable alternative for farmers in the new liberalized trade regime. However, inspite of its immense potential, it has not made any remarkable breakthrough in the domestic and international floriculture markets. The vast potential of this sector is still untapped. Therefore, an attempt has been made to study the potential of floriculture, issues and challenges in this sector and measures to tackle the problems and improve the floriculture industry.

Since Karnataka has been one of the States leading in floriculture in the Country with tremendous potential and commendable performance, it has been selected for the present Study.

3.2 Selection of Flowers and Study Areas

The flowers selected for this Study were Rose, Gerbera and Jasmine. These were selected based on their market potential and the role they play in Floriculture in Karnataka both as Hi -tech (Cut roses and Gerbera) and Traditional (Jasmine and open field roses).

The selection of the Study area and sample was done based on concentration of area under floriculture.

The Study areas selected were

- Bangalore Urban, Bangalore Rural and Chickballapur districts for Rose and Gerbera
- Mysore for Jasmine
- Ooty for Gerbera (to analyze the commodity flow pattern from neighbouring State – Tamil Nadu to Bangalore Market)

These areas had the advantage of favorable climate and proximity to Bangalore city market (the K.R. Market).

3.3 Determining the Sample Size

The Sample Size was 202. The survey included interviewing *198 stakeholders in floriculture including farmers, wholesalers, retailers, consumers, exporters, association etc and gathering information on four flower markets of Karnataka* and also neighbouring State Tamil Nadu.

The flowers selected for Study are Jasmine, Rose and Gerbera

S. No.	Sample	Sample Size				
		Jasmine	*Rose*	*Gerbera*	*Neighbouring districts of Tamil Nadu for Gerbera*	Total
1	Farmers	30	30	30	4	94
2	Traders					
	i) Wholesaler	10	10	10	2	32
	ii) Commission agent	05	05	05		15
	iii) Retailers	10	10	10		30
3	i) Exporters					04
	ii) Farmers' Association				1	03
4	Consumers					20
5	Markets					04
	Total					202

3.4 Reference period of the data used:

The Study relates to the year 2008-09 for the Primary data, whereas the analysis of secondary data to area, production and exports mostly pertains to the period 2001-02 to 2007-08 with special emphasis to the preceding 3 years i.e. 2005-06, 2006-07 and 2007-08.

3.5 Data Collection

For assessing the existing situation in Marketing of Flowers in Karnataka, primary as well as secondary data were collected for the study.

3.5.1 Collection of Secondary data

The secondary data was collected from various reports and documents of Horticulture Department, Government of Karnataka. This has enabled to analyze the trends in area, production and yield of both traditional and modern floriculture, programmes and outlays for floriculture development in the state and infrastructure facilities across the districts of the state. Information has also been collected from Indian Institute of Horticultural research (IIHR), Agricultural and Processed Food Products Export Development Authority (APEDA), National Horticulture Board (NHB), and Karnataka Agro Industries Corporation Flower Action Centre (KAIC) to know the provision for floriculture development as well as trade of flowers. For assessing the export potentiality of this sector, information has been collected from APEDA.

The survey included interviewing *198 stakeholders in floriculture including farmers, wholesalers, retailers, consumers, exporters, association etc and gathering information on flower markets of Karnataka* and also neighbouring State Tamil Nadu.

Producers survey envisages across some major districts of the State. Besides, urban consumers of different income groups were also interviewed in the process of working out demand for flowers. Market intermediaries and other functionaries were conveniently selected out of total market sample of four markets.

3.5.2 Primary data Collection

Primary data was collected from different stakeholders such as Producers, Traders, retailers etc by interviewing them through structured and pretested questionnaires. The questionnaires were prepared after need assessment through collation of secondary data. Primary survey was done through personal interview. Information was collected from flower growers (Farmers), Traders (Wholesalers, Commission agents and Retailers), Consumers, Exporters, Farmers' association, etc.

3.6 Data Entry and Data Analysis

The primary data collected in survey schedules were entered in computer in specific formats according to each category in a specific programme.

The analysis of data was done by calculating the percentages, averages etc. Tabular and Graphical analysis was done to indicate trends and variations. Price spread analysis was done through various channels. Marketing efficiency was also calculated for selected flowers. Cost and return for two major Hi-tech flowers i.e. polyhouse Rose and Gerbera were also calculated. Broad analysis of the existing marketing practices in floriculture for selected flowers was done. Major constraints in floriculture from the farmers' perspective and the desirable remedial measures were studied. Potential and scope for future was also studied.

3.7 Organization of the Report

The Study Report has been divided into six chapters. Chapter I introduces the research study, the background and rationale, the objectives and the scope of the Study.

Chapter 2 deals with the review of the literature and the current scenario of floriculture in India and abroad. Chapters 3 provide the methodology adopted for the Research Study.

Chapter 4 deals with the results and discussion of the Study. It covers the major finding and analysis of the research objectives. It is subdivided into 7 subsections which are Floriculture development in India, floriculture development in Karnataka, Marketing of Flowers in Karnataka, Price spread and marketing efficiency for selected flowers (Rose, Gerbera, Jasmine) grown in Karnataka, Economics of Production and marketing of selected flowers in Karnataka, Market Infrastructure for Floriculture in Karnataka and Potential for Public Private Partnership, Constraints and problems in Floriculture and suggested remedial measures.

Summary and suggestions for development of floriculture are stated in Chapter 5.

CHAPTER 4

RESULTS & DISCUSSION

4.1 FLORICULTURE DEVELOPMENT IN INDIA

4.1.1. Area and Production under Horticultural Crops

The proportion of area under floriculture was 0.80 percent of the total horticultural crops in the year 2007-08. Considering that the proportion of area was 0.72 percent in 1999-2000, not much increase in area has taken place over the past few years (Indian Horticulture Database 2008). Efforts are needed to increase the area under floriculture, especially, the hi tech cultivation in view of the growing demand and vast prospects.

Table 1. Area, Production and Productivity of Horticultural Crops in India

Area in 000 ha, Production in 000 MT and Productivity =MT/HA

		2006-07			2007-08	
Horticultural Crop	**Area**	**Production**	**Productivity**	**Area**	**Production**	**Productivity**
Vegetables	7584	115011	15.2	7803	125887	16.1
Fruits	5554	59563	10.7	5775	63503	11
Plantation Crops	3207	12007	3.7	3226	12045	3.7
Spices	2448	3953	1.6	2603	4103	1.6
Flowers	144	880	6.1	161	870	5.4
Aro. & medicinal Plants	324	178	0.5	386	325	0.8
Almond & Walnut	132	150	1.1	132	177	1.3
Honey		51			65	

Mushroom		37			37	
Total	**19393**	**191831**	**9.9**	**20087**	**207012**	**10.3**

Source: Indian Horticulture Database 2008

Table 2. Percent Share of Area under Horticultural Crops in India during 2007-08

2007-08		
Horticultural Crop	**Area**	**Percentage**
Vegetables	7803	38.85
Fruits	5775	28.75
Plantation Crops	3226	16.06
Spices	2603	12.96
Flowers	**161**	**0.80**
Aro. & medicinal Plants	386	1.92
Almond & Walnut	132	0.66
Honey		.00
Mushroom		0.00
Total	**20087**	100.00

Source: Indian Horticulture Database 2008

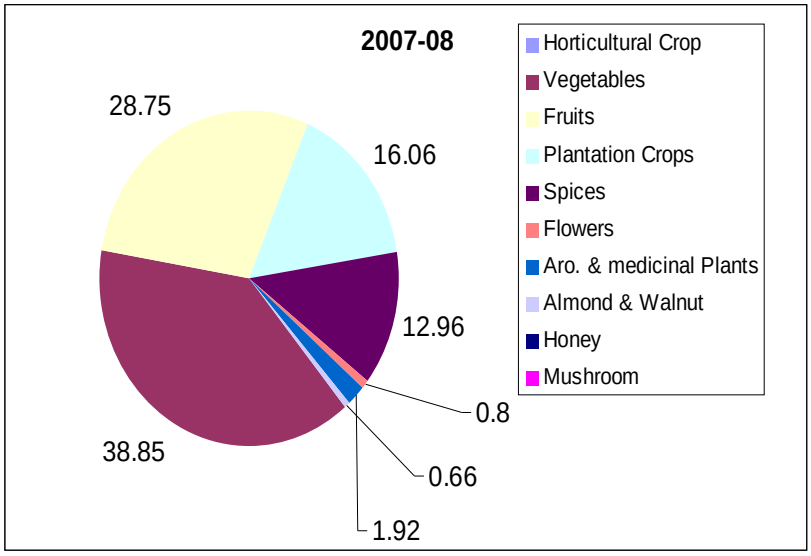


Fig 1. Percent Share of Area under Horticultural Crops in India during 2007-08

Percent Share of Production under Horticultural Crops during 2007- 08

Percent share of flower production to the total horticultural crops is 0.42 percent which is quite negligible compared to 61% in vegetables and 31 % in Fruits. Even plantation crops have their share about 6%. There is tremendous scope to increase production, especially of modern flowers which would not only give favorable returns but would also help to boost up the economy considering their export prospects as well.

Table 3. Percent Share of Production under Horticultural Crops in India during 2007- 08

2007- 08

Horticultural Crop	Production	Percentage
Vegetables	125887	60.81
Fruits	63503	30.68
Plantation Crops	12045	5.82
Spices	4103	1.98
Flowers	870	0.42
Aro. & medicinal Plants	325	0.16
Almond & Walnut	177	0.09
Honey	65	0.03
Mushroom	37	0.02
Total	**207012**	100.00

Source: Indian Horticulture Database 2008

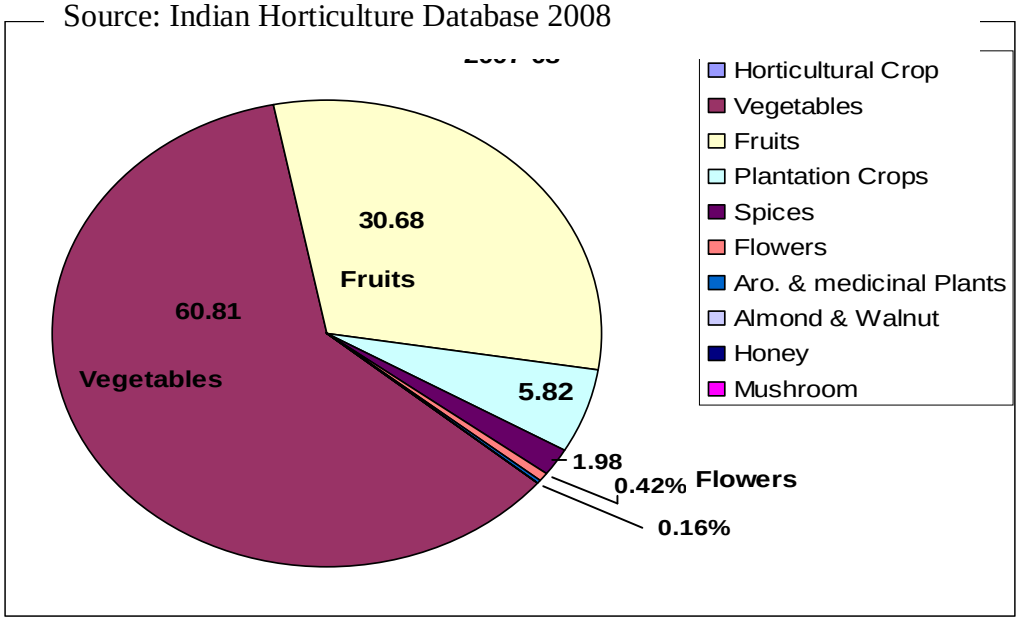


Fig 2. Percent Share of Production under Horticultural Crops in India during 2007- 08

4.1.2 All India Area and Production under Floriculture

The estimated area under floriculture in the country has increased from 106,000 hectares in 2001-02 to 161,000 hectares in 2007-08 (Table 4). There was a decline in 2002-03 and 2003-04 but in subsequent years, the growth has been steady. The production of loose flowers increased from 535,000 Metric Tonnes in 2001-02 to 870,000 Metric Tonnes in 2007-08. There was a sharp rise in production in 2002-03 but it declined in 2003-04. During 2005-06, there was marginal decline in comparison to 2004-05. However, again there was a sharp rise in 2006-07 but it marginally declined in 2007-08. The cut flower production decreased during 2002-03 and 2003-04 but from 2004-05 till 2007-08, the raise

was steady and quite significant. It was observed that with increase in cut flowers in the recent years, traditional flower cultivation (i.e loose flowers) has not increased. However, in the year, 2006-07, there was a sharp rise in both cut flowers and traditional flower cultivation.

Table 4 . All India Area and Production of Flowers for several years

S.No	Year	Area (in 000' Ha)	Production of flowers (Loose) in 000' MT	Production of Cut flowers (Million No.)
1	2001-02	106	535	2565
2	2002-03	70	735	2060
3	2003-04	101	580	1793
4	2004-05	118	659	2071
5	2005-06	130	656	2921
6	2006-07	144	880	3716
7	2007-08	161	870	4342

Source: Indian Horticulture Database 2008

Fig 3. ALL INDIA AREA UNDER FLORICULTURE: *At A Glance*

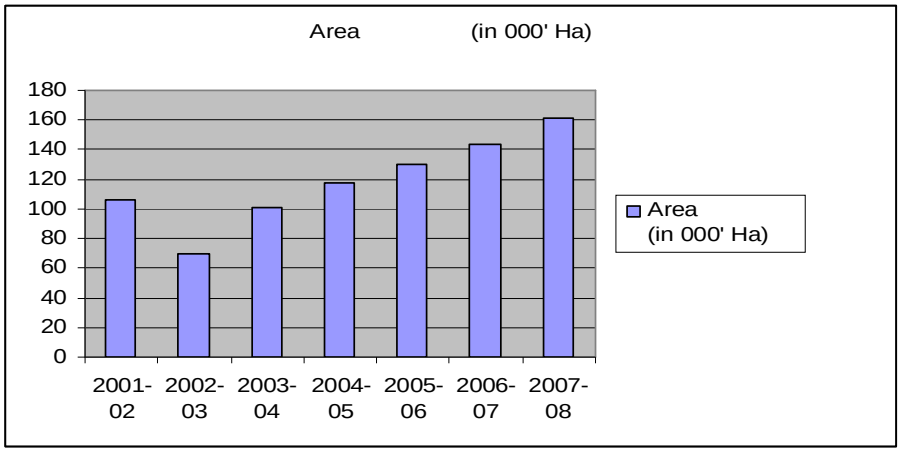


Fig 4. ALL INDIA PRODUCTION OF FLOWERS: *At A Glance*

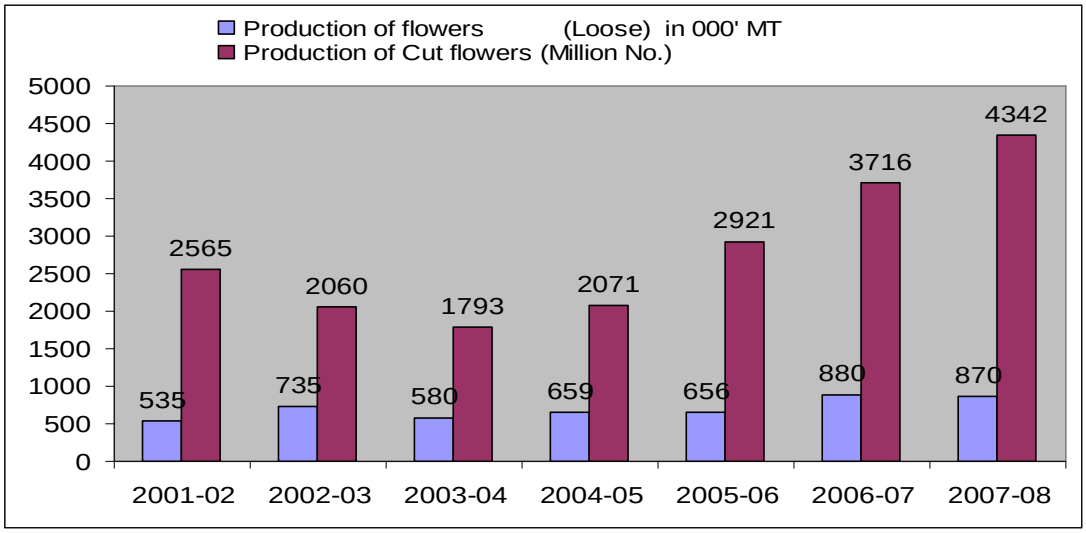
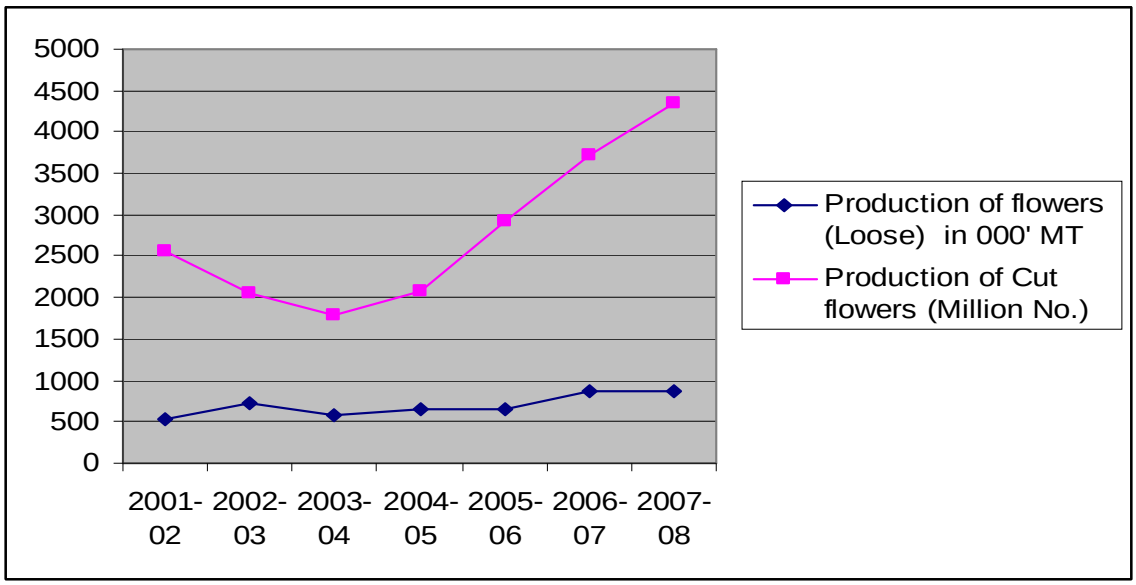


Fig 5. ALL INDIA PRODUCTION TRENDS IN FLORICULTURE



4.1.3. STATEWISE AREA AND PRODUCTION OF FLOWERS

State wise area under Floriculture

The highest area under floriculture in 2007-08 was in West Bengal with 27,420 ha (17.06 % of total area in the country), followed by Tamil Nadu 26,740 ha (16.64%), Andhra Pradesh 23,520 ha (14.64 %), Karnataka 22, 340 ha (13.90 %) and Maharashtra 16,740 ha (10.42 %), Gujarat 9,740 ha (6.06%), Uttar

Pradesh 8, 410 ha (5.23%), Haryana 6,110 ha (3.80 %), Delhi 5,500 ha (3.42 %) and Rajasthan 3,340 ha (2.08 %). These 10 states accounted for 93% of the total area in the Country. The Southern States namely Tamil Nadu, Andhra Pradesh and Karnataka accounted for 45% of the area in the country. West Bengal alone accounts for 17 % of the total area in the Country which is more than 1/6th of the total area. Karnataka on the other hand was holding second position in land area in the year 2005-06 and 2006-07 but has dropped to 4th position in the year 2007-08. There has been a gradual decline in the area under floriculture in Karnataka over the past three years. (Table 5, 6; Fig. 6).

Table 5. STATEWISE AREA AND PRODUCTION OF FLOWERS

		Area in 000' ha			Production (Loose in 000' MT and Cut in Lakh Nos)					
Sl.No	State/UT's	AREA (in 000 ha)			PRODUCTION ((Loose in 000' MT and Cut in Lakh					
		2005-06	2006-07	2007-08	2005-06		2006-07		2007-08	
					LOOSE	CUT	LOOSE	CUT	LOOSE	CUT
1	ANDAMAN & NICOBAR	0.01	0.01	0.03	2.54		2.54		4.7	
2	ANDHRA PRADESH	17.51	21.66	23.52	88.81	67.07	116.24	65.87	126.27	67.82
3	BIHAR	0.2	0.2	0.2	2.3	10.6	2.3	10.6	2.3	10.6
4	CHHATTISGARH	1.55	2.03	2.36			7.84		6.91	
5	DAMAN & DIU	0	0	0	0.01		0.01		0.01	
6	DELHI	5.5	5.5	5.5	5.67	1038.2	5.7	1038	5.7	1038
7	GUJARAT	7.12	8.42	9.74	42.18	4392	49.5	5063	49.5	5063
8	HARYANA	5.4	5.65	6.11	26.3	622.7	52.15	1404	61.76	10.53
9	HIMACHAL PRADESH	0.41	0.58	0.58	3.01	434.35	3.63	530.75	3.4	565.55
10	JAMMU & KASHMIR	0.33	0.33	0.33	1.34	217.9	1.34	218	1.34	218
11	JHARKHAND	0	0.21	0.11	0	0	0.33	273	0.23	73
12	**KARNATAKA**	21.1	23.02	22.34	156.2	5239	**192.07**	5660	169.12	5550
13	MADHYA PRADESH	3.67	2.5	2.55	2		1.4		1.53	
14	MAHARASHTRA	9.44	14.76	16.74	56.08	3410	88.9	4774	69.45	5728
15	MIZORAM	0.04	0.04	0.05	0	17.96	0	30.91	0	36.59
16	NAGALAND	0	0	0.02	0	0	0	0	0	16.5
17	ORISSA	0.59	0.59	2.4	1.79	129.64	1.93	0	7	129.6
18	PONDICHERRY	0.48	0.33	0.33	2.67		2.67	129.6	2.67	
19	PUNJAB	0.8	0.95	1	4.1		74		77.9	
20	RAJASTHAN	3.01	2.73	3.34	2.26		3.26		4.61	
21	SIKKIM	0.1	0.1	0.01		33.1	0.09	16.78	0.09	22.82
22	TAMILNADU	24.75	26.73	26.74	202		218.06		214.38	
23	UTTAR PRADESH	8.25	8.39	8.41	12.18	3668	12.34	3746	12.36	3752
24	UTTRANCHAL	0.56	0.71	0.9	0.36	575	0.46	1229.7	0.7	1455.45
25	WEST BENGAL	17.89	18.56	27.42	42.29	9347.9	43.68	12966	48.45	19680
	Total	**128.71**	**144**	**160.73**	**654.09**	**29203.4**	**880.44**	**37156**	**870.38**	**43417.5**

Source: Indian Horticulture Database 2008

Table 6. RANKING OF THE STATE-WISE AREA UNDER FLORICULTURE, ALL - INDIA

	Area in 000' ha										
	2007-08			2006-07				2005-06			
Rank	Name of the State	Area	Percentage of All-India	Rank	Name of the State	Area	Percentage of All-India	Rank	Name of the State	Area	Percentage of All-India
1	WEST BENGAL	27.42	17.06	1	TAMILNADU	26.73	18.56	1	TAMILNADU	24.75	19.23
2	TAMILNADU	26.74	16.64	2	KARNATAKA	23.02	15.99	2	KARNATAKA	21.1	16.39
3	ANDHRA PRADESH	23.52	14.64	3	ANDHRA PRADESH	21.66	15.04	3	WEST BENGAL	17.89	13.90
4	KARNATAKA	22.34	13.90	4	WEST BENGAL	18.56	12.89	4	ANDHRA PRADESH	17.51	13.60
5	MAHARASHTRA	16.74	10.42	5	MAHARASHTRA	14.76	10.25	5	MAHARASHTRA	9.44	7.33
6	GUJARAT	9.74	6.06	6	GUJARAT	8.42	5.85	6	UTTAR PRADESH	8.25	6.41
7	UTTAR PRADESH	8.41	5.23	7	UTTAR PRADESH	8.39	5.83	7	GUJARAT	7.12	5.53
8	HARYANA	6.11	3.80	8	HARYANA	5.65	3.92	8	DELHI	5.5	4.27
9	DELHI	5.5	3.42	9	DELHI	5.5	3.82	9	HARYANA	5.4	4.20
10	RAJASTHAN	3.34	2.08	10	RAJASTHAN	2.73	1.90	10	MADHYA PRADESH	3.67	2.85
11	MADHYA PRADESH	2.55	1.59	11	MADHYA PRADESH	2.5	1.74	11	RAJASTHAN	3.01	2.34
12	ORISSA	2.4	1.49	12	CHHATTISGARH	2.03	1.41	12	CHHATTISGARH	1.55	1.20
13	CHHATTISGARH	2.36	1.47	13	PUNJAB	0.95	0.66	13	PUNJAB	0.8	0.62
14	PUNJAB	1	0.62	14	UTTRANCHAL	0.71	0.49	14	ORISSA	0.59	0.46
15	PUNJAB	0.9	0.56	15	ORISSA	0.59	0.41	15	UTTRANCHAL	0.56	0.44
16	HIMACHAL PRADESH	0.58	0.36	16	HIMACHAL PRADESH	0.58	0.40	16	PONDICHERRY	0.48	0.37
17	PONDICHERRY	0.33	0.21	17	JAMMU & KASHMIR	0.33	0.23	17	HIMACHAL PRADESH	0.41	0.32
17	JAMMU & KASHMIR	0.33	0.21	17	PONDICHERRY	0.33	0.23	18	JAMMU & KASHMIR	0.33	0.26
18	BIHAR	0.2	0.12	18	JHARKHAND	0.21	0.15	19	BIHAR	0.2	0.16
19	JHARKHAND	0.11	0.07	19	BIHAR	0.2	0.14	20	SIKKIM	0.1	0.08
20	MIZORAM	0.05	0.03	20	SIKKIM	0.1	0.07	21	MIZORAM	0.04	0.03
21	ANDAMAN & NICOBA	0.03	0.02	21	MIZORAM	0.04	0.03	22	ANDAMAN & NICOBAR	0.01	0.01
22	NAGALAND	0.02	0.01	22	ANDAMAN & NICOBAR	0.01	0.01	23	DAMAN & DIU	0	0.00
23	SIKKIM	0.01	0.01	23	DAMAN & DIU	0	0.00	23	JHARKHAND	0	0.00
24	DAMAN & DIU	0	0.00	23	NAGALAND	0	0.00	23	NAGALAND	0	0.00
	ALL-INDIA	160.7	100.0			144	100.00			128.71	100.00

Source: Indian Horticulture Database 2008

Fig 6. Percent area under Floriculture in Major Flower Producing States (2007-08)

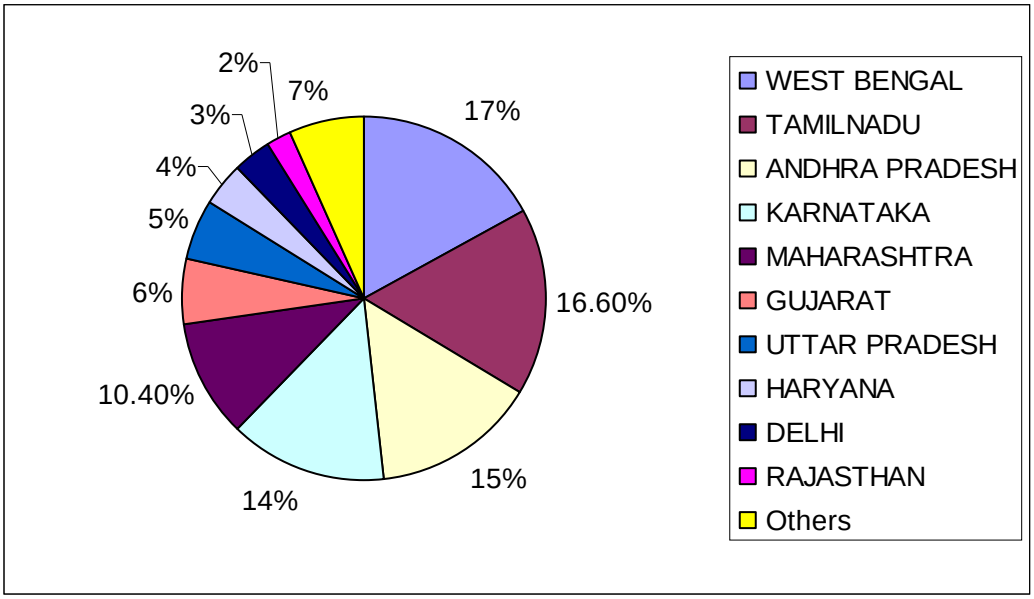


Fig 7. Spatial Distribution of area under floriculture in India

The major flower growing states are Karnataka, Tamil Nadu and Andhra Pradesh in the South, West Bengal in the East, Maharashtra and Gujarat in the West and Rajasthan, Delhi, Uttar Pradesh and Haryana in the North. It must, however, be mentioned that it is extremely difficult to compute the statistics of area in view of the very small sizes of holdings, which very often go unreported. (Fig 7).

More than two thirds of this large area is devoted for production of traditional flowers, which are marketed loose e.g. marigold, jasmine, chrysanthemum, aster, crossandra, tuberose etc. The area under cut flower crops (with stems) used for bouquets, arrangements etc. has grown in recent years, with growing affluence and people's interest in using flowers as gifts. The major flowers in this category are rose, gladiolus, tuberose, carnation, orchids and more recently liliums, gerbera, chrysanthemum, etc

State wise production of Flowers

Major loose flower producing States in the Country in 2007-08 were Tamil Nadu (24.63% of the total Country's Production) followed by Karnataka (19.43 %), Andhra Pradesh (14.51 %), Punjab (8.95 %), Maharashtra (7.98 %), Haryana (7.10 %), Gujarat (5.69 %) and West Bengal (5.57 %). These eight States accounted for 94 % of India's total loose flower production. The Southern States Viz. Tamil Nadu, Karnataka and Andhra Pradesh accounted for 58% of India's total loose flower production (Table 7).

Fig 8. Major Loose Flower Producing States in India (2007-08)

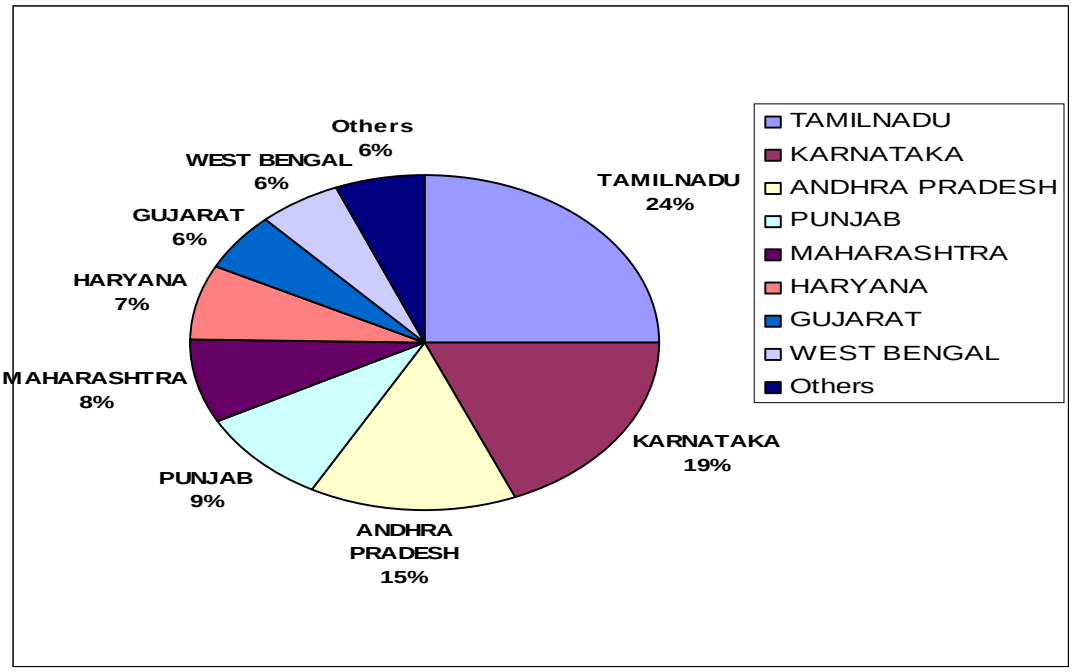


Fig 9. Spatial distribution of production under floriculture in India

Table 7. RANKING OF THE STATE-WISE PRODUCTION OF FLOWERS (Loose), ALL - INDIA

	Production (Loose Flowers) in 000' MT											
	2007-08				2006-07				2005-06			
Rank	Name of the State	Production	Percentage of All-India	Rank	Name of the State	Production	Percentage of All-India	Rank	Name of the State	Production	Percentage of All-India
1	TAMILNADU	214.38	24.63	1	TAMILNADU	218.06	24.77	1	TAMILNADU	202	30.88
2	KARNATAKA	169.12	19.43	2	KARNATAKA	192.07	21.82	2	KARNATAKA	156.2	23.88
3	ANDHRA PRADESH	126.27	14.51	3	ANDHRA PRADESH	116.24	13.20	3	ANDHRA PRADESH	88.81	13.58
4	PUNJAB	77.9	8.95	4	MAHARASHTRA	88.9	10.10	4	MAHARASHTRA	56.08	8.57
5	MAHARASHTRA	69.45	7.98	5	PUNJAB	74	8.40	5	WEST BENGAL	42.29	6.47
6	HARYANA	61.76	7.10	6	HARYANA	52.15	5.92	6	GUJARAT	42.18	6.45
7	GUJARAT	49.5	5.69	7	GUJARAT	49.5	5.62	7	HARYANA	26.3	4.02
8	WEST BENGAL	48.45	5.57	8	WEST BENGAL	43.68	4.96	8	UTTAR PRADESH	12.18	1.86
9	UTTAR PRADESH	12.36	1.42	9	UTTAR PRADESH	12.34	1.40	9	DELHI	5.67	0.87
10	ORISSA	7	0.80	10	CHHATTISGARH	7.84	0.89	10	PUNJAB	4.1	0.63
11	CHHATTISGARH	6.91	0.79	11	DELHI	5.7	0.65	11	HIMACHAL PRADESH	3.01	0.46
12	DELHI	5.7	0.65	12	HIMACHAL PRADESH	3.63	0.41	12	PONDICHERRY	2.67	0.41
13	ANDAMAN & NICOBAR	4.7	0.54	13	RAJASTHAN	3.26	0.37	13	ANDAMAN & NICOBAR	2.54	0.39
14	RAJASTHAN	4.61	0.53	14	PONDICHERRY	2.67	0.30	14	BIHAR	2.3	0.35
15	HIMACHAL PRADESH	3.4	0.39	15	ANDAMAN & NICOBAR	2.54	0.29	15	RAJASTHAN	2.26	0.35
16	PONDICHERRY	2.67	0.31	16	BIHAR	2.3	0.26	16	MADHYA PRADESH	2	0.31
17	BIHAR	2.3	0.26	17	ORISSA	1.93	0.22	17	ORISSA	1.79	0.27
18	MADHYA PRADESH	1.53	0.18	18	MADHYA PRADESH	1.4	0.16	18	JAMMU & KASHMIR	1.34	0.20
19	JAMMU & KASHMIR	1.34	0.15	19	JAMMU & KASHMIR	1.34	0.15	19	UTTRANCHAL	0.36	0.06
20	UTTRANCHAL	0.7	0.08	20	UTTRANCHAL	0.46	0.05	20	DAMAN & DIU	0.01	0.00
21	JHARKHAND	0.23	0.03	21	JHARKHAND	0.33	0.04	21	JHARKHAND	0	0.00
22	SIKKIM	0.09	0.01	22	SIKKIM	0.09	0.01	22	MIZORAM	0	0.00
23	DAMAN & DIU	0.01	0.00	23	DAMAN & DIU	0.01	0.00	23	NAGALAND	0	0.00
24	MIZORAM	0	0.00	24	MIZORAM	0	0.00	24	CHHATTISGARH		0.00
25	NAGALAND	0	0.00	25	NAGALAND	0	0.00	25	SIKKIM		0.00
	ALL-INDIA	870.4	100.00			880.44	100.00			654.09	100.00

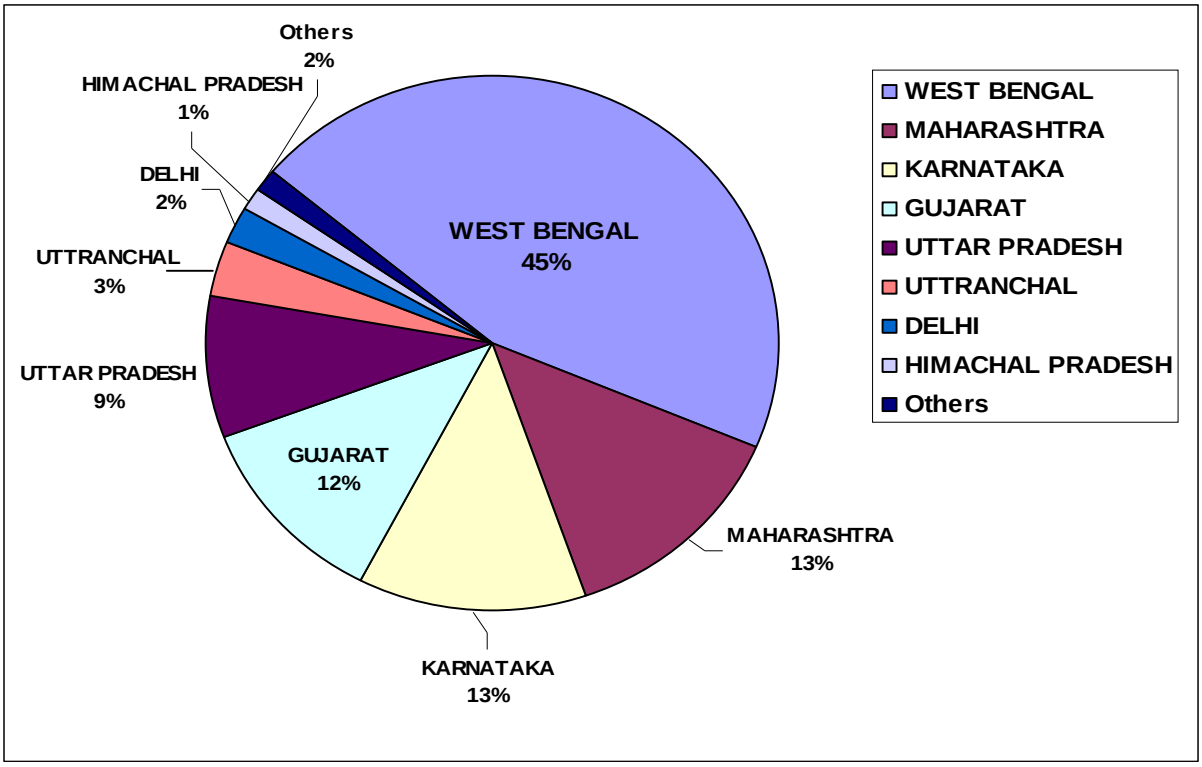
Source: Indian Horticulture Database 2008

Table 8. STATE-WISE PRODUCTION OF CUT FLOWERS , ALL - INDIA

	Production (Cut Flowers) inLakh No.								
	2007-08								
S.No	Name of the State	Production	Percentage of All-India	Name of the State	Production	Percentage of All-India	Name of the State	Production	Percentage of All-India
1	WEST BENGAL	19680	45.33	WEST BENGAL	12966	34.90	WEST BENGAL	9347.9	32.01
2	MAHARASHTRA	5728	13.19	KARNATAKA	5660	15.23	KARNATAKA	5239	17.94
3	KARNATAKA	5550	12.78	GUJARAT	5063	13.63	GUJARAT	4392	15.04
4	GUJARAT	5063	11.66	MAHARASHTRA	4774	12.85	UTTAR PRADESH	3668	12.56
5	UTTAR PRADESH	3752	8.64	UTTAR PRADESH	3746	10.08	MAHARASHTRA	3410	11.68
6	UTTRANCHAL	1455.45	3.35	HARYANA	1404.04	3.78	DELHI	1038.2	3.56
7	DELHI	1038	2.39	UTTRANCHAL	1229.74	3.31	HARYANA	622.7	2.13
8	HIMACHAL PRADESH	565.55	1.30	DELHI	1038	2.79	UTTRANCHAL	575	1.97
9	JAMMU & KASHMIR	218	0.50	HIMACHAL PRADESH	530.75	1.43	HIMACHAL PRADESH	434.35	1.49
10	ORISSA	129.6	0.30	JHARKHAND	273	0.73	JAMMU & KASHMIR	217.9	0.75
11	JHARKHAND	73	0.17	JAMMU & KASHMIR	218	0.59	ORISSA	129.64	0.44
12	ANDHRA PRADESH	67.82	0.16	PONDICHERRY	129.6	0.35	ANDHRA PRADESH	67.07	0.23
13	MIZORAM	36.59	0.08	ANDHRA PRADESH	65.87	0.18	SIKKIM	33.1	0.11
14	SIKKIM	22.82	0.05	MIZORAM	30.91	0.08	MIZORAM	17.96	0.06
15	NAGALAND	16.5	0.04	SIKKIM	16.78	0.05	BIHAR	10.6	0.04
16	BIHAR	10.6	0.02	BIHAR	10.6	0.03	JHARKHAND		
17	HARYANA	10.53	0.02	NAGALAND			NAGALAND		
18	ANDAMAN & NICOBAR			ORISSA			ANDAMAN & NICOBAR		
19	CHHATTISGARH			ANDAMAN & NICOBAR			CHHATTISGARH		
20	DAMAN & DIU			CHHATTISGARH			DAMAN & DIU		
21	MADHYA PRADESH			DAMAN & DIU			MADHYA PRADESH		
22	PONDICHERRY			MADHYA PRADESH			PONDICHERRY		
23	PUNJAB			PUNJAB			PUNJAB		
24	RAJASTHAN			RAJASTHAN			RAJASTHAN		
25	TAMILNADU			TAMILNADU			TAMILNADU		
	ALL-INDIA	43417.5	100.00		37156.29	100.00		29203.42	100.00

Source: Indian Horticulture Database 2008

Fig 10. Major Cut Flower Producing States in India (2007-08)



From the data available from Indian Horticulture Database 2008, West Bengal leads in cut flower production at 19,680 lakh flowers accounting for 45% of India's total production. Although data is not available for cut flower production in Tamil Nadu, area, data on production of loose flowers and other information, both primary and secondary indicate that Tamil Nadu also has a significant share in Cut flower production. Karnataka and Maharashtra are other important producers followed by Gujarat and Uttar Pradesh (Table 8).

4.1.4. Export Potential and Statistics

Floriculture has been identified as the fast emerging sector and is now branded as an industry in domestic as well as export market. India's Export of floriculture has increased from Rs. 299.41 Crores in 2005-06 to Rs. 649.83 Crores in 2006-07. Apart from exports, domestic market is also picking up significantly. The plantation area all over the country owing to the diverse climate is available for producing a range of floriculture crops. U.S.A, Japan, U.K, Netherlands and Germany are major countries which import Indian floriculture products.

The total export value from Karnataka during 2006-07 was Rs.60 Crores. In spite of this, the share of Indian flower exports is less than 1% in the international market.

There were more than 300 export-oriented units in India. More than 50% of the floriculture units are based in South zone mainly in Karnataka, Andhra Pradesh, Tamil Nadu. Also West Bengal, Maharashtra, Rajasthan have large areas under floriculture. The domestic flower production goes on increasing annually. Technical collaborations with foreign companies have been approved for India, in order to increase total share in the floriculture world trade.

Indian floriculture industry has been shifting from traditional flowers to cut flowers for export purposes. The liberalized economy has given an impetus to the Indian entrepreneurs for establishing export oriented floriculture units under controlled climatic conditions. In India, Maharashtra, Karnataka, Andhra Pradesh and Haryana have emerged as major floriculture centres in recent times.

Flower exports earned Rs. 301 Crore during the year 2005-06 fiscal of which fresh cut stems primarily roses earned around Rs. 74 Crores. During 2007-08, revenue from fresh flower stems declined to Rs. 50 Crore out of Rs. 340 Crore earned from floral exports (Directorate General of Commercial Intelligence and Statistics)

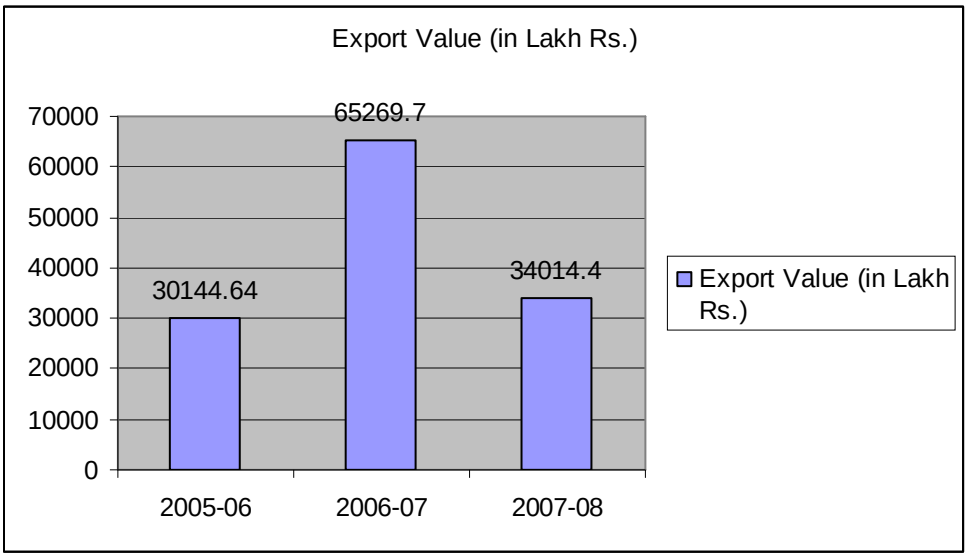
Table 9. Percent Contribution of floriculture to Total Export Value

Export Statistics	2005-06		2006-07		2007-08	
	QTY	VALUE	QTY	VALUE	QTY	VALUE
Floriculture	**35457.45**	**30144.64**	**42545.28**	**65269.73**	**36240.71**	**34014.42**
Grand Total	**10455460.13**	**1878296.23**	**10907355.6**	**2180594.34**	**17451122.75**	**3187060.71**
Percent contribution of Floriculture in Total Export Value		**1.60**		**2.99**		**1.06**

Source: DGCIS Annual Data

In the year 2006-07, Floriculture contributed about 3% of the total value of India's export which was significantly higher than that of the previous year i.e. 2005-06 at 1.60%. This is a clear indicative of the growing demand for flowers in the International Market and India's growing presence in the global platform. However, it dropped sharply to 1.06 % in 2007-08 (Table 9).

Fig 11. EXPORT TREND IN FLORICULUTRE FOR 3 Years



2006-07 definitely saw a boom in the Floriculture sector justifying the Government's decision to give it a Sunrise Industry Status. Although, there was a sharp decline in 2007-08, it should not be alarming considering the recession that had influenced the Markets World wide. Taking encouragement from the 2006-07

status, India should further strengthen its efforts in this sector and regain the growth and further boost it in the coming years.

Table 10. Major International Markets for Indian Floriculture Products

Value in Rs. Lakh, Quantity in MT

S.No	Country	QTY(2005-2006)	Value(2005-2006)	QTY(2006-2007)	Value(2006-2007)	QTY(2007-2008)	Value(2007-2008)
1	**JAPAN**	13176.79	7596.93	9676.99	7520.98	9371.85	7067.80
2	**U.S.A.**	2234.47	2748.71	4335.58	4478.37	4745.58	4513.57
3	**NETHERLANDS**	3796.54	3099.55	4300.34	3604.37	4215.22	4044.82
4	**U.K.**	2986.86	2436.78	3849.89	3101.68	4200.85	3505.11
5	**GERMANY**	3384.89	5644.07	8323.50	32554.12	1835.02	3277.27

Source: DGCIS Annual Export

4.1.5. Initiatives for floriculture Development

Since setting up of an Expert Group on Floriculture Development by the Govt. of India in 1989, several steps have been initiated for rapid development of the sector.

4.1.5.1 Government initiatives

- Government of India acknowledges the potential of the floriculture industry and has conferred 100% export oriented industry status to it. The Government has liberalized its policies to promote floriculture. The liberalized policies and various incentives offered by the Government have enabled the setting up of number of floriculture units for producing and exporting flowers. The bulk of the area lies in the Southern states like Tamil Nadu, Karnataka and Andhra Pradesh.
- These units have obtained technical know-how from Dutch and Israeli consultants.
- **Exemption from Import Duty:** The Govt. has exempted import duty on Ornamental plants, tubers and bulbs of flowers, cutting of saplings of flower plants used for the purpose of sowing and planting. Duties have been reduced for import of flower seeds and tissue-culture plants.

- Financial support is provided for setting up of pre-cooling and cold storage units, as well as for using improved packaging material.
- **Air freight subsidy:** In a move to make export of floricultural products more competitive in the international market, the Government has decided to grant air freight subsidy on cut flowers (HS Code: 06.03.1000). The scheme is being implemented by APEDA.
- **New Foreign Trade Policy (FTP):** Under the new FTP (2004-09) announced by the Ministry of Commerce & Industry, Government of India, a host of incentives have been given to boost agri-exports. These include duty-free import of capital goods under the Export Promotion Capital Goods (EPCG) scheme, duty credit scrip equivalent to 5 per cent of the f.o.b. value of exports, and Launching of *Vishesh Krishi Upaj Yojana* which is aimed at promoting agri-exports, viz. ,flowers, vegetables, fruits, minor forest produce, etc.
- Government of India promotes, assists and facilitates the setting up of Agri Export Zones (AEZ) in association with State Governments with the objective of providing remunerative returns to farming community in a sustained manner and to increase their competitiveness. There are at present six Agri Export Zones set up for floricultural products in the states of Sikkim, Tamil Nadu, Uttaranchal, Karnataka and Maharashtra.for floriculture development in India.

4.1.5.2 Initiatives for Export of floriculture products

The Agriculture and Processed Food Export Development Authority (APEDA) has been designated as the nodal agency for export promotion and development activities relating to floriculture. It has recently taken several steps to boost export of floriculture products. Some of the major initiatives are as follows:

(i) Commissioning of Indian Institute of Packaging for standardizing export packing used for floriculture export items;

(ii) Visits of Indian Delegations to Netherlands,

(iii) Finalization of a host of joint ventures with prominent foreign companies;

(iv) Visit of Dutch Delegations to India for finalizing joint ventures on protected cultivation techniques i.e. the practice of growing plants in green houses as is done in

European countries and in the area of refrigeration marketing and propagation of planting;

(v) Setting up of integrated facilities for handling and storage of exportable perishable products like floricultural products cargo at International Airports in Mumbai, Delhi, Chennai, Bangalore, Hyderabad and Thiruvananthapuram;

(vi) Setting up of market cum auction centers for exports at Bangalore, Mumbai and NOIDA.

(vii) Setting up of a Market Facilitation Centre in Aalsameer, Netherlands.

(viii) Setting up of Export Processing Zones for floriculture products in Tamil Nadu, Uttaranchal, Maharashtra, Karnataka and Sikkim.

4.2 FLORICULTURE DEVELOPMENT IN KARNATAKA

Karnataka is a major floriculture State in the Country with 22,340 hectares of area under floriculture accounting for 14% of Country's total area and a production of 169, 120 metric tones of loose and 5550 Lakh number cut flowers accounting for 20% of loose and 13% of cut flower production of the Country.

Karnataka occupied second position in land area in the year 2005-06 and 2006-07 but has dropped to 4th position in the year 2007-08. There has been a gradual decline in the area under floriculture in Karnataka over the past three years. However, in loose flower production, Karnataka has consistently maintained second position from 2005-06 to 2007-08.

4.2.1. Area, Production, yield and value of Major Horticultural Crops in Karnataka

The total area under Horticultural crops All India was 193.93 Lakh hectares and production was 1918.31 lakh tons in the year 2006-07(Indian Horticulture Database 2008). Karnataka had 17.25 Lakh hectares under horticultural crops accounting for about 8.89% of the total area of the Country. Total horticultural production in Karnataka is 130.26 Lakh tons which is 6.79 % of the total production of the Country (Horticultural Crop Statistics of Karnataka State *At A Glance 2006 - 07)* (Table 11).

Table 11. Area, Production, yield and value of Major Horticultural Crops in Karnataka in 2006-07

Area: *In lakh hectares* ***Yield:*** *Tons/Hectare*
Production: *In Lakh Tons* ***Value:*** *In Lakh Rupees*

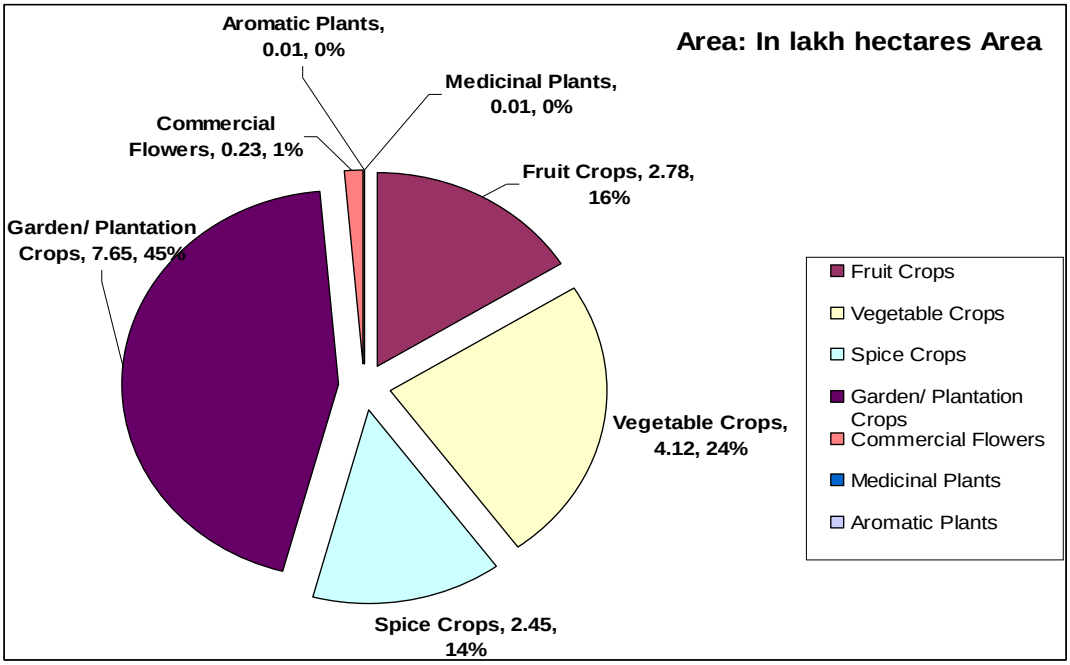
S.No	Name of the Crop	2006-07				2005-06			
		Area	Production	Yield	Value	Area	Production	Yield	Value
1	Fruit Crops	2.78	47.36	17.04	405726	2.58	43.45	16.84	402022
2	Vegetable Crops	4.12	70.15	17.03	419976	4.03	67.00	16.61	371727
3	Spice Crops	2.45	6.04	2.47	149650	2.32	6.12	2.64	169425
4	Garden/ Plantation Crops	7.65	4.69	0.61	674601	7.34	4.07	0.56	626026
5	**Commercial Flowers**	**0.23**	**1.92**	**8.35**	**35953**	**0.21**	**1.68**	**8.08**	**31258**
6	Medicinal Plants	0.01	0.02	2.00	529	0.01	0.02	2.10	414
7	Aromatic Plants	0.01	0.08	8.00	1148	0.01	0.15	10.87	1786
	STATE TOTAL	**17.25**	**130.26**	**55.50**	**1687583**	**16.50**	**122.48**	**7.42**	**1602657**

Table 12. Percent Share of Area and Production under Horticultural Crops in Karnataka

SL. No.	Name of the Crop	2006-07			2005-06		
		Area	***Production***	***Value***	***Area***	***Production***	***Value***
1	Fruit Crops	16.12	36.36	24.04	15.64	35.47	25.08
2	Vegetable Crops	23.88	53.85	24.89	24.46	54.7	23.19
3	Spice Crops	14.20	4.64	8.87	14.04	4.99	10.57
4	Garden/ Plantation Crops	44.35	3.60	39.97	44.47	3.33	39.06
5	Commercial Flowers	1.33	1.47	2.13	1.26	1.37	1.95
6	Medicinal Plants	0.06	0.02	0.03	0.05	0.01	0.03
7	Aromatic Plants	0.06	0.06	0.07	0.08	0.12	0.11
	STATE TOTAL	**100**	**100**	**100**	**100**	**100**	**100**

Percent share of area under floriculture against major horticultural crops in Karnataka increased from 1.26% in 2005-06 (21,000 ha) to 1.33% in 2006-07(23,000 ha). Percent area increase in cultivation of commercial flowers from 2005-06 to 2006-07 was 9.52%. Percent share of Production increased from 1.37% in 2005-06 (1,68,000 tons) to 1.47% in 2006-07 (1,92,000 tons). Percent increase in production of commercial flowers from 2005-06 to 2006-07 was 14.28% (Table 12, Fig. 12, 13).

Fig 12. Percent Share of Area under Horticultural Crops in Karnataka 2006-07



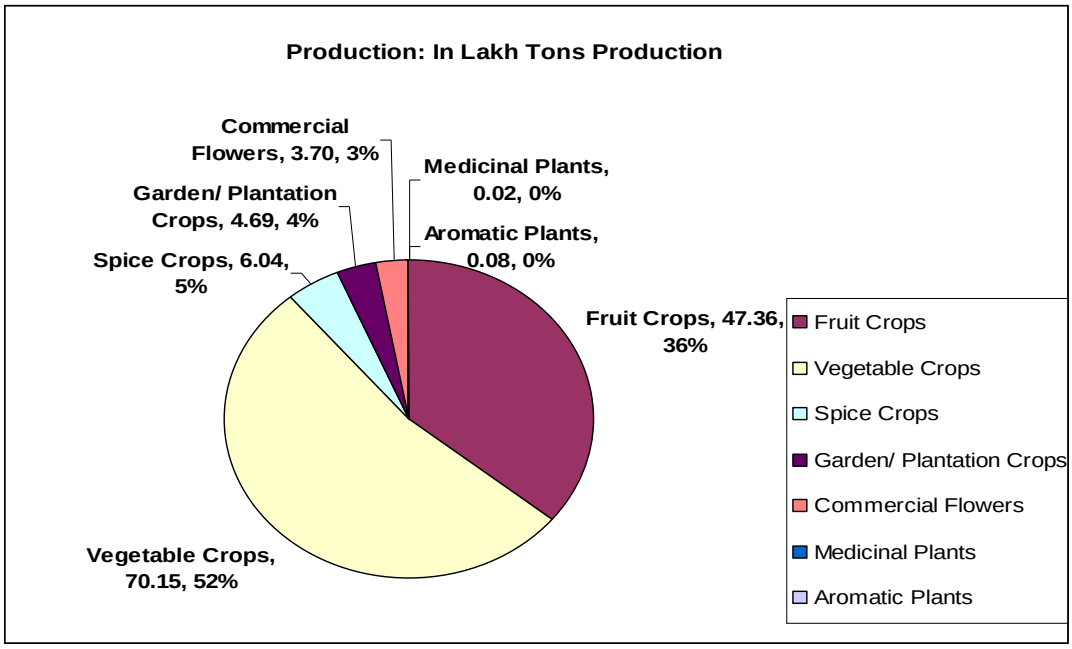


Fig 13. Percent Share of Production under Horticultural Crops in Karnataka 2006-07

4.2.2. Area and Production of Flowers in Major Districts of Karnataka

Table 13. District - wise Area and production of Commercial Flowers in Karnataka State-

2006 – 07

Area: In Hectares Production : In Tons
Yield : Tons / Hectare Value : In Rs. Lakhs

Sl.No	Name of the District	COMMERCIAL FLOWERS				*TOTAL for Horticultural Crops*			
		Area	Prodn.	Yield	Value	Area	Prodn.	Yield	Value
1	B'lore (U)	1316	10021	7.61	2730	*22490*	*243155*	*11*	*70098*
2	B'lore ®	1946	12520	6.43	1925	*81369*	*609260*	*7*	*65229*
3	Chitradurga	1208	9664	8.00	1539	*105762*	*659574*	*6*	*102049*
4	Davanagere	1362	14765	10.84	2164	*64117*	*380529*	*6*	*80537*
5	Kolar	2787	17934	6.43	1635	*143469*	*1938592*	*14*	*128159*
6	Shimoga	220	874	3.97	164	*56875*	*356004*	*6*	*86485*
7	Tumkur	2160	21294	9.86	7630	*176710*	*558098*	*3*	*192541*
8	Bagalkot	407	2306	5.66	557	*26088*	*428346*	*16*	*35690*
9	Belgaum	746	6923	9.28	871	*61800*	*903683*	*15*	*61003*
10	Bijapur	467	2615	5.60	473	*26173*	*472872*	*18*	*42986*
11	Dharwad	119	180	1.51	71	*105933*	*1047830*	*10*	*106197*
12	Gadag	594	4544	7.65	687	*51083*	*333966*	*7*	*19501*
13	Haveri	1635	17518	10.71	2225	*77486*	*677635*	*9*	*7/577*
14	Uttara	21	174	8.29	23	*32893*	*169844*	*5*	*61265*
15	Bellary	770	5087	6.61	537	*35763*	*345916*	*10*	*23890*
16	Bidar	238	1678	7.04	171	*13274*	*193101*	*15*	*11385*
17	Gulbarga	389	3396	8.73	302	*27413*	*367799*	*13*	*14728*
18	Kappal	464	3366	7.26	638	*19923*	*345000*	*17*	*26451*
19	Raichur	231	1792	7.76	1006	*14295*	*140785*	*10*	*24043*
20	C.R.Nagar	1783	16987	9.53	4838	*35658*	*288426*	*8*	*28934*
21	C.K.lur	515	4800	9.32	879	*117034*	*630973*	*5*	*146005*
22	D.Kannada	101	665	6.55	212	*98079*	*310396*	*3*	*82283*
23	Hassan	217	1031	4.75	30	*140241*	*488993*	*3*	*39651*
24	Kodagu	7	70	10.00	476	*32531*	*95246*	*3*	*24686*
25	Mandya	1328	13485	10.15	2007	*71006*	*508069*	*7*	*64822*
26	Mysore	1618	15682	9.69	1732	*37359*	*334102*	*9*	*37814*
27	Udupi	367	2571	7.01	433	*49888*	*197623*	*4*	*39574*
STATE TOTAL		***23017***	***191940***	***8.34***	***35953***	***1724710***	***13025814***	***8***	***1687584***

Source: Horticultural Crop Statistics of Karnataka State At A Glance 2006-07).

Table 14. District - wise Area and production of Commercial Flowers in Karnataka State- 2005 – 06

Area: In Hectares Production : In Tons

Yield : Tons / Hectare Value : In Rs. Lakhs

Sl. No	Name of the District	COMMERCIAL FLOWERS				*TOTAL for Horticultural Crops*			
		Area	**Prodn.**	**Yield**	**Value**	**Area**	**Prodn.**	**Yield**	**Value**
1	B'lore (U)	1376	10326	7.5	2842	22103	225228	10.19	66708
2	B'lore ®	1549	9515	6.14	3709	77996	590688	7.57	65937
3	Chitradurga	996	7876	7.91	1260	100568	646472	6.43	89757
4	Davanagere	1301	14114	10.85	2006	56750	352061	6.2	81849
5	Kolar	2455	17684	7.2	1934	129221	1688640	13.07	94351
6	Shimoga	203	1469	7.24	307	54485	329367	6.05	84916
7	Tumkur	2209	22338	10.11	7353	168961	536940	3.18	155042
8	Bagalkot	350	1939	5.54	467	24887	419750	16.87	32493
9	Belgaum	559	5119	9.16	562	59423	899658	15.14	60192
10	Bijapur	465	2811	6.05	395	25124	466224	18.56	51389
11	Dharwad	199	726	3.65	165	96636	965729	9.99	100042
12	Gadag	594	5461	9.19	827	51042	366070	7.17	25815
13	Haveri	1506	12697	8.43	1677	76269	793081	10.4	79087
14	Uttara Kannada	20	167	8.35	57	31422	175428	5.58	68098
15	Bellary	782	5593	7.15	794	33915	332197	9.79	31680
16	Bidar	133	1006	7.54	180	9948	149220	15	11732
17	Gulbarga	275	2253	8.19	243	19762	236909	11.99	13732
18	Kappal	407	3013	7.4	542	15974	252876	15.83	18221
19	Raichur	181	1417	7.83	606	12522	117824	9.41	17486
20	C.R.Nagar	1736	16700	9.62	583	35379	258928	7.32	26356
21	C.K.lur	401	3496	8.72	558	109501	566152	5.17	135662
22	D.Kannada	116	237	2.05	84	98388	223084	2.27	50198
23	Hassan	108	336	3.11	12	158222	570914	3.61	38294
24	Kodagu	8	80	10	432	28515	111293	3.9	20063
25	Mandya	1272	11965	9.4	1788	69685	498443	7.15	72298
26	Mysore	1154	6275	5.44	1074	33229	270329	8.14	32536
27	Udupi	396	2995	7.56	801	49655	204465	4.12	78725
STATE TOTAL		**20750**	**167606**	**8.08**	**31258**	**1649580**	**12247969**	**7.42**	**1602657**

Table 15. District Wise Percent share of area and Production under floriculture against major horticultural crops in Karnataka for 2005-06 and 2006-07

Sl. No	Name of the District	2005-06		2006-07	
		Area	Production	Area	Production
1	**B'lore (U)**	**6.23**	**4.58**	**5.85**	**4.12**
2	**B'lore ®**	**1.99**	**1.61**	**2.39**	**2.05**
3	Chitradurga	0.99	1.22	1.14	1.47
4	**Davanagere**	**2.29**	**4.01**	**2.12**	**3.88**
5	**Kolar**	**1.90**	**1.05**	**1.94**	**0.93**
6	Shimoga	0.37	0.45	0.39	0.25
7	**Tumkur**	1.31	4.16	1.22	3.82
8	Bagalkot	1.41	0.46	1.56	0.54
9	Belgaum	0.94	0.57	1.21	0.77
10	Bijapur	**1.85**	**0.60**	**1.78**	**0.55**
11	Dharwad	0.21	0.08	0.11	0.02
12	Gadag	1.16	1.49	1.16	1.36
13	Haveri	**1.97**	**1.60**	**2.11**	**2.59**
14	Uttara Kannada	0.06	0.10	0.06	0.10
15	**Bellary**	**2.31**	**1.68**	**2.15**	**1.47**
16	Bidar	1.34	0.67	1.79	0.87
17	Gulbarga	1.39	0.95	1.42	0.92
18	**Kappal**	**2.55**	**1.19**	**2.33**	**0.98**
19	Raichur	1.45	1.20	1.62	1.27
20	**C.R.Nagar**	**4.91**	**6.45**	**5.00**	**5.89**
21	C.K.lur	0.37	0.62	0.44	0.76
22	D.Kannada	0.12	0.11	0.10	0.21
23	Hassan	0.07	0.06	0.15	0.21
24	Kodagu	0.03	0.07	0.02	0.07
25	**Mandya**	**1.83**	**2.40**	**1.87**	**2.65**
26	**Mysore**	**3.47**	**2.32**	**4.33**	**4.69**
27	Udupi	0.80	1.46	0.74	1.30
	Total State	**1.26**	**1.37**	**1.33**	**1.47**

Districts of Bangalore (Urban) had 6.23% area and 4.58% production under floriculture against total horticultural crops in 2005-06. However, the area decreased to 5.85% and production to 4.12% in 2006-07. On the other hand, both proportion of area and production under floriculture against total horticultural crops increased in 2006-07 in Bangalore Rural District, Mysore and Mandya. Other important districts having proportion of area and production under floriculture against total horticultural crops higher than the total State proportion were Davangerere, Kolar, C.R. Nagar and Bellary (Table 15).

Table 16. District - wise percent share in area and production of Commercial Flowers in Karnataka

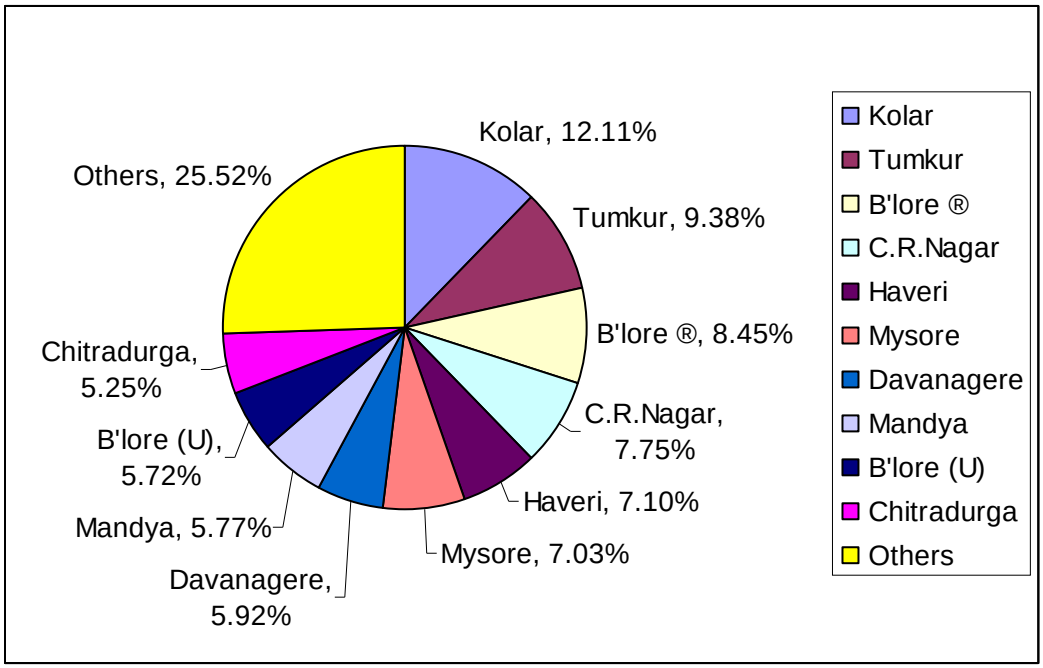
Area: In Hectares *Production : In Tons*

		2005-06		2006-07		2005-06		2006-07	
S.No	**Name of the District**	**Area**	**% Share in total**	**Area**	**% Share to total**	**Prodn**	**% Share in Total**	**Prodn**	**% Share in Total**
1	B'lore (U)	1376	**6.63**	1316	5.72	10326	6.16	10021	5.22
2	B'lore ®	1549	**7.47**	1946	8.45	9515	5.68	12520	6.52
3	Chitradurga	996	**4.80**	1208	5.25	7876	4.70	9664	5.03
4	Davanagere	1301	**6.27**	1362	5.92	14114	8.42	14765	7.69
5	Kolar	2455	**11.83**	2787	12.11	17684	10.55	17934	9.34
6	Shimoga	203	0.98	220	0.96	1469	0.88	874	0.46
7	Tumkur	2209	**10.65**	2160	9.38	22338	13.33	21294	11.09
8	Bagalkot	350	1.69	407	1.77	1939	1.16	2306	1.20
9	Belgaum	559	2.69	746	3.24	5119	3.05	6923	3.61
10	Bijapur	465	2.24	467	2.03	2811	1.68	2615	1.36
11	Dharwad	199	0.96	119	0.52	726	0.43	180	0.09
12	Gadag	594	2.86	594	2.58	5461	3.26	4544	2.37
13	Haveri	1506	**7.26**	1635	7.10	12697	7.58	17518	9.13
14	Uttara Kannada	20	0.10	21	0.09	167	0.10	174	0.09
15	Bellary	782	3.77	770	3.35	5593	3.34	5087	2.65
16	Bidar	133	0.64	238	1.03	1006	0.60	1678	0.87
17	Gulbarga	275	1.33	389	1.69	2253	1.34	3396	1.77
18	Kappal	407	1.96	464	2.02	3013	1.80	3366	1.75
19	Raichur	181	0.87	231	1.00	1417	0.85	1792	0.93
20	C.R.Nagar	1736	**8.37**	1783	7.75	16700	9.96	16987	8.85
21	C.K.lur	401	1.93	515	2.24	3496	2.09	4800	2.50
22	D.Kannada	116	0.56	101	0.44	237	0.14	665	0.35
23	Hassan	108	0.52	217	0.94	336	0.20	1031	0.54
24	Kodagu	8	0.04	7	0.03	80	0.05	70	0.04
25	Mandya	1272	**6.13**	1328	5.77	11965	7.14	13485	7.03
26	Mysore	1154	**5.56**	1618	7.03	6275	3.74	15682	8.17
27	Udupi	396	1.91	367	1.59	2995	1.79	2571	1.34
STATE TOTAL		**20750**	**100**	**23017**	100	100	100	100	100.00

Table 17. Top Ten Districts in Bangalore in terms of Area in 2005-06 and 2006-07

Rank	District	2005-06 *(Percent Share in Total area under Floriculture in Karnataka)*	Rank	District	2006-07 *(Percent Share in Total area under Floriculture in Karnataka)*
1	Kolar	**11.83**	**1**	Kolar	**12.11**
2	Tumkur	**10.65**	**2**	Tumkur	**9.38**
3	C.R. Nagar	**8.37**	**3**	B'lore ®	**8.45**
4	Bangalore Rural	**7.47**	**4**	C.R.Nagar	**7.75**
5	Haveri	**7.26**	**5**	Haveri	**7.1**
6	Bangalore Urban	**6.63**	**6**	Mysore	**7.03**
7	Davanagere	**6.27**	**7**	Davanagere	**5.92**
8	Mandya	**6.13**	**8**	Mandya	**5.77**
9	Mysore	**5.56**	**9**	B'lore (U)	**5.72**
10	Chitradurga	**4.80**	**10**	Chitradurga	**5.25**

Fig 14. District wise percent share of Area in Karnataka 2006-07



The top 10 districts in terms of area under Floriculture in Karnataka in 2006-07 were Kolar, Tumkur, Bangalore Rural, C.R. Nagar, Haveri, Mysore, Davanagere, Mandya,

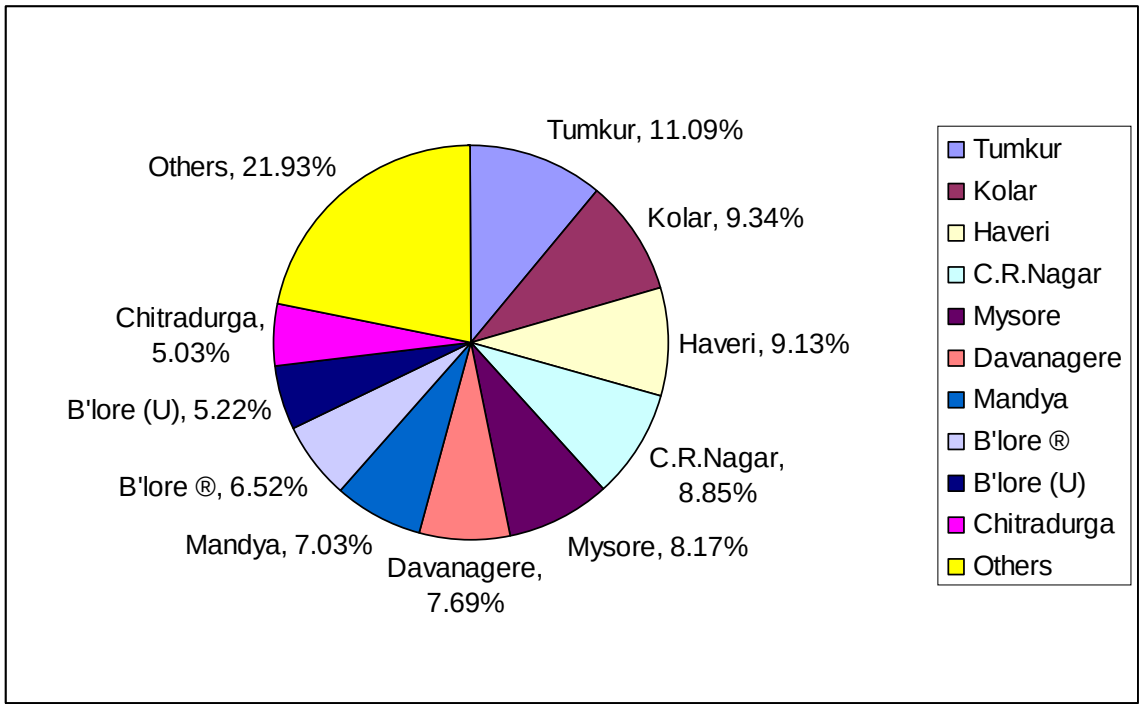
Bangalore Urban, , and Chitradurga. These districts cover Three fourth of the total area under floriculture in Karnataka, the remaining 17 districts contributing only one fourth. (Table 17, Fig 14).

Kolar continues to dominate in terms of highest area under floriculture in the State both in 2005-06 and 2006-07 followed by Tumkur. Bangalore Urban, Mysore and Mandya have shown increase in area under floriculture for these two years while Bangalore Urban has come down three positions to Rank 9 in 2006-07 from Sixth position showing a decrease in total area.

Table 18. Top Ten Districts in Bangalore in terms of Production in 2005-06 and 2006-07

Rank	**District**	**2005-06** *(Percent Share in Total Production under Floriculture in Karnataka)*	**Rank**	**District**	**2006-07** *(Percent Share in Total Production under Floriculture in Karnataka)*
1	Tumkur	13.33	**1**	Tumkur	11.09
2	Kolar	10.55	**2**	Kolar	9.34
3	C.R.Nagar	9.96	**3**	Haveri	9.13
4	Davanagere	8.42	**4**	C.R.Nagar	8.85
5	Haveri	7.58	**5**	Mysore	8.17
6	Mandya	7.14	**6**	Davanagere	7.69
7	B'lore (U)	6.16	**7**	Mandya	7.03
8	B'lore ®	5.68	**8**	B'lore ®	6.52
9	Chitradurga	4.7	**9**	B'lore (U)	5.22
10	Mysore	3.74	**10**	Chitradurga	5.03

Fig. 15 District wise percent share of Production in Karnataka 2006-07



The top 10 districts in terms of area under Floriculture in Karnataka in 2006-07 were Tumkur, Kolar, Haveri C.R. Nagar, Mysore, Davanagere, Mandya, Bangalore Rural, Bangalore Urban, and Chitradurga. These districts cover Seventy eight percent of the total area under floriculture in Karnataka, the remaining 17 districts contributing only 22 percent (Table 18, Fig 15).

Tumkur continues to dominate in terms of highest production under floriculture in the State both in 2005-06 and 2006-07 followed by Kolar. However, total percent share in production has gone down for both Tumkur and Kolar in 2006-07 as compared to 2005-06. The districts of C.R. Nagar, Davangere, Mandya and Bangalore Urban also showed a decline in production in 2006-07 as compared to 2005-06 where as the districts of Haveri, Bangalore Rural, Chitradurga and Mysore had increased production in 2006-07 in comparison to 2005-06.

Irrespective of their ranking, Tumkur, Kolar, Haveri C.R. Nagar, Mysore, Davanagere, Mandya, Bangalore Rural, Bangalore Urban, and Chitradurga were the major districts of Karnataka dominating in Floriculture in both area and production.

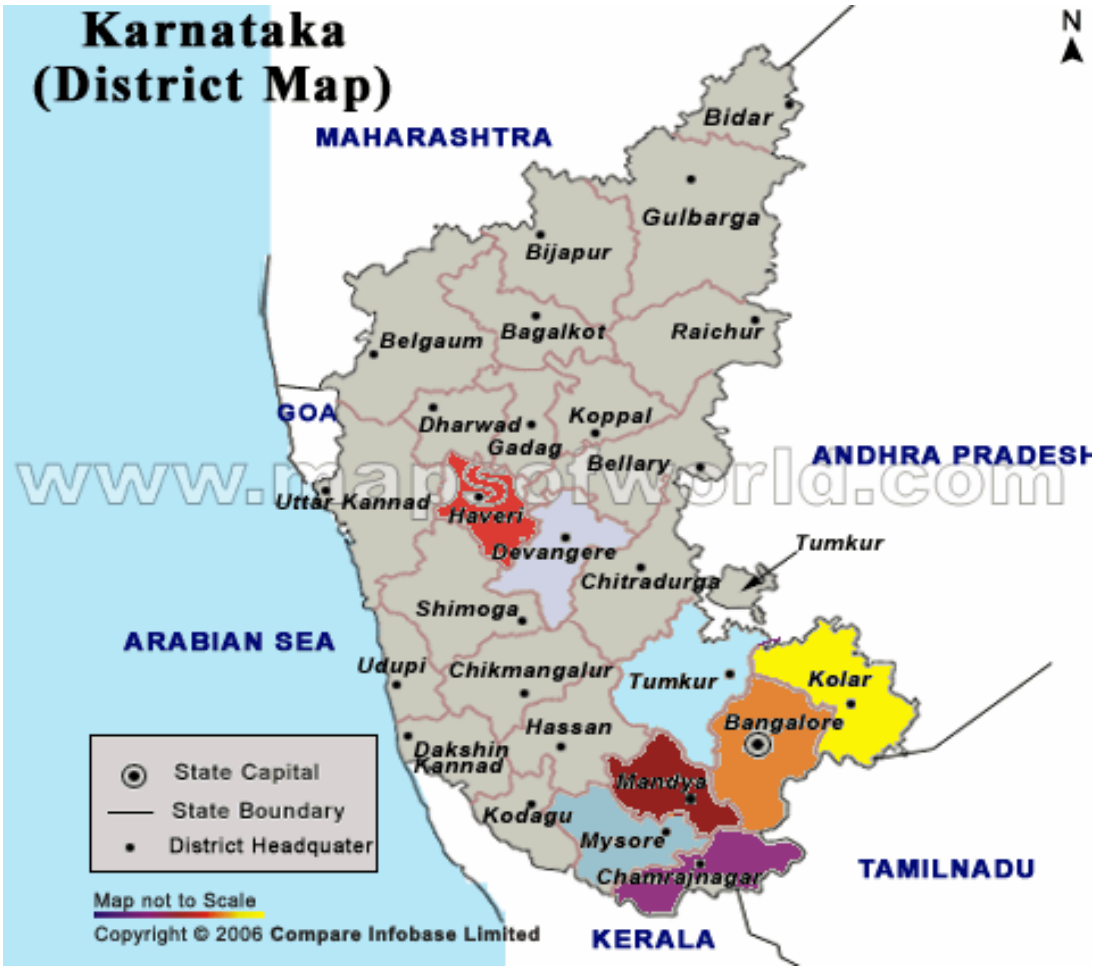


Fig. 16. Spatial distribution of the major districts of Karnataka dominating in Floriculture

As is evidence from spatial distribution, the major area and production of flowers is in South Karnataka and some in Central parts of the State.

Districts selected for Primary Study were Bangalore Rural, Bangalore Urban, Kolar, Mysore and Mandya.

Table 19. Data on Flower - wise Area, Production and Yield in Karnataka State

Area : In Hectares. Production : In Tons. Yield : Tons / Hectare. Value In Rs. Lakhs

		2005-06				2006-07			
Sl. No.	**Name of the Crop**	**Area**	**Prodn**	**Yield**	**Value**	**Area**	**Prodn**	**Yield**	**Value**
Commercial flower crops									
1	Aster	1354	13265	9.79	1473	1542	15203	9.86	1498
2	Crossandra	1840	8753	4.76	1993	2131	10112	4.75	2174
3	Marigold	5300	51721	9.76	3731	5664	57329	10.12	4151
4	**Jasmine**	**4068**	**27022**	**6.64**	**5116**	**4493**	**29090**	**6.48**	**9052**
5	Chrysanthemum	3521	49266	13.99	6798	4046	56474	13.96	*8329*
6	Tube Rose								
a)	Single	842	8186	9.72	1892	966	9382	9.72	1804
b)	Double (lakh spikes)	120	342	2.84	247	152	272	1.79	78
7	Gladiolus (lakh spikes)	84	185	2.21	204	216	498	2.3	323
8	**Rose (lakh flowers)**	**1674**	**4510**	**2.69**	**3291**	**1815**	**4510**	**2.48**	**1980**
9	Bird of Paradise (lakh flowers)	35	1076	30.92	78	47	61	1.31	343
10	Salldago / Golden Rod (lakh flowers)	14	52	3.71	24	24	62	2.58	26
11	Calla Lilly (lakh flowers)	5	10	2	3	5	16	3.2	*240*
12	Orchids (lakh spikes)	0.1	1	7.92	5	0.2	0	0.25	1
13	Carnation (lakh cut flowers)	30	201	6.68	661	173	73	0.42	*283*
14	Anthurium (lakh cut flowers)	31	87	2.85	446	37	97	2.63	*492*
15	**Gerbera (lakh cut flowers)**	**57**	**68**	**1.18**	**92**	**71**	**71**	**1**	**62**
16	Statice (lakh cut flowers)								
a)	Free Flowering Variety	60	10	0.17	1	67	94	1.41	3
b)	Seasonal Variety	51	5	0.1	1	50	39	0.78	2
17	Other Flower Crops	1894	9394	4.96	5201	1916	14349	7.49	5113
TOTAL - COMMERCIAL FLOWER CROPS		**20750**	**167606**	**8.08**	**31258**	**23017**	**191940**	**8.34**	**35953**

Source: ***Horticultural Crop Statistics of Karnataka State At A Glance 2006-07***

Table 20. Flower wise average yield /Productivity in Karnataka

Name of the Flower	2005-06	2006-07	Increase/Decrease in Productivity
Aster	9.79	9.86	0.07
Crossandra	4.76	4.75	-0.01
Marigold	9.76	10.12	0.36
Jasmine	**6.64**	**6.48**	-0.16
Chrysanthemum	13.99	13.96	-0.03
Tube Rose (Single)	9.72	9.72	0
Tube Rose Double (lakh spikes)	2.84	1.79	-1.05
Gladiolus (lakh spikes)	2.21	2.3	0.09
Rose (lakh flowers)	**2.69**	**2.48**	-0.21
Bird of Paradise (lakh flowers)	30.92	1.31	-29.61
Salldago / Golden Rod (lakh flowers)	3.71	2.58	-1.13
Calla Lilly (lakh flowers)	2	3.2	1.2
Orchids (lakh spikes)	7.92	0.25	-7.67
Carnation (lakh cut flowers)	6.68	0.42	-6.26
Anthurium (lakh cut flowers)	2.85	2.63	-0.22
Gerbera (lakh cut flowers)	**1.18**	**1**	-0.18
Statice (lakh cut flowers) - Free Flowering Variety	0.17	1.41	1.24
Statice (lakh cut flowers) - Seasonal Variety	0.1	0.78	0.68
Other Flower Crops	4.96	7.49	2.53

Inspite of vast potential for floriculture in the State, productivity of many flowers has decreased in 2006-07 as compared to 2005-06.

Chrysanthemum, Marigold and Aster had highest productivity in the year 2006-07 followed by Tube rose (Single) and Jasmine. Roses ranked 11th in productivity and Gerbera ranked 16th . In terms of production in 2006-07, Marigold ranked first closely followed by Chrysanthemum. Jasmine was ranked 3rd in production in the State while rose occupied 7th position and Gerbera 13th(*Horticultural Crop Statistics of Karnataka State At A Glance 2006-07)*

Marigold had the highest area under production followed by Jasmine and Chrysanthemum. Roses ranked 6th while Gerbera 12th in terms of area under cultivation.

Table 21. Data on Production and Yield District wise for selected Flowers

Area: In Hectares Production : In Tons Value: In Rs

S.No	Name of the District	Rose (Lakh numbers)				Jasmine				Gerbera * (lakh cut flowers				TOTAL FLOWER CROPS			
		Area	Prodn.	Yield	Value	Area	Prodn.	Yield	Value	Area	Prodn	Yield	Value	Area	Prodn.	Yield	Value
1	B'lore (U)	256	511	2	511	172	1135	7	170	24	24	1	24	1316	10021	8	2730
2	B'lore ®	289	581	2	436	563	3350	6	402	16	16	1	10	1946	12520	6	1925
3	Chitradurga	23	50	2	23	364	2548	7	382					1208	9664	8	1539
4	Davanagere	43	105	2	70	346	2409	7	372					1362	14765	11	2164
5	Kolar	426	845	2	280	350	2315	7	215					2787	17934	6	1635
6	Shimoga	4	8	2	4	11	77	7	12					220	874	4	164
7	Tumkur	26	52	2	26	29	203	7	162					2160	21294	10	7630
8	Bagalkot	51	109	2	55	61	199	3	64					407	2306	6	557
9	Belgaum	113	226	2	113	20	140	7	12	6	6	1	6	746	6923	9	871
10	Bijapur	77	77	1	19	63	441	7	88	22	22	1	20	467	2615	6	473
11	Dharwad	52	104	2	52									119	180	2	71
12	Gadag	28	56	2	28	212	948	4	115					594	4544	8	687
13	Haveri	37	82	2	41	458	2836	6	425					1635	17518	11	2225
14	Uttara					12	84	7	13					21	174	8	23
15	Bellary	39	39	1	13	477	2986	6	399					770	5087	7	537
16	Bidar	36	90	3	32	38	304	8	44					238	1678	7	171
17	Gulbarga	51	59	1	13	60	428	7	70					389	3396	9	302
18	Kappal	61	76	1	38	163	1139	7	342					464	3366	7	638
19	Raichur	45	90	2	55	52	364	7	320					231	1792	8	1006
20	C.R.Nagar	9	18	2	18	158	1107	7	4402					1783	16987	10	4838
21	C.K.lur	33	66	2	40	93	640	7	115					515	4800	9	879
22	D.Kannada	17	30	2	16	66	493	7	172					101	665	7	212
23	Hassan	5	3	1	1	30	46	2	3					217	1031	5	30
24	Kodagu													7	70	10	476
25	Mandya	44	87	2	46	189	1323	7	204	2	2	1	2	1328	13485	10	2007
26	Mysore	28	56	2	28	221	1547	7	232					1618	15682	10	1732
27	Udupi	23	46	2	23	285	2030	7	317					367	2571	7	433
STATE TOTAL		**1815**	**3467**	2	**1980**	**4493**	**29090**	**6**	**9052**	**71**	**71**	**1**	**62**	**23017**	**191940**	**8**	**35953**

Table 22. Top Ten Districts in Area under cultivation for selected flowers

	Rose		Jasmine		Gerbera	
Rank 1	Kolar	426	B'lore ®	563	B'lore (U)	24
Rank 2	B'lore ®	289	Bellary	477	Bijapur	22
Rank 3	B'lore (U)	256	Haveri	458	B'lore ®	16
Rank 4	Belgaum	113	Chitradurga	364	Belgaum	6
Rank 5	Bijapur	77	Kolar	350	Mandya	2
Rank 6	Kappal	61	Davanagere	346		
Rank 7	Dharwad	52	Udupi	285		
Rank 8	Bagalkot	51	Mysore	221		
Rank 9	Gulbarga	51	Gadag	212		
Rank 10	Raichur	45	Mandya	189		
Total for 10 districts		1421		3465		70
% in State Total		78.29%		77.11 %		98.59%

Kolar district has the highest area under rose cultivation followed by Bangalore rural and Bangalore Urban. Bangalore rural has highest are for Jasmine cultivation. For Gerbera cultivation, Bangalore Urban has the highest area, while Bangalore rural ranks 3rd and Mandya ranks 5th (Table 22).

Table 23. Top Ten Districts in Production for selected flowers

	Rose		Jasmine		Gerbera	
Rank 1	Kolar	845	B'lore ®	3350	B'lore (U)	24
Rank 2	B'lore ®	581	Bellary	2986	Bijapur	22
Rank 3	B'lore (U)	511	Haveri	2836	B'lore ®	16
Rank 4	Belgaum	226	Chitradurga	2548	Belgaum	6
Rank 5	Bagalkot	109	Davanagere	2409	Mandya	2
Rank 6	Davanagere	105	Kolar	2315		
Rank 7	Dharwad	104	Udupi	2030		
Rank 8	Bidar	90	Mysore	1547		
Rank 9	Raichur	90	Mandya	1323		
Rank 10	Mandya	87	Kappal	1139		
Total for 10 districts		2748		22483		70
% in State Total		79.26%		77.28%		98.59%

Rose production is highest in Kolar district followed by Bangalore rural and Bangalore Urban. Bangalore rural has highest Jasmine production whle Mysore ranks 8th and Mandya 9th. Bangalore Urban has highest Gerbera production while Bangalore rural ranks 3rd (Table 23).

Area and Production of Commercial Flowers and Total Horticultural Production of Selected District and Taluk of Karnataka State- 2006 - 07.

The area and production of commercial flowers and total horticultural crops for the districts selected for this Study are presented below. The statistics show that these districts are among the major flower producing districts of Karnataka.

Districts selected for Primary Study were Bangalore Rural, Bangalore Urban, Kolar, Mysore and Mandya. These districts are among the top ten districts leading of Karnataka dominating in Floriculture in both area and production.

Table 24. Area and Production of Commercial Flowers and Total Horticultural Production of Selected District and Taluk of Karnataka State- 2006 - 07.

Area : In Hectares. Production : In Tons. Yield : Tons / Hectare Value : In Rs Lakhs.

		COMMERCIAL FLOWERS				*GRAND TOTAL*			
Sl. No.	**Name of the Division / District / Taluk**	**Area**	**Prodn.**	**Yield**	**Value**	**Area**	**Prodn.**	**Yield**	**Value**
	Bangalore Urban District								
1	**Anekal**	**287**	**1896**	**660**	**492**	**3602**	**58499**	**16.24**	**5581**
2	Bangalore North	288	2173	7.55	537	7916	104567	13.21	33913
3	Bangalore South	143	1035	7.23	215	7473	44672	5.98	23344
4	Bangalore East	598	4918	8.22	1485	3499	35418	10.12	7260
District Total		**1316**	**10021**	**7.61**	**2730**	***22490***	***243155***	***10.81***	***70098***
	Bangalore Rural District								
1	**Channapattana**	**56**	**379**	**6.77**	**52**	**18270**	**36287**	**1.99**	**5087**
2	Ramanagara	298	357	1.2	51	133751	88832	6.64	11208
3	**Kanakapura**	**341**	**2093**	**613**	**267**	**14862**	**117441**	**7.9**	**10573**
4	Magadi	225	2322	10.32	250	11354	90189	7.94	9995
5	**Devanahalli**	**295**	**2523**	**8.55**	**374**	**3886**	**47653**	**12.26**	**5913**
6	**Doddaballapura**	**258**	**2252**	**8.73**	**355**	**9789**	**115315**	**11.78**	**12416**
7	**Nelamangala**	**175**	**1383**	**7.9**	**178**	**4324**	**51584**	**11.93**	**5360**

8	**Hosakote**	**297**	**1211**		**400**	**5508**	**61960**	**11.25**	**4677**
District Total		**1946**	**12520**	**6.43**	**1925**	***81369***	***609260***	***7.49***	***65229.47***
	Kolar District								
1	Bagepalli	34	230	6.76	13	2495	34060	13.65	2181
2	**Bangarapet**	**108**	**1320**	**12.22**	**43**	**13434**	**202822**	**15.1**	**11698**
3	**Chikkaballapura**	**768**	**4180**	**5.44**	**382**	**10527**	**122590**	**11.65**	**8874**
4	Chinthamani	96	564	5.88	58	14089	145322	10.31	10978
5	Gowribidanur	519	3837	7.39	357	8211	120832	14.72	8153
6	Gudibande	41	388	9.46	23	1293	11757	9.09	925
7	Kolar	178	1430	803	197	13715	224047	16.34	24174
8	Malur	817	4245	5.2	289	15718	259993	16.54	13854
9	Mulabagilu	147	1286	8.75	174	30959	435420	14.06	24132
10	Shidiaghatta	37	214	5.78	63	8044	109100	13.56	6979
11	Srinivaspura	42	240	5.71	36	24985	272650	10.91	16210
	District Total	**2787**	**17934**	**6.43**	**1635**	***143469***	***1938592***	***13.51***	***128159***
	Tumkur District								
1	C.N.Halli	7	89	12.71	26	25180	16290	0.65	18975
2	Gubbi	18	191	10.61	71	40093	148598	3.71	44528
3	Koratagers	605	7230	11.95	1782	5365	41774	7.79	9852
4	Kunigal	14	95	6.79	37	9042	51681	5.72	10104
5	Madhugiri	573	4204	734	2886	5897	34580	5.86	10060
6	Pavagada	60	708	11.8	186	3304	27261	8.25	5844
7	Sira	269	2149	7.99	1284	11803	47845	4.05	17099
8	Tiptur	20	184	9.2	71	25499	27559	1.08	20538
9	Tumkur	579	6305	10.89	1235	23322	133563	5.73	32279
10	Thuruvekere	15	139	9.27	52	27205	28948	1.06	23260
District Total		**2160**	**21294**	**9.86**	**7630**	***176710***	***558098***	***3.16***	***192541***
	Mandya District								
1	**K.R.Pet**	388	4413	11.39	629	16067	112123	6.98	14985
2	**Maddur**	66	550	8.28	85	8011	28299	3.53	5560
3	Malavalli	289	2550	8.82	411	12814	114074	8.9	11873
4	**Mandya**	164	1514	923	228	7616	72295	9.49	8013
5	**Nagamangala**	319	3424	10.75	491	16145	101719	6.3	14648
6	**Pandavapura**	89	953	1071	147	4354	37181	8.54	4278
7	**Srirangapattana**	14	82	5.86	17	5999	42378	7.06	5465
District Total		**1328**	**13485**	**10.15**	**2007**	***71006***	***508069***	***7.16***	***64822***
	Mysore District								
1	H.D.Kote	124	896	7.23	143	4807	59279	12.33	5881
2	AHunsur	98	1120	11.43	139	7594	50113	6.6	8447
3	K.R.Nagar	43	360	8.37	53	3227	62090	19.24	3039
4	Mysore	92	756	8.22	120	8885	59597	6.71	6531
5	Nanjanagud	316	3370	10.66	480	4705	34204	7.27	4738
6	Periyapattana	89	837	9.4	70	3901	24561	6.3	3512
7	**T.Narasipur**	856	8343	9.75	726	4241	44258	10.44	5666
District Total		**1618**	**15682**	**9.69**	**1732**	***37359***	***334102***	***8.94***	***37814***

Table 25. Programme targets under Commercial Floriculture scheme (2005-06)

Sl.No.	Programme		Annual Target	
		Unit cost	Financial (Rs.in lakhs)	Physical
1	Area Expansion Programme	Rs.2,000 to 10,000	145.15	2146 ac.
2	Shed net	Rs.31,250	3.117	10
3	Green house	Rs.62,500	23.160	38
4	Training / Seminor	Rs. 15,000 /25000	4.00	24
5	Farmers Study Tour	Rs.2,000 / farmer	0.600	30
6	Model Floriculture Centre		30.000	5
7	Hill Stations		12.22275	3
8	Contingency		1.07750	
	Total		**219.32725**	

Source: Government of Karnataka (Reports of Various Years), Department of Karnataka, Planning Section, Lalbagh, Bangalore.

NHM-Karnataka			Physical unit in Ha. & Fin in Lakhs			
Flowers AEP Tar &		COST NORMS	Targets		Ach	
			Phy	Fin	Phy	Fin
2005-06						
cut	small	Rs. 35000/ HA	200	70	0	0
	others	Rs. 23100/ HA	200	46.21	0	0
bulb	small	Rs. 45000/ HA	100	45	0	0
	others	Rs. 29700/ HA			0	0
loose	small	Rs. 12000/HA	400	48	0	0
	others	Rs. 7920/ HA	400	31.68	**0**	0
Sub Tot			**1300**	**240.89**	**0**	0
2006-07						
cut	small	Rs. 35000/ HA	**493**	**172.55**	**191**	**74.73**
	others	Rs. 23100/HA	**389**	**89.86**	**200**	**46.2**
bulb	small	Rs. 45000/ HA	**236**	**106.2**	**35**	**15.75**
	others	Rs. 29700/ HA	**151**	**44.85**	**169**	**50.08**
loose	small	Rs. 12000/HA	717	86.04	850	102

	others	**Rs. 7920/ HA**	801	63.44	1050	83.68
Sub Tot			**2787**	**562.94**	**2495**	**372.44**

2007-08						
cut	small	Rs. 35000/ HA	457	135.95	1164	406.8
	others	Rs. 23100/HA	359	70.49	803.93	171.23
bulb	small	Rs. 45000/ HA	250	95.62	357	160.82
	others	Rs. 29700/ HA	240	60.58	184	54.43
loose	small	Rs. 12000/HA	2020	206.04	2291	274.91
	others	Rs. 7920/ HA	1700	114.44	2203	175
Sub Tot			**5026**	**683.12**	**7002.93**	**1243.19**

	2008-09 upto Dec2008						
	cut	**small**	**Rs. 35000/ HA**	**200**	**70.00**	**120**	**42.06**
		others	**Rs. 23100/HA**	**400**	**92.41**	**117**	**26.45**
	bulb	**small**	**Rs. 45000/ HA**	**845**	**380.25**	**177**	**79.49**
		others	**Rs. 29700/ HA**	**644**	**191.24**	**334**	**99.08**
	loose	**small**	**Rs. 12000/HA**	**2243**	**269.16**	**1615**	**193.49**
		other	**Rs. 7920/ HA**	2011	159.28	**2008**	**159.05**
	Sub Tot			6343	1162.34	4371	599.62
	tot			**15456**	**2649.3**	**13869**	**2215.3**

Development of floriculture activities in Karnataka by Horticulture Department is evident from the development of Lalbagh and Cubbon Park. Under National Horticulture Mission, there is budgetary provision for floriculture. However, it is observed that the target realized is far below both in terms of physical and financial targets.

4.3 MARKETING OF FLOWERS IN KARNATAKA

Large volume of Flower trade is confined to the major cities of the Country such as Kolkata, Mumbai, Bangalore, Delhi and Chennai. Bangalore is one of the major flower trading Centre of the Country. The Study was undertaken in the following Markets of the State:

1. **Krishna Rajendra Market (K.R. Market)** in Bangalore City which is the primary wholesale market but unorganized. **(Studied for Roses and Gerbera)**
2. **International Flower auction Centre -** The only organized market for flowers in Karnataka **(deals mainly with roses)**
3. **Malleswaram Market –(Retail Shops)**
4. **Mysore Devaraj Market -** *Unorganized* **(Studied for Jasmine – Wholesaler and retailers coexist)**

The flowers studied were Roses, Gerbera and Jasmine.

4.3.1 KRISHNA RAJENDRA MARKET (K.R. MARKET)

Marketing of flowers mainly taken place at **Krishna Rajendra Market (K.R. Market)** in Bangalore City which is the primary wholesale market. All the major cut flowers such as Roses, Gerbera, Anthurium, Carnation etc from major districts of Karnataka are sold in this market. Besides, Gerbera from Ooty, orchids from Bangkok and flowers from Hosur are also traded here. Inspite of the fact that this market is the only option to sell commercial cut flowers in Bangalore and Karnataka in general, it is largely unorganized and is situated near the bus stand and trading of high value cut flowers take place along the road side. Besides, traditional loose flowers are sold in an enclosed area near the bus stand under unhygienic condition. Although Tamil Nadu leads the flower production in India, the flowers are sold in the Bangalore K. R. Market. Considering the fact that flowers are high value and delicate crops, they require careful handling. These crops fetch tremendous returns to the farmers. However, these flowers are sold under adverse conditions as there is no organized wholesale Market for flowers in Karnataka. The only organized market is the International Flower auction Centre which at present deals mainly with roses and has limited clientele.

Farmers selling cut flowers at road side in K.R.Market. Flowers stacked on the foot path and road side as busses and traffic pass by.

Marketing of commercial cut flowers in KR Market, Bangalore

Flowers stacked on the foot path and road side as busses and traffic pass by.

High value cut roses stacked beside a Motor cycle along roadside

A retailer purchased flowers from K.R wholesale Market and carrying in his motorcycle.

Orchids imported from Bangkok being sold in footpath (K.R. Market) Bangalore

The periodicity of the market is daily. According to primary study, flowers from 100 to 150 villages are sold in this market. These include most villages in Bangalore and Tamil Nadu. K.R. Market is the only major Market in Bangalore for flowers. It is operating for the past 15 years. It is an open market for all farmers, traders and wholesalers. It is very unorganized situated near bus stand. Farmers and traders sell the flowers along road side. Cut flowers are traded here. The flowers are kept for sale on the footpath. There is also time restriction for sale from 4.00 am to 7.30 am after which the farmers and traders are made to leave the place and flowers are thrown away.

There is no cold storage facility. The farmers have to hire private cold storage.

S.No.	Major flowers sold	Average Price
1	Gerbera	Rs 60 -80 /bunch (10 stem /bunch)
2	Carnation	Rs 80 -100 /bunch (10 stem /bunch)
3	Orchids	Rs. 150/- for 10 Stem
4	Roses	Rs. 60 -120 /bunch (20 stem /bunch)
5	Chrysanthemum	Rs. 50/bunch (10 stem /bunch)
6	Tuberose	Rs. 60-100 /bunch (20 stem /bunch)

Place of Arrival

From Bangalore:

1. Nelamangala
2. Anekal
3. Varthyre
4. Athibalae
5. Sarjapur

} About 30 -35 villages in and around Bangalore

From Tamil Nadu :

20 villages of Hosur District. Ooty: 20 villages (Gerbera Growers)

Coorg: 15-18 villages

From Thailand:

Orchids are imported from Thailand

MAJOR FLOWERS SOLD IN K.R. MARKET

Hi-tech Roses (Cut Stem sold in bunches of 20 flowers)

Orchids

Gerbera (Cut Stem sold in bunches of 10 flowers)

Carnation ((Cut Stem sold in bunches of 10 flowers)

Chrysanthemum from Kolkata

Tuberose

Garbage

Places of Dispatch:

Within Karnataka:

Bangalore Urban:

Koramangala, Jayanagar, J.P Nagar, Indranagar, Hebbal, Yelehanka, Malleswaram etc

Chennapatna

Mangalore

Mysore

Tumkur

Outside Karnataka:

Chennai, Hyderabad, Delhi, Mumbai, Andhra Pradesh, Pune etc.

Mode of sale of cut flowers is on the basis of bunch. Delivery and payment is on spot.

Market Facilities:

Since it is an unorganized market, there is no market management. The conditions are very unhygienic, no platform for selling cut flowers, no storage facilities available.

MARKET FOR LOOSE FLOWERS

Traditional flowers are sold in K.R. Market building which is an old structure. The surrounding areas of the building is extremely unhygienic. The flowers are sold loose and sold on the basis of weight (per Kg). The building has some shop spaces which has been rented out to the flower traders at a rent of Rs. 300 per day.

Many farmers/wholesalers sell flowers by spreading them on the floor in the lobby as evident from the following pictures.

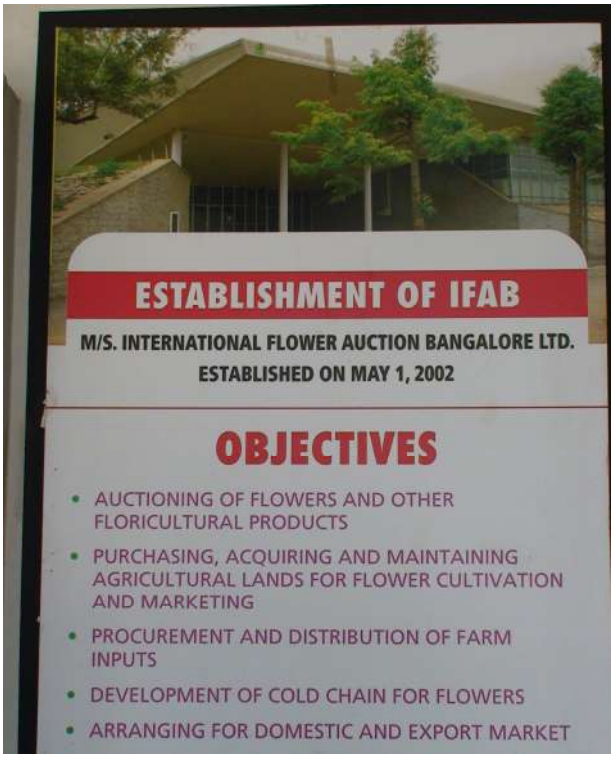
Trading of loose flowers in KR Market, Bangalore

4.3.2 FLOWER AUCTION IN KARNATAKA

INTERNATIONAL FLOWER AUCTION CENTRE

To tap the available floriculture potential in the domestic and international markets, Govt. of Karnataka (GOK) started the Floriculture Division in Karnataka Agro Industries Corporation (KAIC). During the year 1995, KAIC established the Auction Centre at the behest of South Indian Floriculture Association (SIFA). After the success of this Auction Centre, Govt. of India (GOI) through APEDA, GOK and SIFA came forward to fund the suitable infrastructure for a Modern Auction Centre with the stakes, such as, GOK (5.11 acres of land), G0l/APEDA(Rs.3.57 Crores) etc.

In order to run the flower auction, a joint venture company under the name and style of M/S INTERNATIONAL FLOWER AUCTION BANGALORE LIMITED (IFAB) was incorporated on 1st May 2002 with GOK and SIFA as the main share holders.



SALIENT FEATURES OF THIS FLOWER AUCTION:

-- First time in India. (Third in the World after Holland and Germany).

-- All modern cut flowers at one place (at present auction only for cut roses)

-- Transparency in operations

-- Regular payment to growers

-- Cold storage facilities

-- Direct buyer seller contact

-- Good buyers and grower base.

Table 26. SHAREHOLDING OF IFAB

SHAREHOLDERS	SHARES	AUTHORIZED SHARE CAPITAL (RS. LAKHS)	PAID-UP SHARE CAPITAL (RS. LAKHS)
PRIVATE EQUITY HODERS			
SIFA	51%	51.00	3.04
SMALL GROWERS	17%	17.00	1.01
BUYERS	06%	06.00	0.00
PUBLIC EQUITY HOLDERS			
KAIC	16%	16.00	0.95
KAPPEC	10%	10.00	0.50
TOTAL	**100%**	**100.00**	**5.50**

MANAGEMENT

The IFAB is managed by the board of management consisting of 12 directors nominated by respective shareholders such as GOI (1), GOK (3), SIFA (6) and Small Growers (2). The ACS&DC, GOK is the Chairman/ Chairperson of IFAB.

FACILITIES & ESTABLISHMENT

The facility is built on 5.11 acres of land with modern facilities using passive architecture, energy efficient systems, solar energy utilization and automation for efficient handling of the flowers. The total cost for this project is estimated to be approximately Rs.10.00 crores. IFAB was set up as a Public Ltd Company in the Public Private Partnership mode. APEDA's contribution is Rs.3.57 crores and Rs.6.12 crores is from the Karnataka State Govt. in the form of land measuring 5.11 acres, at Hebbal.

Further, Rs 3 crores was sanctioned under the ASIDE Scheme of Govt. Of India, of which Rs 73 Lakhs has been released for creating a state of art electronic auction systems and other flower handling equipments required for auctions , including logistic support.

Present PPP Model

Public Share:

KAIC (Karnataka Agro Industries Corporation): 16%

KAPPEC (Karnataka Agril. Produce processing & export Corporation) : 10%

Private

SIFA (South Indian Floriculture Association) : 51%

Small Growers association: 17%

Buyers: 6%

The Auction center can accommodate over 100 bidders. Only registered producer/buyers are allowed to bid here. Quality of the flowers is checked before putting them to the auction. Registration fees is Rs. 5000/- for life member.

The unique design of the complex is based on solar passive architecture principles and is environmentally suitable for the climate of Bangalore.

The infrastructure consists of:

Cold Storage (capacity of 2.5 lakh stems) 300 sq.m

Distribution Hall 400 sq.m

Buyers area 300 sq.m

Auction Hall 300 sq.m

The highlights of the design are :

-- **Distribution hall** with minimal env **Cold Storage**

-- Integration of solar passive architecture techniques.

-- Design makes best use of natural daylight to reduce overall electrical load

-- Optimum orientation of individual blocks and features such as earth berms to reduce thermal load

-- Provision for incorporation of:

-- State-of-the-art SCADA based automatic storage and retrieval of flowers

-- Real time integration of E-trading and online accounting with auction

-- Internet enabled auction process, which could be fully integrated to the complete automation, accounting and localized physical auction.

-- Solar photovoltaic panels for power generation

-- Modular design with ample scope for expansion

Modern Electronic Auction hall at IFAB

The IFAB has the facility of Transparent Auction System by the electronic & digitally controlled operations; Receiving centers, grading-cum-quality checking area, cold storages & packing halls, distribution area, visitors' gallery; Material handling equipments; Immediate payment to farmers; and Hassle free trading through the computer network from anywhere in the world.

Modern Electronic Auction hall at IFAB

FLOWER ARRIVALS AT IFAB –Approximately, 60,000 cut flowers everyday**.** During December to February, arrival is as high as 2 lakh flowers.

Karnataka

- Bangalore Urban
- Bangalore Rural
- Chickballapur
- Ramnagara
- Kolar
- Coorg
- Uttar Kannada districts

Tamil Nadu

- Hosur
- Ooty
- Kodaikanal
- Coonoor

Other States

- Assam
- Sikkim

Flower arrival from Hosur. Tamil Nadu

MARKETING SYSTEM & AUCTION AT IFAB

The market is open daily and auction takes place all 365 days. At present flower auction takes place for cut roses. Flowers from different destination arrive in the evening and are stored in the cold storage. Before auction, flowers from different farmers and companies are arranged and segregated according to grade in the distribution area.

After auction, they are moved to packing area and finally dispatched to their respective destination.

The Auction of Flowers at IFAB

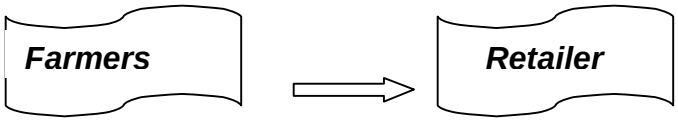
Bidding takes place and price is fixed per flower. Delivery is on their own. Buyers have to pay same day and take their delivery while farmers receive payment once in seven days (every 1st , 7th , 14th and 21st day of each month). . Only registered producer/buyers are allowed to bid here. Quality of the flowers is checked before putting them to the auction. Registration fees is Rs. 5000/- for life member. In the year 2007-08, there were 92 licensee/seller. Hygienic condition of the market are average. There is facility of cold storage, regular cleaning and sanitation. Rs. 50,000/- is spent monthly for maintenance of the market. Disputes are taken care of by the General Manager.

Average price for roses is Rs. 3/- It reaches as high as Rs.12 per stem during Valentines Day. Lowest may go down to 50 paise during April to June.

Market service charge is 2.5% levied on both the farmers and buyers i.e 5% for each transaction amount. There are about 15 -20 transactions each day.

Marketing Channel:

And sometimes -



FLOWERS' DESTINATION

The flowers after the auction, move to various Florists' Shops, Decorators' Shops, Retailers' Shops, Corporate Offices, Reputed Hotels and Parcels to important cities viz., New Delhi, Mumbai, Pune, Hyderabad, Calcutta, Cochin, Chennai, Mangalore, Goa, etc.

ADVANTAGES

The IFAB has considerable advantages over the other market systems, such as Elimination of middle men; Assured flower quality to buyers and better realization to growers; Minimizing the post harvest losses due to cold chain facility at IFAB; Computerized Auction, faster operations & assured payment to growers; and Facilities to exporters for processing & packing for exports

Table 27 TURNOVER OF IFAB

YEAR	STEMS SOLD (CRORES)	VALUE (CRORES)	AVERAGE PRICE (RS.)
2003-04	0.41	1.04	2.55
2004-05	1.19	2.44	2.04
2005-06	1.86	3.93	2.11
2006-07	2.22	4.65	2.09
2007-08	2.53	5.40	2.14

Table 28. Data on Sale of flowers at International Flower Auction Bangalore Limited

INTERNATIONAL FLOWER AUCTION BANGALORE LIMITED

KAIC PREMISES, HEBBAL BANGALORE 560 024.

YEARWISE COMPARATIVE STATEMENT

Month	2003-04			2004-05			2005-06			2006-07			2007-08		
	No. of stems sold	Value in Rs	Average price Rs. Ps.	No. of stems sold	Value in Rs	Average price Rs. Ps.	No. of stems sold	Value in Rs	Average price Rs. Ps.	No. of stems sold	Value in Rs	Average price Rs. Ps.	No. of stems sold	Value in Rs	Average price Rs. Ps.
APRIL				662077	1056738	1.60	1061030	1403527	1.32	1755540	2506706	1.43	2134707	4448654	2.08
MAY				788961	1593071	2.02	1585026	2886169	1.82	1828808	3741424	2.05	1490105	3715149	2.49
JUNE				899060	1169451	1.30	1592735	2063957	1.30	1472407	2217777	1.51	1782254	2550150	1.43
JULY				971848	1314923	1.35	1364039	1919221	1.41	1521734	2141015	1.41	1951099	2753622	1.41
AUG				1295828	2169328	1.67	1775262	3260765	1.84	2008292	4302853	2.14	2316727	4542582	1.96
SEPT				1008165	2237132	2.22	1658977	3161669	1.91	1750725	3341796	1.91	2302677	4477555	1.94
OCT. 16	364279	863201	2.37	843820	1462193	1.73	1657248	2570556	1.55	1627075	2955838	1.82	2867999	3956254	1.38
NOV	615749	1361145	2.21	870850	2531086	2.91	1448123	4356112	3.01	1722449	3295086	1.91	2233023	7659147	3.43
DEC	827137	2506969	3.03	1126975	3405863	3.02	1701735	5632174	3.31	2348031	7095670	3.02	2174518	5444340	2.50
JAN	653661	2050696	3.14	1134363	3036204	2.68	1538055	4345186	2.83	1775553	5862014	3.30	1830239	5281370	2.89
FEB	956986	2593234	2.71	1376176	3200685	2.33	1591574	5666758	3.56	2167133	5885666	2.72	2143770	5796263	2.70
MARCH	633477	975053	1.54	961519	1227438	1.28	1628513	1984814	1.22	2228405	3160913	1.42	2061360	3440472	1.67
TOTAL	4051289	10350298	2.55	11939642	24404112	2.04	18602317	39250908	2.11	22206152	46506758	2.09	25288478	54065558	2.14

Fig. 17. Sale of Stems at IFAB from 2003- 04 to 2007- 08

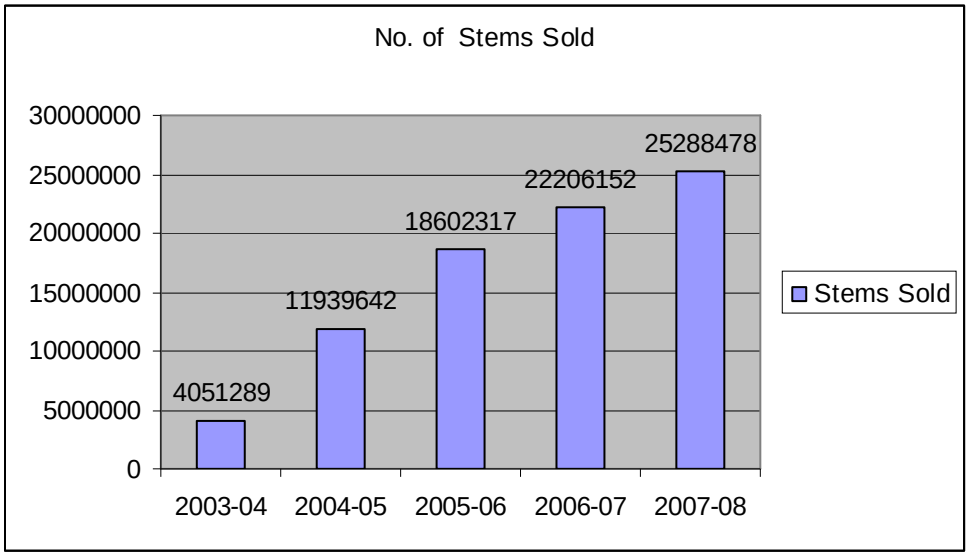
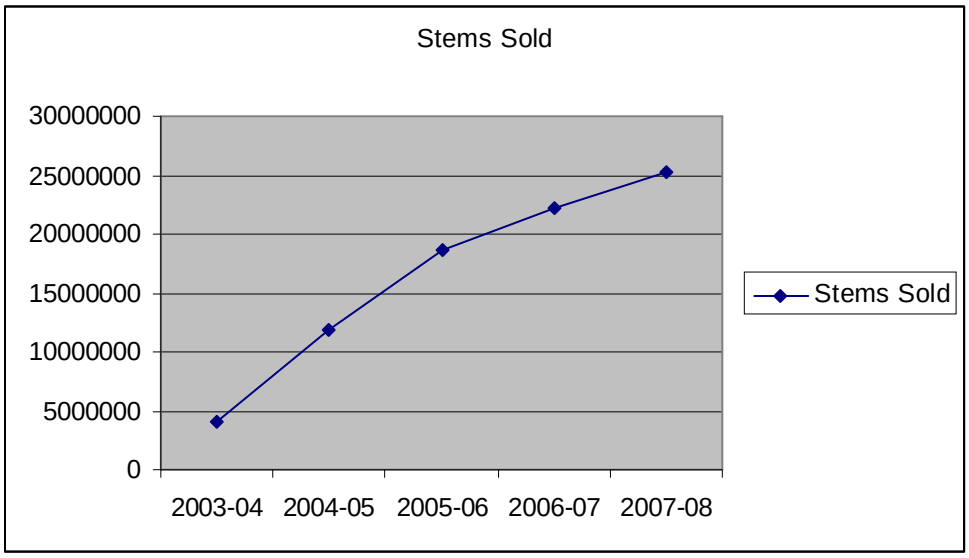


Fig.18. Trend of Sale in IFAB for five years from 2003-04 to 2007- 08



From the data available, it is evident that sale of cut roses have increased significantly over the years from 2003-04 to 2007-08. From 2003-04 till 2005-06, the rise has been steep but thereafter the rate of increase has been gradual and not as high as previous years. This may be due to the fact that when IFAB became operational in 2003-04, it generated lot of interest and farmers were attracted to this new organized mode of sale. However, over the years alternative mode of sale has also emerged and K.R. market, even though unorganized remains the major wholesale Market. Major growers have also started export.

Fig 19. TURNOVER OF IFAB – Value in rupees from 2003-04 to 2007-08

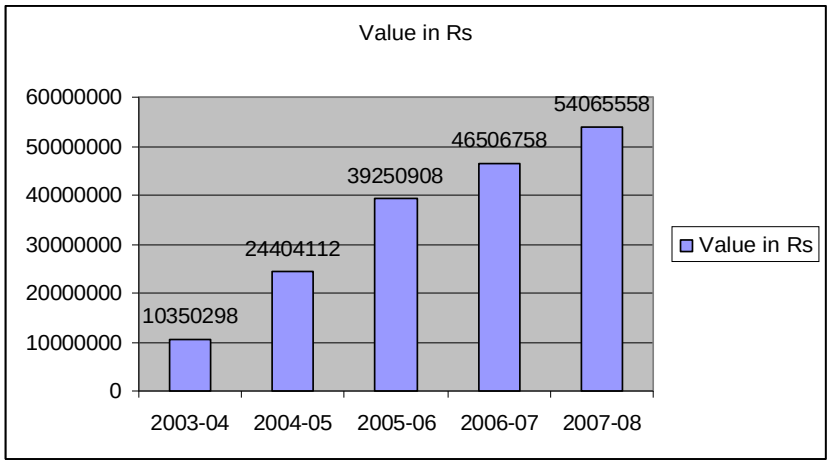
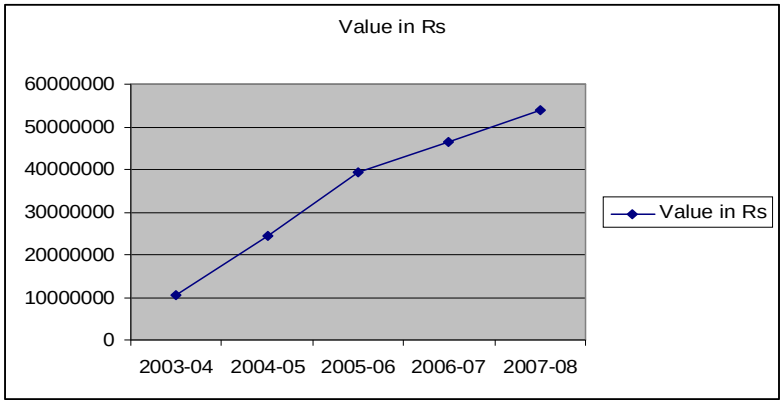


Fig 20. Trend of Value in rupees from 2003-04 to 2007-08



The turnover of IFAB has also increased from 2003-04 to 2007-08. The rate of increase was highest in 2005-06.

Average price per stem in rupees of rose from 2003-04 to 2007-08

Although number of stem sold and turnover in rupees has increased over the years, the average price of a single stem has decreased. It was highest in 2003-04 at Rs. 2.55 and lowest in 2004-05 at Rs. 2.04. In subsequent years, it was more or less the same. The increase in production and volume of flowers sold may be a probable reason for decline in unit price of cut roses.

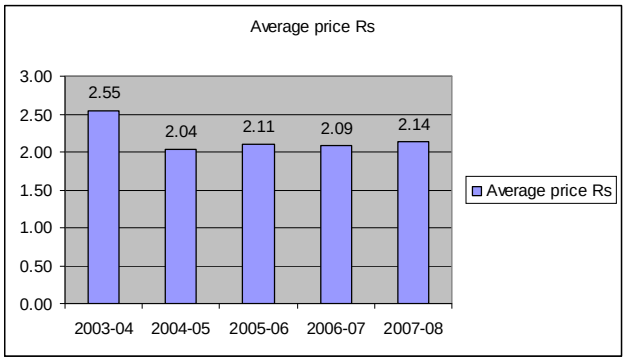


Fig.21.Average price per stem in rupees of rose from 2003-04 to 2007-08

TREND OF MONTHLY SALE IN IFAB FROM 2003-04 TO 2007-08

Fig. 22. Trend of Sale of Stems per month from 2003-04 to 2007-08

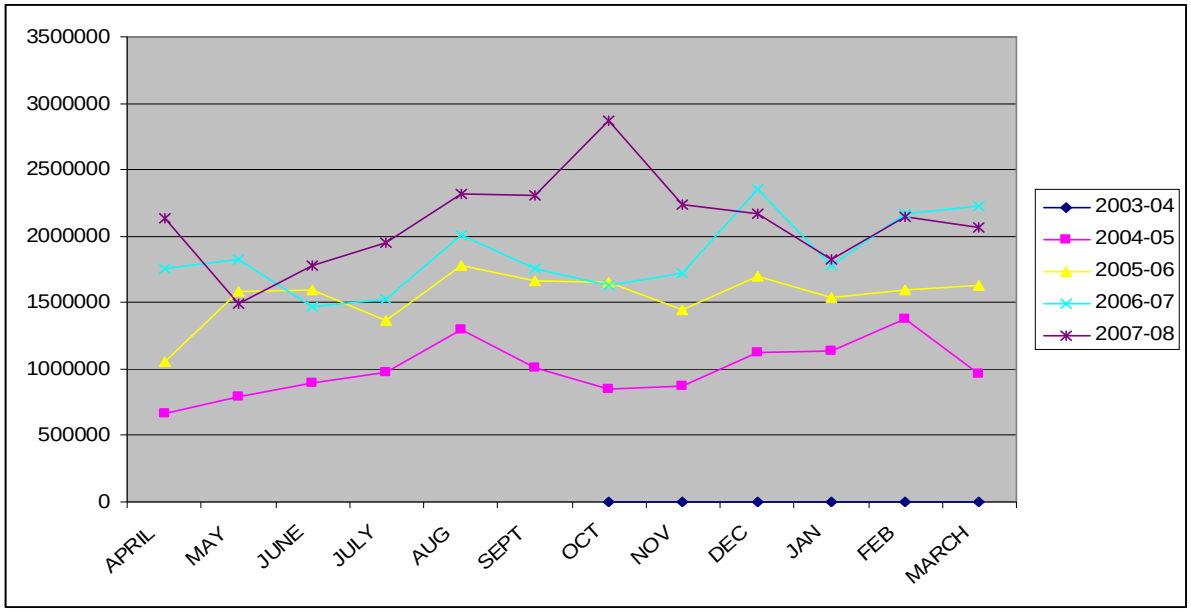
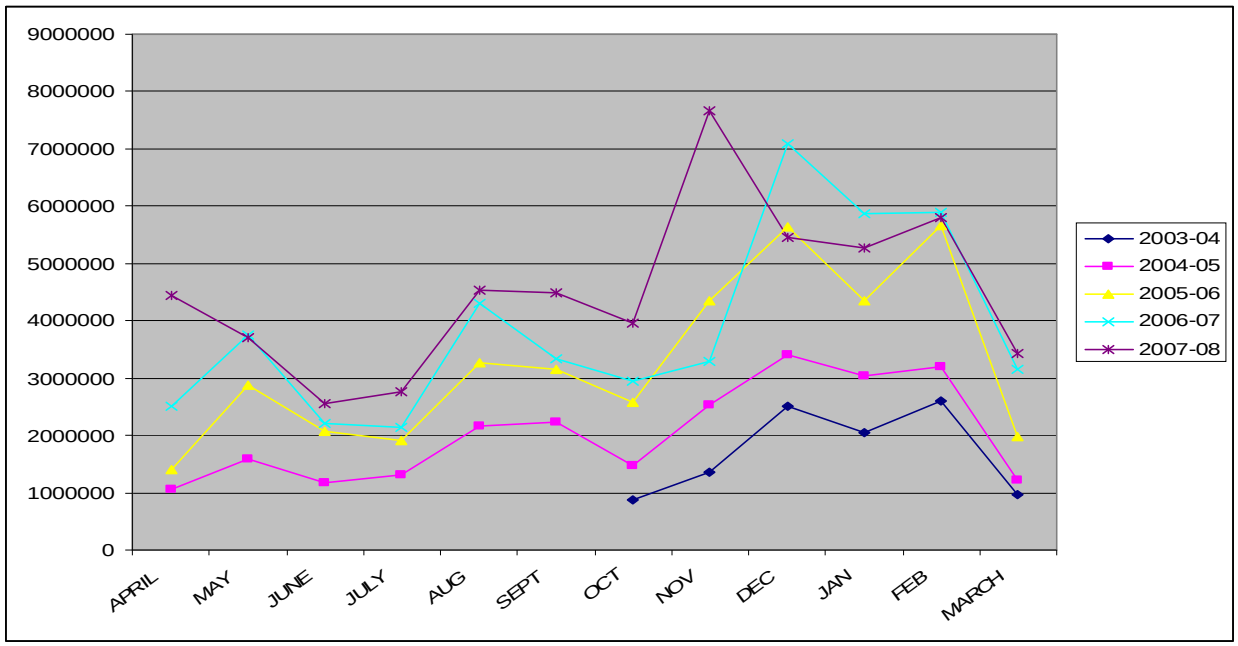


Fig 23. Trend of TURNOVER OF IFAB – Value in rupees per month from 2003-04 to 2007-08



Sale trend is different for different years. However, for all the years, the lowest months were June, July and September –October. The sales are high during August, December

and February. However, in 2007-08, highest sale was recorded in October. The sales are as per production and demand. Demand is highest during Marriage season, Christmas, New year and Valentines day.

Fig 24. Trend of Sale in 2007-08 –At a Glance

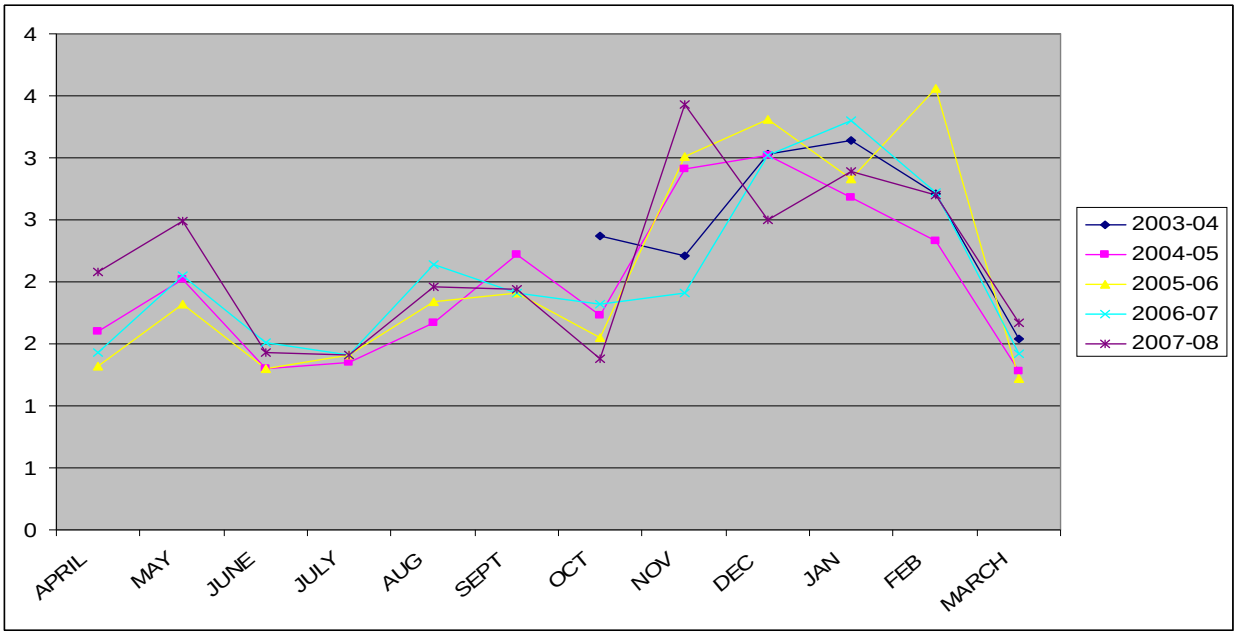


Fig 25. Sale of Flowers at IFAB in 2007-08 –At a Glance

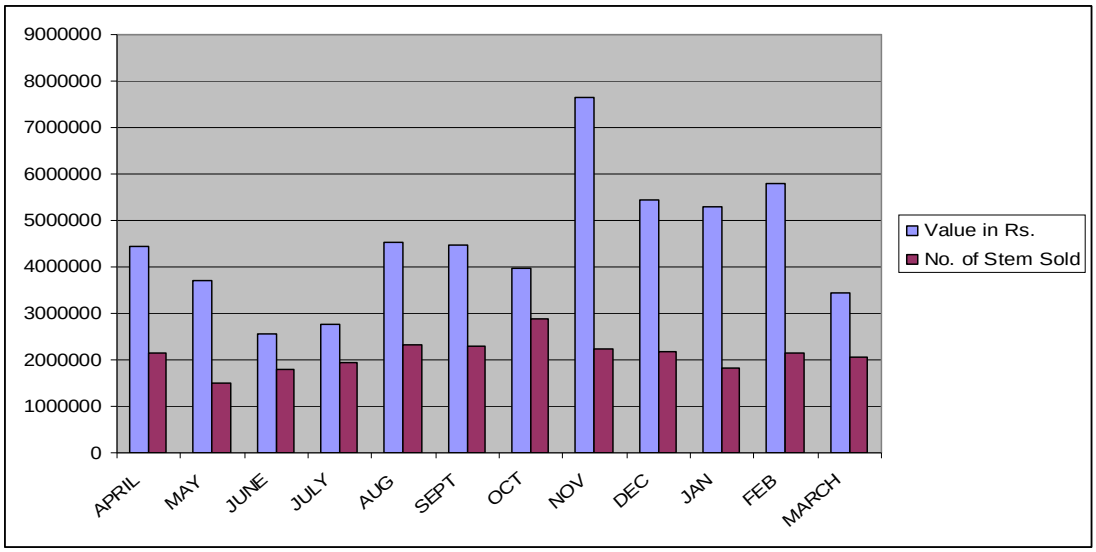
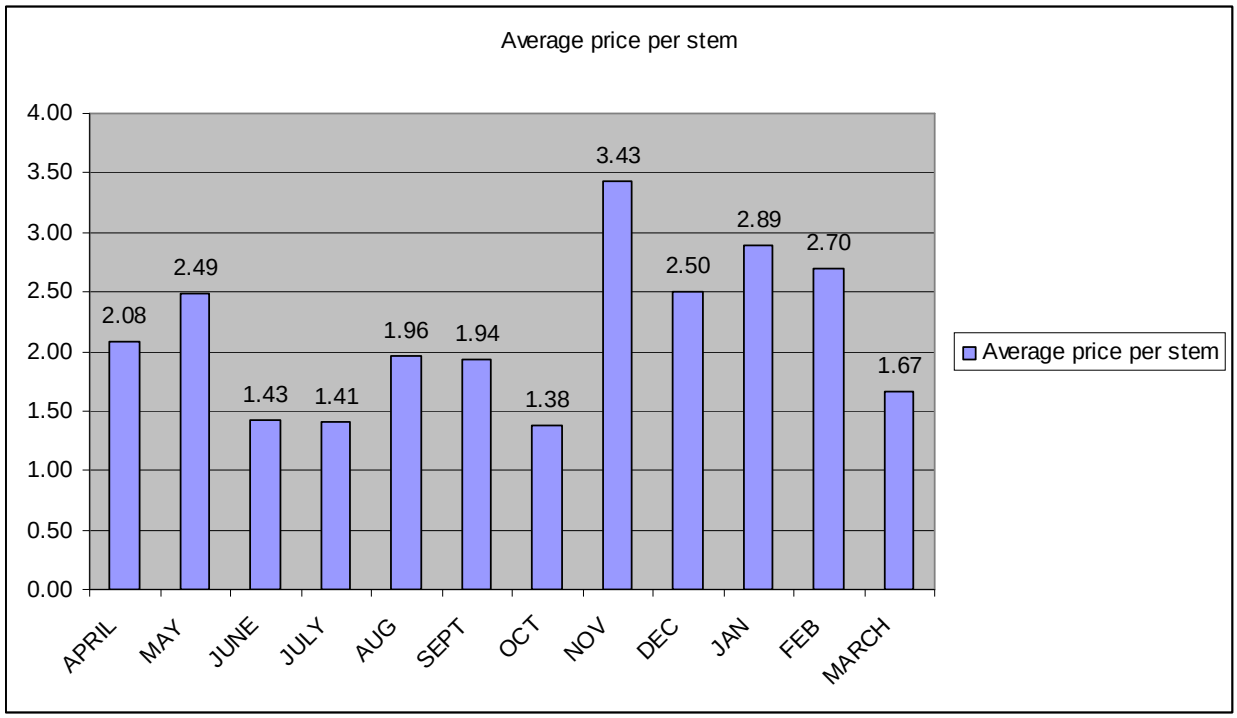


Fig 26. Average price of single stem of rose month wise in 2007-08



In the year 2007-08, highest sale was recorded in October followed by November, December and February. April and August also had moderate sale. However, price per stem was highest in November followed by January, February, December and April. Accordingly, revenue earned was highest in November followed by February, December and January 2008.

FUTURE PLANS

- Supply of farm inputs to growers.
- Information centre for farmers & exporters.
- Establishment of a Floral Studio to sell value-added products like bouquets etc.
- Invite more & more buyers & farmers.
- Strengthening of existing infrastructure.
- Direct selling by IFAB to end users.
- Establishing grower/ seller management system, remote auction system, grower data terminal & remote buyer data terminal.
- Publicity & propaganda through print & electronic media to increase the arrivals & sales of flowers in the auction.
- Study tour by small & marginal growers.
- To link reputed world auction centers.
- Develop e marketing facilities.
- Improve the hygienic condition

4.3.3. Malleswaram Market

Malleswaram market has retail shop of flowers. It is a daily market. Here, flowers are sold in bunches as well as sold after value addition i.e. in the form of bouquets and garlands. The marketing channel is as follows:

Farmers – Wholesaler – retailer – Consumer

Prices are fixed by supply and demand.

A view of Malleswaram Retail Market

Data Collection at Malleswaram Market

Retail Shop selling flower after value addition - Bouquet

Retail Shop selling flower after value addition – Garlands

4.3.4 Mysore's Devaraj Market

It is an unorganized wholesale market for flowers. The major flower sold is Jasmine. It is a daily market. About 100-150 villages are covered by this market within a radius of 5 to 50 Km.

Marketing channels is:

Farmers – Commission agents – wholesaler –retailers –Consumers

Commission agent purchases the flowers (Jasmine) from the farmers and bring to Mysore Market. The farmer pays for the transport. The commission agent then sells to the retailer who sell after preparing garlands (value addition). Mysore malligae and Kakra are two common varieties of Jasmine sold in this market.

Retail selling Jasmine after value addition (garlands)

Retail shops in Mysore Devaraj Market

Wholesaler shop at Mysore Devaraj Market

4.3.5 MARKETING OF ROSE

Rose is a perennial crop which has a life of more than 10 years. It can be cultivated both in traditional as well as modern way. Traditionally, it is cultivated under open field conditions and the modern cut flowers are cultivated under controlled conditions in a greenhouse (commonly known as Polyhouse). Polyhouse cultivation is mostly under G.I structure which is high cost while some are wooden structures which are low cost Poly house.

The roses are mostly used for making garland, decorative purpose, bouquets etc. The traditional flowers are marketed loose and sold on the basis of weight while modern cut stems are sold in bunches of 20 flowers.

While the traditional roses are marketed only domestically, cut flowers are cultivated both for export as well as local market. While export takes place only during winter months when European countries face chilling cold, rose is sold throughout the year in local market. The peak time for export is during valentines'day. In local market also, the peak seasons are marriage and festival seasons, Valentines Day and New Year.

A sample of 30 farmers were selected from Bangalore Urban (12), Bangalore rural (13) and Kolar (5) districts. 22 farmers were selected for study under Polyhouse cultivation and 8 for open field condition.

Table 29.Sample distribution of Rose Growers (both Polyhouse and Open field)

S.No	District	Taluk	Description of Farm	No. of farmers	Total District wise
1.	**Bangalore Urban**	Anekal	Polyhouse	11	**12**
			Open field	01	
2.	**Kolar**	Chickballapur	Polyhouse	03	**05**
		Bangarapet	Open field	01	
		Kolar road	Open field	01	
3.	**Bangalore Rural**	Doddaballapur	Polyhouse	04	**13**
		Nelamangala	Polyhouse	02	
		Hoskote	Open field	03	
		Devanhalli	Open field	01	
		Harudyar	Polyhouse	01	
		Bijawara	Open field	01	
		Tumkur road	Polyhouse	01	
				Total	**30**

Table 30. Land area distribution of Sample Rose Flower growers (poly house) [22 farmers]

Among the sample of 22 farmers growing roses under poly house, the total area under cultivation is presented in the following table.

Category	Holding Size	No. Of Growers	Total Area (acres)
Small	0.5 to 1.99 acres	4	4.75
Medium	2 to 5 acres	11	40.5
Large	More than 5 acres	7	67.5
Total		22	112.75

The total area covered under primary survey for Polyhouse roses is 112.75 acres i.e. 45 hectares.

Area under cultivation under poly house for individual farmers varies from as low as one acre to as high as 14 acres. Most of the farmers doing poly house cultivation are medium to large having an area ranging mostly between 4 to 10 acres. Some have about 2 acres land under cultivation. Now a days, farmers have taken up polyhouse cultivation in one acre area also.

Some of the farms are located very close to road, many are located within 4 to 6 km and some are located more than 10 Km from road. All the polyhouses are built on growers own land.

SPECIFIC FEATURES of CUT ROSE CULIVATION

The establishment of hi tech floriculture production units involved several specific features such as appropriate polyhouse technology, identification and selection of the right variety and the right growing method.

1. The Polyhouse structure:

A Rose Polyhouse in Nelamangala

A polyhouse is a framed structure, covered with transparent or translucent material like UV stabilizer film. Such cultivation facilitates artificial control of sunlight, humidity, temperature and also advanced agricultural technologies like drip irrigation and fertigation units. The initial investment is linked to the type of Polyhouse and the area covered. The main source of Polyhouse design were traditional production centres like Holland, Israel or France which added up to the initial cost of the Project. The technology option for growers range from the

Rose Poly house of Ferns & Roses Company imported from Israel

indigenous polyhouse designs to imported sophisticated designs. Though more than 60% growers opt for indigenous fabrication, some growers imported the poly house from Israel involving a very high cost. The initial investment in a polyhouse, which accounts for the major portion of the Project cost can range from Rs 40 Lakhs per hectare to over Rs. 2 crores per hectare.

2. Variety

The second most important feature is the planting materials. Exotic varieties of flowers are cultivated. Most common are the Dutch roses. The ruling rose varieties are Grand Gala and First Red, among red coloured ones and Nobless and ravel among the pink ones. Being Exotic, these varieties are protected under Intellectual property rights/ Plant breeder rights and include a component of royalty in their price.

3. Technology

Growing technology was not familiar to Indian growers and hence many opted for high priced consultants which added to initial cost. Use of expensive fertilizers, pesticides, lack of standard method of cultivation and non suitability of some varieties for Indian growing conditions were the major constraints.

Equipment used for cultivation

Equipment used for cultivation are Power Sprayer, Generator, Pruning Scissors, Cutting Scissors, Pump etc. For getting uniform and better quality buds, bud cap is used. Modern production techniques used are Poly house, Power sprayer, Fertigation unit and drip irrigation. Cold Storage is also required for storing the flowers. Large farms also have an A.C. Van for transportation. All the polyhouse has good access to water and is mainly through boring.

The product is marketed both in local market as well as exported. Export mainly done during December to February. Other than that, it is done on demand basis. Before marketing, the cut flowers are graded and packed. Grading is done on the basis of bud size, stalk length and quality. After harvest, precooling is done for 24

hours and bud cap is placed. Then the stems are packed in bunches of 20 flowers according to grade.

GRADING

The harvested flowers are graded based on the stem length as

Long – 60 cm and above
Medium – 50 cm
Small - 35to 50 cm

Wrapped in cardboard wrappers in bundles of 20 number. These bundles are kept in buckets with water and cold stored at 0 to 2 degree centigrade. These are then packed into specifies size cardboard boxes based on the ultimate destination. In local market, they are carried in buckets.

Grade A: only for export

- 85 cm stem length
- Bud size: Big buds
- Good leaf quality

Export price during valentine period i.e. (26 January to 14 February 09) -Rs. 28 -30 per stem when farmer exports himself

Rs. 15 per stem when exporter buys from farmer at the farm gate.

Grade 'B'

- 65 cm stem length
- Good bud size

Mainly for local market

Local market price is Rs.10 per stem during December to February.

During Valentine 's Day, upto Rs. 15 per stem.

Grade C

Rs. 1 in local market. They are used as decorative.

Seasonal Supply: More in December, January and February, festival and marriage season.

Price range of cut roses

Month	Price Range
September to February (peak)	Avg max price - Rs. 120 per bunch (Rs. 6 per stem)
June to August	Avg Min price: Rs.40/bunch (Rs. 2 per stem)
March to May	Rs.60/bunch (Rs. 3 per stem)

After grading, the cut stems are packed in bunches of 20 stem using card board and white sheet and rubber band. They are then packed in gunny bags. Distance to market range between 40 to 60 km. Some farms are located at about 85 Km distance. The road is pucca. Mode of transportation used is own vehicle.

Prices of flowers are fixed based on demand. They are high during marriage and festival season, Valentines Day and New Year. Prices are assessed by regular visit to market, from past experience and good links with exporter.

The main local market where they are sold is K.R. Market. Morning 3 o'clock the farmers load the produce in the vehicle and leave for Market. K.R. Market operates from 4.00 am and 7.30 am for cut flowers sold along roadside of bus stand Kalashipalyam. Method of sale is on the basis of Bunch, 20 flowers per bunch. It is an open market. There is no market fee. Payment is on the spot. Floriculture is a sustainable source of income. It is the main source of income for those who are doing hi tech rose cultivation and it has been a profitable venture for them.

Marketing of rose through various channel and price spread

A sample of 22 farmers cultivating hi-tech rose was selected. The data of cultivation and marketing were collected through primary survey with help of pre tested questionnaires. For marketing, 10 wholesalers, 5 commission agents and 10 retailers involved in marketing of rose in Bangalore were selected.

Marketing Channel

The marketing channels involved were

1. **Producer → Commission agent → Wholesaler → Retailer → Consumer**
2. **Producer → Retailer → Consumer**
3. **Producer → Wholesaler → Retailer → Consumer**
4. **IFAB → Wholesaler → Retailer → Consumer**
5. **Producer → Commission agent → Retailer → Consumer**

Producer (sample size 22)

The first link in the marketing channel is the Producer. The sample farmers (22) are the Hi –tech rose producers who themselves sell their produce in K.R. Market either to the wholesalers or the retailers and sometimes directly to consumers. Hence the marketing channel are:

Producer → Wholesaler → retailer → Consumer

Producer → retailer → Consumer

Producer → Consumer

Commission agent /middlemen (sample 5)

They are middlemen who procure flowers from the farmers field and bring the produce to K.R. Market. They then sell either to the wholesalers or directly to retailers.

The marketing channel is as follows:

Producer → Commission agent → Wholesaler → Retailer → Consumer

Producer → Commission agent → Retailer → Consumer

Wholesaler (Sample -10)

These agencies purchased the flowers from middleman and sold to retailers. Sometimes, they purchased from farmers also. Wholesalers also purchased flowers at flower auction at IFAB. (i.e direct purchase from producers)

The marketing channel is

Producer → Commission agent → Wholesaler → Retailer → Consumer

Producer → Wholesaler → retailer → Consumer

Retailers (Sample -10)

These agencies purchased flowers from the producers, wholesalers and sometimes from the commission agents and sold the produce to the consumers.

The marketing channel is

Producer → retailer → Consumer

Producer → Wholesaler → Retailer → Consumer

Producer → Commission agent → Retailer → Consumer

The above marketing channels are common in K.R. Market.

When marketing takes place through IFAB, the channel is:

Producer → Wholesaler → Retailer → Consumer

Producer → retailer → Consumer

The price spread, marketing cost and margins were studied for the following four channels:

Channel 1

Producer → Commission agent → Wholesaler → Retailer → Consumer

Channel 2 Producer → Retailer → Consumer

Channel 3 Producer → Wholesaler → Retailer → Consumer

Channel 4 IFAB → Wholesaler → Retailer → Consumer

Table 31. Price Spread of Rose (poly house) per bunch

S.No	Particulars	***Rupees per bunch***			
		Channel I	Channel II	Channel III	Channel IV
1	Marketing costs incurred by Producer a) Fees b) Transportation Cost c) Cost of Packing/ grading etc d) Handling charges e) Loading/ unloading cost f) Any other (Miscellaneous) Total		 Nil 1.45 0.4 0.15 2.0	 Nil 1.45 0.4 0.15 2.0	
2	Producers' selling Price	50 (50.00)	60 (60.00)	60 (60.00)	45 (45.00)
	Net Price received by the farmer	50 (50.00)	58 (58.00)	58 (58.00)	
3	Commission agents' Purchasing Price or Producers' selling Price	50 (50.00)			
4	Costs incurred by Commission agent a) Fees b) Transportation Cost c) Cost of Packing/ grading etc d) Handling charges e) Loading/ unloading cost f) Any other (Miscellaneous) Total	 Nil 1.0 1.0			
5	Commission agents' Selling Price	55 (55.00)			
6	Commission agents' margin	4.0 (4.0)			
7	Wholesalers' Purchasing Price or Producers' selling Price	55 (55.00)		60 (60.00)	45 (45.00)
8	Costs incurred by Wholesaler g) Fees h) Transportation Cost i) Cost of Packing/ grading etc j) Handling charges k) Loading/ unloading cost l) Any other (Miscellaneous) Total	 1.0 1.0		 1.0 1.0	 1.0 0.5 1.0 2.5
9	Wholesalers' Selling Price	65 (65.00)		65 (65.00)	65 (65.00)
10	Wholesalers' margin	9.0 (9.0)		4.0 (4.0)	17.5 (17.5)
11	Retailers' Purchasing Piece or Wholesalers' Selling Price	65 (65.00)	60 (60.00)	65 (65.00)	65 (65.00)
12	Costs incurred by Retailer a) Fees b) Transportation Cost c) Cost of Packing/ grading etc d) Handling charges	 3.0	 3.0	 3.0	 3.0

	e) Loading/ unloading cost f) Any other (Miscellaneous) **Total**	1.0 4.0	1.0 4.0	1.0 4.0	1.0 4.0
13	Retailer selling price	100 (100.00)	100 (100.00)	100 (100.00)	100 (100.00)
14	Retailer's Margin	31 (31.00)	36 (36.00)	31 (31.00)	31 (31.00)
15	Producer's share in Consumer rupee	50.00	58.00	58.00	45
16	Price Spread	50	42	42	
17	**Shepherd Index for Marketing Efficiency**	**2.0**	**2.38**	**2.38**	

**Figures in parenthesis indicate percentage share in consumer's price.*
***Since price of roses are seasonal and fluctuates, the prices and costs here are standard average and indicative only.*

Price spread of hi tech roses was studied for 4 channels. It was found that producers share in Consumer rupee was highest (58%) when he himself brought the product to market and sold to wholesaler or retailer. Producers' share in consumer rupee was 50% in Channel 1, (lower than channel II and Channel III) when the producer sold his produce to the middlemen at farm gate. Wholesaler's margin was less than that of retailer. It was 9% when the wholesaler purchased the produce from commission agent and 4% when purchased directly from farmers in the market whereas when the wholesaler purchased the produce from IFAB, his margin was 17.5%. Producers share in consumer rupee in Channel IV is 45%. However, this channel is effective for farmers who produce in bulk and also bring their produce from far off places including other parts of Karnataka, Tamil Nadu etc and don't have any storage facilities in the city. Retailer's margin was highest in the entire channel, more than 30%. It was highest (36%) when the retailer purchased directly from the farmers. Marketing cost in roses is 2% for farmers (Channel II &III) and even less for wholesalers (1 % by Channel 1 and III). For Channel 4, market cost is around 2.5 % but the returns are also much higher. For retailer, marketing cost is 4% but the margin for retailer is also very high.

It is observed that shorter the marketing channel i.e. less the price spread, greater is the marketing efficiency and vice versa. Shorter marketing channel also help in bringing economies of scale. In all, marketing of flowers is a very profitable venture and can fetch handsome returns.

OPEN FIELD ROSES & TRADING OF LOOSE FLOWERS IN KR MARKET, BANGALORE

Traditional flowers are sold in K.R. Market building which is an old structure. The surrounding areas of the building is extremely unhygienic. The flowers are sold loose and sold on the basis of weight (Kg). The building has some shop spaces which has been rented out to the flower traders at a rent of Rs. 300 per day. Many farmers/wholesalers sell flowers by spreading them on the floor.

Table 32. Distribution of Sample Rose Flowers growers (open field)

Category	Holding Size	No. Of Growers
Small	0.5 to 1.99 acres	O7
Medium	2 to 5 acres	01
Large	More than 5 acres	-
Total		08

Most of the farmers cultivate open field roses in small areas and in addition to other agricultural crops.

The marketing channel is as follows:

Producer- wholesaler – retailer

Farmers bring the produce from his field to the godown wholesaler and sells the flowers (traditional roses) to wholesaler @ RS 35 to 40 per kg. Farmer gets a commission of 12%. Wholesaler's selling price ranges between 50 to 100 Rs per Kg. Retailers selling price is Rs. 120 to Rs.150 per Kg. These flowers are sold loose or used in preparation of garlands.

Open field rose cultivation

CASE STUDIES

1) Cultivation of Hi –tech Rose in 14 acres farm in Neelamangala

Mr. Srinivas, a master in Agriculture from G.K.V.K has taken up floriculture in his farm at Neelamangala under the trade name of **Uthan Saiflora.** The total area under cultivation is 14 acres. The farm is located at a distance of 4 km from the main road and 56 km from K.R. Market. He uses modern cultivation techniques like Polyhouse with G.I structure, drip irrigation, power sprayers, generator, cold storage etc.

The varieties used are Dutch roses –Grandgala, Havalanch, First red etc. The royalty plants are from Netherlands. He pays a royalty of Rs.45/Plant.

Prior to harvesting, bud caps are placed for uniform sized buds. Precooling is done for 24 hours.

Bud cap placed for uniform sized buds

Pruning Equipments, Scissors, Cutters etc

Grading is done based on

- Bud size
- Stem length – Graded in 3 sizes - 85 cm, 65 cm and 45 cm and packed separately.
- Colour - Different colours are separately packed according to stem length and bud size for export and local market.
- Packed in bunches of 20 stems. Packing materials used are cardboard sheet and rubber bands. Storage facilities is on the farm.

Grading Scale for measuring Stem Length

Racks for bunching

Packing material – cardboard wrappers

Cold Storage

Buckets for storing and taking to local market

Flowers stacked in precooling chamber

Mr. Srinivas

Marketing of the roses:

Half of his production is sold in local market and half for export. The average price received from local market is Rs. 3.5/- per stem while average export price is Rs. 15 per stem.

Local Market – IFAB and K.R. Market

Export Market – China, Dubai

Peak Seasons: USA Day, Christmas, New Year and Valentines day.

2) Cultivation of Hi –tech Rose by 'Ferns and Roses' Company
District –Tumkur - *Greenhouse technplogy imported from ISrael*

M/s. Ferns and Roses was incorporated in the year 2007 and is engaged into the business of floriculture. The company is set up to deliver high-quality cut flowers (roses) to the tune of 8 million stems per annum in its state-of-art facility.

The company has been setup to cater to the needs of quality cut flowers globally and it intends to start with roses and expand into other products such gerbera and carnation. The company is planning to export to countries like Holland, Australia, Europe, Japan, and Russia.
The company also plans to ramp up its current infrastructure to deliver around 15 million stems in the next financial year. Future business plans include setting up an Agro-based industry which caters to the needs of the global market.

Ferns and Roses grow the following varieties of roses. Of them a special mention can be made on the 'Bonheur' variety which is a unique breed.

The below chart gives the brief description.

Flowers	Stem Length (cms)	Bud Size	Colors
First Red	40 – 60	3.5 - 4.5	Red
Grand Gala	60 – 80	4 - 5.5	Red
Bordeaux	40 – 60	3.5 – 4.5	Red
Red Corvette	50 – 70	4 – 5	Red
Noblesse	40 – 60	4 – 5	Pink
Gold Strike	40 – 60	4 – 5	Yellow
Tropical Amazone	40 – 60	3.5 – 4.5	Orange

White Avalanche	40 – 60	3.5 – 5	White
Bonheur	40 – 55	3.5 – 5	Hard Pink

The total production per day = 21,000
The total production per month = 6, 50,000
The total production per Annum + 78.00.000
The 60% are exportable flowers.

TROPICAL AMAZON

BORDEAUX

NOBLESSE 3

GRANDGALA

The distance from the farm to Bangalore International Airport (BIA) is around 70 kms. Flowers are transported with utmost care in their own air conditioned vehicles from the farm to BIA.

The total area involved in floriculture is 10 Hectares , Out of which 5.6 Hectares is under green house rose cultivation. The remaining area has been used for roads, water tank (12 lakh liters capacity), security rooms, and spacious packing hall (8000 sq ft), manager quarters, employer's quarters, fertigation system, and cold storage rooms.

The galvanized structure with 205 microns UV transparent, sulphur resistant sheets and the irrigation system for the green house used for rose cultivation has been imported from Gineger Company and Plastro, Israel respectively.

The height of green house is 7 meters and a gutter height of 4.3 meters. pole to pole length of 9.6 mts.

The water ph is 6.8 to 7 , the water electrical conductivity is 0.4 mm(mili moles). These are the parameters which allow the flowers to grow beautifully and maintain good health.

Unique features

- State-of-art technology adopted for Irrigation system and fertigation systems.
- Post-harvesting techniques are of high standards keeping in mind that both the cold room and the packing hall should be maintained at the required temperatures for longevity of the flowers.
- The grading process is automated.
- The packing material and the system do meet the international standards and are checked at two levels.
- The cold chain is maintained at all the times to increase the vase life of the flowers

Refrigerated Vans

Cold Storage

Grading Scale

Bunching Racks

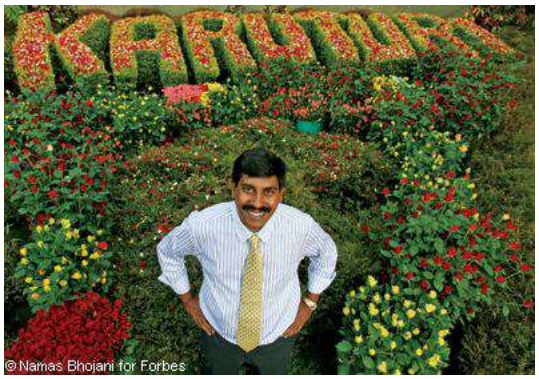
Computerised Fertigation Unit

Irrigation System

Bore Well within Greenhouse **Generator**

Ferns and Roses have adopted the latest technology in Hi tech rose cultivation. They are a very good example of progressive development of floriculture in the Country.

3) Karuturi-the king of Roses



Sai Ramakrishna Karuturi is the Founder and Managing Director of Karuturi Global Ltd. Under his dynamic leadership, Karuturi Global has become the world's largest producer of cut-roses. Mr. Ram Karuturi is widely regarded as the pioneer of cut flower revolution in the World.

Mr. Sai Ramakrishna Karuturi holds a Bachelors' degree in Mechanical Engineering from Bangalore University and an MBA (Dean's Honor) from Case Western Reserve University, Ohio. Had he launched an IT (Information Technology) company, it wouldn't have been a big deal. The very fact that Karuturi launched a floriculture firm and then decided to take it global makes an inspirational success story. It shows the making of an entrepreneur in true sense who had the vision of floriculture having a remarkable industry prospects.

Karuturi 42, started his journey as an young entrepreneur in 1994 by setting up 'Karuturi Floritech' in Doddaballapur, near Bangalore, India. The annual capacity was to process 12 million premium cut roses at the state-of-the-art production facility. By 1999, Karuturi Floritech had increased the cultivation to 10 hectares and in 2003, it became the largest rose producer in India.Simultaneous to his operations in India, he identified Kenya & Ethiopia as a hub for cultivation and export of roses. In 2004, Ramakrishna Karuturi set up a wholly owned subsidiary in Ethiopia, Africa, Ethiopian Meadows Plc-to cultivate roses with a special focus on HT (Hybrid Tea) roses. The company has expanded to other related businesses as well. In 2007 he acquired Sher Agency to become world's largest cut rose producer. Expanded its cut-rose production into Naivasha, Kenya

From a modest beginning in 1994, as an export-oriented unit for floriculture 'Karuturi Floritech' have expanded their presence into agriculture and food processing verticals with operations spread across Ethiopia, Kenya and India.

'Karuturi Floritech' was later named 'Karuturi Networks Limited' and at present Karuturi Global Ltd.

'Karuturi Global' is a world leader in production of cut roses with operations spread across Ethiopia, Kenya and India. With an area of over 239 hectares under Greenhouse cultivation, they annually produce around 555 million stems of quality cut roses, essentially for exports to high-value markets.

Mr. Sai Ramakrishna Karuturi, Managing Director of Karuturi Global Ltd was awarded the Ernst & Young Business Entrepreneur of the year 2009 from India.

An integrated production model encompassing in-house plantation, cultivation and distribution capabilities coupled with a series of green initiatives make 'Karuturi Global' one of the lowest cost producer of cut roses in the world. Almost entire produce is exported to high-value markets such as Holland, Germany, United Kingdom, Italy, Singapore, Hong Kong, Taiwan, Bahrain, Muscat, Dubai, Australia, Japan, New Zealand, Brunei and North America, with a small portion sold in India. Having established their strong presence in floriculture, 'Karuturi Global' now aims to broad base their portfolio into a larger agri-produce basket.

Indeed, Mr. Ram Karuturi has proved that a true vision with focused determination can make great entrepreneurs. After all, nothing succeeds like success.

4.3.6 MARKETING OF GERBERA

Gerbera is a genus of ornamental plants from the sunflower family (Asteraceae). It was named in honor of the German naturalist Traugott Gerber, a friend of Carolus Linnaeus. It has around 40 species spreading from Africa across to Madagascar into tropical Asia and South America. Gerbera is very popular and widely used as a decorative garden plant or as cut flowers. Gerbera is also important commercially. These plants are usually grown in greenhouses and are used for cut flowers. Gerbera flowers all year round.

The cut flowers are mostly used for making bouquets, decorative purpose, etc. They are sold in bunches of 10 flowers.

A sample of 30 farmers was selected from Bangalore Urban (05), Bangalore rural (08), Mandya (08), Mysore (03), Tumkur (03) and Kolar (03) districts. 20 farmers were selected for study under Polyhouse cultivation and 10 for open field condition.

Table 33. Sample distribution of Gerbera Growers (both Polyhouse and Open field)

S.No	District	Taluk	Description of Farm	No. of farmers	Total District wise
1.	**Bangalore Urban**	Anekal	Polyhouse	05	**05**
2.	**Mandya**	Mandya	Polyhouse	02	**08**
		Mandya	Open field	02	
		Maddur	Polyhouse	02	
		Maddur	Open field	01	
		Srirangapattana	Polyhouse	01	

3	**Bangalore Rural**	Channapatna	Polyhouse	01	**08**
		Doddaballapur	Polyhouse	02	
		Nelamangala	Polyhouse	01	
		Kanakapura	Polyhouse	02	
		Devanhalli	Open field	02	
4	**Mysore**	Mysore	Polyhouse	01	**03**
		T. Narasipur	Open field	02	
5	**Tumkur**	Tumkur Road	Polyhouse	03	**03**
6	**Kolar**	Chickballapur	Open field	03	**03**
				TOTAL	**30**

Table 34. Land area distribution of Sample Gerbera Flower growers (poly house)[20 farmers]

Among the sample of 20 farmers growing Gerbera under polyhouse , the total area under cultivation is presented in the following table.

Category	Holding Size	No. Of Growers	Total Area (acres)
Small	0.5 to 1.99 acres	11	11 acres
Medium	2 to 5 acres	09	23 acres
Large	More than 5 acres	-	
Total		20	34

The total area covered under primary survey for Polyhouse Gerbera is 34 acres i.e. 13.6 hectares.

Area under cultivation of poly house Gerbera varies from as low as half acre to three acres. Most of the farmers doing poly house cultivation are small to medium having an area ranging mostly between 0.5 to 3 acres. Gerbera cultivation under polyhouse has recently been taken up by farmers on small to medium scale. As compared to hi-tech rose cultivation which takes place in 4 to 10 acres of land or even more, Gerbera cultivation takes place on a smaller scale in and around Bangalore.

Some of the farms are located very close to road, many are located more than 10 Km from road. All the polyhouses are built on growers own land.

SPECIFIC FEATURES of GERBERA CULIVATION

The establishment of hi tech floriculture production units involved several specific features such as appropriate polyhouse technology, identification and selection of the right variety and the right growing method.

The Polyhouse structure:

Equipment used for cultivation

Equipment used for cultivation are Power Sprayer, Generator, Pruning Scissors, Cutting Scissors, Pump etc. Modern production techniques used are Poly house, Power sprayer, Fertigation unit and drip irrigation. Cold Storage is also required for storing the flowers. All the polyhouses have good access to water which is mainly through boring.

The product is marketed in the local market (KR Market). Before marketing, the cut flowers are graded and packed. Grading is done on the basis of size and colour. Then the stems are packed in bunches of 10 flowers per bunch. Each flower is wrapped in cellophane paper and then 10 flowers are wrapped in bunches with newspaper and rubber band or thread is used for tying.

Seasonal Supply: More in December, January and February, festival and marriage season.

Price range of Gerbera

Average Maximum Price: Rs.100 to Rs. 120 per bunch

Average Minimum Price: Rs. 60 per bunch

Low Price (During months of Sept, Oct and Nov) - Rs. 20 to 30 per bunch

Prices of flowers are fixed based on demand. They are high during marriage and festival season, Valentines Day and New Year. Prices are assessed by regular visit to market and from past experience.

The main local market where they are sold is K.R. Market. Distance to market ranges between 40 to 60 km. Some farms are located at a distance of more than 100 Km. The road is pucca. Mode of transportation used is own vehicle.

Morning 3 o'clock the farmers load their produce in the vehicle and leave for Market. K.R. Market operates from 4.00 am and 7.30 am for cut flowers sold along roadside of bus stand Kalashipalyam. Method of sale is on the basis of Bunch. 10 flowers per bunch. It is an open market. There is no market fee. Payment is on the spot. Major production problem is pest and diseases. Floriculture is a sustainable source of income. Floriculture is the main source of income for those who are doing hi tech Gerbera cultivation and it has been a profitable venture for them.

Marketing of Gerbera through various channel and price spread

20 farmers cultivating Gerbera under Polyhouse condition were selected. The data of cultivation and marketing were collected through primary survey with help of pre tested questionnaires. For marketing, 10 wholesalers, 5 commission agents and 10 retailers involved in marketing of Gerbera in Bangalore were selected.

Marketing Channel

The marketing channels involved were

Producer → Commission agent → Retailer → Consumer

Producer → Retailer → Consumer

Producer → Wholesaler → Retailer → Consumer

Producer (sample size 20)

The first link in the marketing channel is the Producer. The sample farmers (20) are the Hi –tech gerbera producers who themselves sell their produce in K.R. Market either to the wholesalers or the retailers and sometimes directly to consumers. Hence the marketing channel are:

Producer → Wholesaler → retailer → Consumer

Producer → retailer → Consumer

Producer → Consumer

Commission agent /middlemen (sample 5)

They are middlemen who procure flowers from the farmers field and bring the produce to K.R. Market. They then sell directly to retailers. The marketing channel is as follows:

Producer → Commission agent → Retailer → Consumer

Wholesaler (Sample -10)

These agencies purchase the flowers from farmers and sell to retailers.

The marketing channel is

Producer → Wholesaler → retailer → Consumer

Retailers (Sample -10)

These agencies purchase flowers from the producers, wholesalers and commission agents and sell to the produce to the consumers.The marketing channel is

Producer → retailer → Consumer

Producer → Wholesaler → Retailer → Consumer

Producer → Commission agent → Retailer → Consumer

The above marketing channels are common in K.R. Market.

The price spread, marketing cost and margins were studied for the following three channels:

Channel I Producer → Commission agent → Retailer → Consumer

Channel II Producer → Wholesaler → Retailer → Consumer

Channel III Producer → Retailer → Consumer

Table 35. Price Spread of Gerbera (poly house) per bunch

S.No	Particulars	*Rupees per bunch*		
		Channel I	Channel II	Channel III
1	Marketing costs incurred by Producer			
	g) Fees		**Nil**	**Nil**
	h) Transportation Cost		**0.40**	**0.40**
	i) Cost of Packing/ grading etc	**0.35**	**0.35**	**0.35**
	j) Handling charges			
	k) Loading/ unloading cost			
	l) Any other (Miscellaneous)		**0.25**	**0.25**
	Total	**0.35**	**1.0**	**1.0**
2	Producers' selling Price	**35 (43.75)**	**40 (50.00)**	**50 (62.50)**
3	Net Price received by Producer	**34.65 (43.31)**	**39 (48.75)**	**49 (61.25)**
	Commission agents' Purchasing Price	**35**		
	Costs incurred by Commission agent			
	m) Fees			
	n) Transportation Cost	**2.0**		
	o) Cost of Packing/ grading etc			
	p) Handling charges			
	q) Loading/ unloading cost			
	r) Any other (Miscellaneous)	**1.0**		
	Total	**3.0**		
	Commission agents' Selling Price	**55 (68.75)**		
	Commission agents' margin	**17 (21.25)**		
4	Wholesalers' Purchasing Price		**40**	
5	Costs incurred by Wholesaler			
	s) Fees			
	t) Transportation Cost			
	u) Cost of Packing/ grading etc			
	v) Handling charges			
	w) Loading/ unloading cost			
	x) Any other (Miscellaneous)		**1.0**	
	Total		**1.0**	
6	Wholesalers' Selling Price		**55 (68.75)**	
7	Wholesalers' margin		**14 (17.5)**	
8	Retailers' Purchasing Piece	**55**	**55**	**50**
9	Costs incurred by Retailer			
	g) Fees			

	h) Transportation Cost i) Cost of Packing/ grading etc j) Handling charges k) Loading/ unloading cost l) Any other (Miscellaneous) Total	**2.0** **1.0** **3.0**	**2.0** **1.0** **3.0**	**2.0** **1.0** **3.0**
10	Retailer selling price	**80 (100.00)**	**80 (100.00)**	**80 (100.00)**
11	Retailer's Margin	**22 (27.5)**	**22 (27.5)**	**27 (33.75)**
12	Producer's share in Consumer rupee	**43.31**	**48.75**	**61.25**
13	Price Spread	**56.69**	**51.25**	**38.75**
14	**Shepherd Index for Marketing Efficiency**	**1.76**	**1.95**	**2.58**

**Figures in parenthesis indicate percentage share in consumer's price.*
***Since price of gerbera are seasonal and fluctuates, the prices and costs here are standard average and indicative only.*

Price spread of hi tech gerbera was studied for 3 channels. It was found that producers share in Consumer rupee was highest (61.25%) when he himself brought the product to market and sold to retailer. Producers share in Consumer rupee was 48.75% when he sells to wholesaler. Producers' share in consumer rupee was 43.31% in Channel I, lower than channel II and Channel III when the producer sold his produce to the middlemen at farm gate. Wholesaler's margin was less than that of retailer. Retailers margin was highest in the entire channel, about 30%. It was highest (33.75%) when the retailer purchased directly from the farmers.

Marketing cost in gerbera is 1.25% for farmers (Channel II &III) and 0.5 % (Channel I), for wholesalers 1.25 % and 3.75 % for commission agent. However margin of Commission agent is higher than wholesaler. For retailers, marketing cost is 3.75% but the margin for retailer is the highest.

It is observed that shorter the marketing channel i.e. less the price spread, greater is the marketing efficiency and vice versa. In all, marketing of flowers is a very profitable venture and can fetch handsome returns. Shorter marketing channel also help in bringing economies of scale. In all, marketing of gerbera flowers is also a very profitable venture and can fetch handsome returns.

Flow pattern of Gerbera from Ooty to Bangalore

Gerbera, an important cut flower crop cultivated in Karnataka is sold in K.R. market, Bangalore. However, it is interesting to note that Gerbera cultivated in Ooty, TamilNadu is also marketed in K.R. Market. Gerbera is cultivated on a large scale in Ooty. 30% of the produce is sold locally, 30% within the state and 40% transported to Karnataka and Kerala.

4.3.7 MARKETING OF JASMINE

Jasmine –The essence of Karnataka

It is a small white flower with a pleasant fragrance. Jasmine is used as a decorative flower for all occasions. It is weaved in length with the help of a thread. The flower is mostly used for making garlands for pooja purposes, adornment of hair by ladies, in religious and social ceremonies and other occasions. In North India, some communities use this flower to cover the face of the bridegrooms.

Cultivation of Jasmine under open field condition

Jasmine is a traditional flower and cultivated under open field condition. Jasmine is a very popular flower and has great religious significance in South India. Different types of jasmine varieties are in cultivation of which 'Kakada'*(jasmine pubescens)*is the popular variety grown in Karnataka.

A sample of 30 farmers was selected from Mysore district.

Table 36. Sample distribution of Jasmine Growers

S.No	District	Taluk	Description of Farm	No. of farmers	Total District wise
1	**Mandya**	Pandavpura Mandya K.R. Pet	Open field	11 07 03	**21**
2	**Mysore**	T. Narasingpur H.D. Kote Mysore	Open field	03 01 05	**09**
				Total	**30**

Table 37. Land area distribution of Sample Jasmine Flower growers (30 farmers)

Among the sample of 30 farmers growing Jasmine under open field condition, the total area under cultivation is presented in the following table.

Category	Holding Size	No. Of Growers	Total Area (acres)
Small	0.5 to 1.99 acres	10	3.8
Medium	2 to 5 acres	19	63.8
Large	More than 5 acres	01	8.0
Total		30	75.6

The total area covered under primary survey for Jasmine is 75.6 acres i.e. 30.24 hectares.

Area under cultivation of Jasmine under open field condition varies from as low as 0.1 acre to 8.0 acres. Most of the farmers cultivating Jasmine under open field condition are small to medium having an area ranging mostly between 0.25 (10 guntas) to 5 acres.

Some of the farms are located very close to roa some at a distance of 5 Km or more from road.

Jasmine Farmers' field in Mandya District

Equipment used for cultivation

Equipment used for cultivation are mostly axe and spade. Cultivation is done in a very tradition way and irrigation technique is also convention from water tank. All the farms have good access to water.

The product is marketed in the local market (Devaraj Market, Mysore). The flowers are marketed loose and sold on weight basis (per Kg rate).

Seasonal Supply: Festival and marriage seasons.

Marketing of Jasmine

Prices of flowers are fixed based on demand. They are high during marriage and festival seasons. Prices are assessed by regular visit to market and from past experience.

The main local market where they are sold is Devaraj Market, Mysore.

Wholesalers shop at Mysore's Devaraj Market

Retail Shops in Devaraj Market, Mysore

Distance to market ranges between 20 to 40 km. Some farms are located at a distance of 60 Km. The road is usually pucca, but at some places it is Kutcha near the villages. Mode of transportation used is hired as well as own vehicle. Mostly, commission agents visit the farmers field buy the flowers from the farmers and sell at Devraj Market. Farmers bear the transportation cost. The commission agents sell

the produce to the wholesalers who sell it to retailers. Both wholesalers and retailers trade from Devaraj Market. No marketing cost is incurred by wholesaler.

Marketing of Jasmine through various channel and price spread

30 farmers cultivating Jasmine under open field condition were selected. The data of cultivation and marketing were collected through primary survey with help of pre tested questionnaires. For marketing, 10 wholesalers, 5 commission agents and 10 retailers involved in marketing of Jasmine in Mysore/Mandya were selected.

Marketing Channel

The marketing channels involved were

Producer→ Commission agent →Wholesaler →Retailer →Consumer

Producer→ Wholesaler→ Retailer →Consumer

Table 38 Price Spread of Jasmine per Kg

S.No	Particulars	**Rupees per Kg**	
		Channel I	Channel II
1	Marketing costs incurred by Producer m) Fees n) Transportation Cost o) Cost of Packing/ grading etc p) Handling charges q) Loading/ unloading cost r) Any other (Miscellaneous) Total	 **3.0** **3.0**	 **3.0** **3.0**
2	Producers' selling Price	**30 (20.00)**	**40 (26.67)**
	Net Price received by the farmer	**27 (18.00)**	**37 (24.67)**
	Commission agents' Purchasing Price	**30 (20.00)**	
	Costs incurred by Commission agent y) Fees z) Transportation Cost aa) Cost of Packing/ grading etc bb) Handling charges cc) Loading/ unloading cost dd) Any other (Miscellaneous) Total		
	Commission agents' Selling Price	**60 (40.00)**	
	Commission agents' margin	**30 (20.00)**	
4	Wholesalers' Purchasing Price	**60 (40.00)**	**40 (26.67)**
5	Costs incurred by Wholesaler ee) Fees ff) Transportation Cost		

	gg) Cost of Packing/ grading etc hh) Handling charges ii) Loading/ unloading cost jj) Any other (Miscellaneous) Total		
6	Wholesalers' Selling Price	**100 (66.67)**	**100(66.67)**
7	Wholesalers' margin	**40 (26.67)**	**60 (40.00)**
8	Retailers' Purchasing Piece	**100 (66.67)**	**100 (66.67)**
9	Costs incurred by Retailer m) Fees n) Transportation Cost o) Cost of Packing/ grading etc p) Handling charges q) Loading/ unloading cost r) Any other (Miscellaneous) Total	 **5.00** **5.00**	
10	Retailer selling price	**150 (100.00)**	**150 (100.00)**
11	Retailer's Margin	**45 (30.00)**	**45 (30.00)**
12	Producer's share in Consumer rupee	**18.00**	**24.67**
13	Price Spread	**82.00**	**75.33**
14	**Shepherd Index for Marketing Efficiency**	**1.21**	**1.38**

**Figures in parenthesis indicate percentage share in consumer's price.*
***Since price of gerbera are seasonal and fluctuates, the prices and costs here are standard average and indicative only.*

Price spread of traditional Jasmine was studied for 2 channels. It was found that producers share in Consumer rupee was slightly higher (24.67%) when he himself brought the product to market and sold to wholesaler. But the regular practice is sale through commission agents where Producers share in Consumer rupee was 18%. Wholesaler's margin was 26.67% when he purchased from the commission agent while it was 40% when he purchased from the farmers. Retailers margin was 30%. Marketing of Jasmine fetched good returns to the Wholesalers and retailers. It was the farmers whose share was low in the consumers' rupee.

Since the marketing channel was relatively longer than rose and gerbera, especially with the involvement of commission agents, the price spread was more and farmers share in consumer rupee was low. This reduced the marketing efficiency of traditional flower like Jasmine.

4.3. 8 Commodity Flow pattern

The commodity flow pattern in K.R. Market and IFAB are as follows:

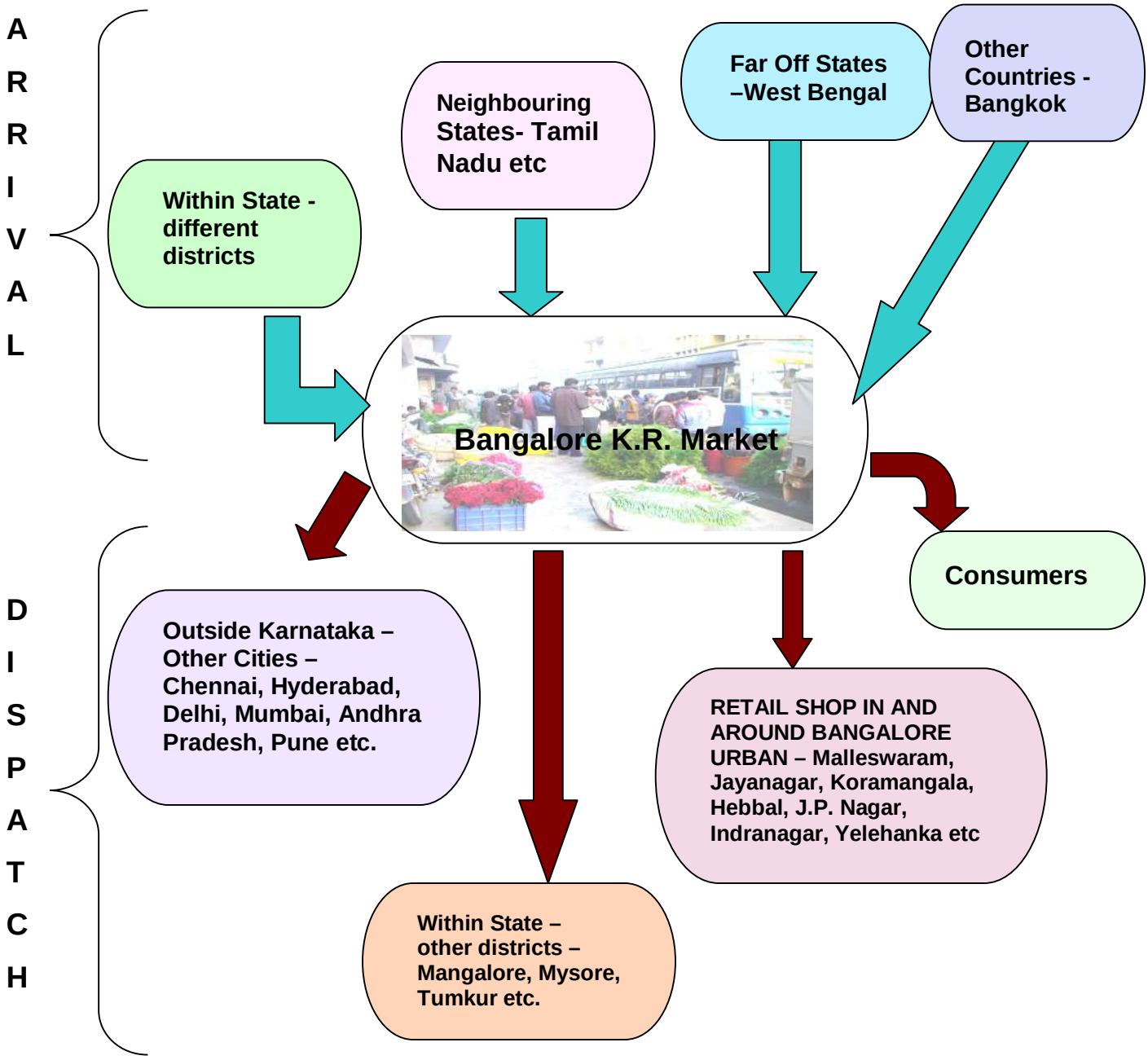


Fig 27. Commodity Flow Pattern in K.R. Market, Bangalore

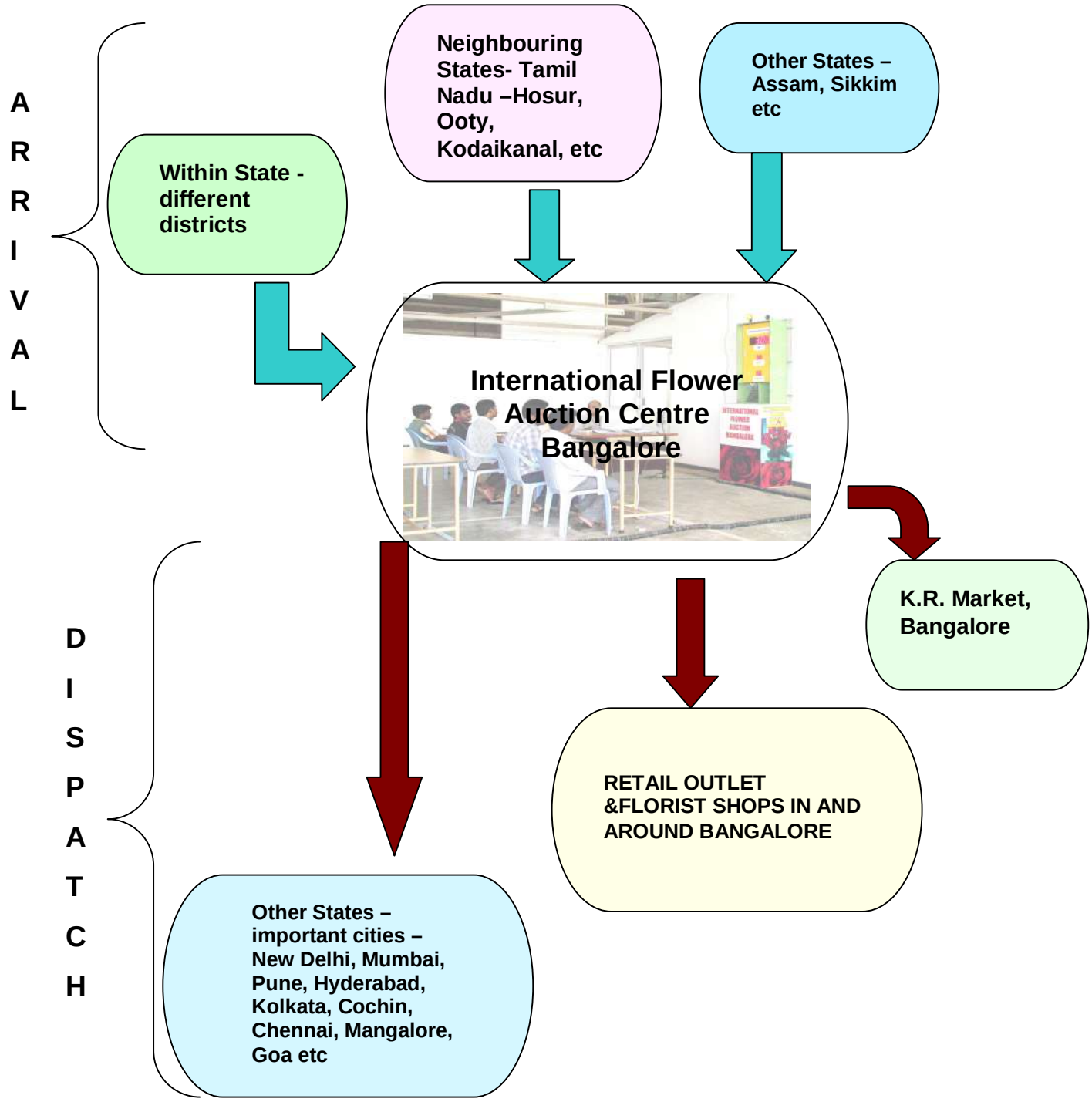


Fig 28. Commodity Flow Pattern in IFAB, Bangalore

4.4 Price Spread and Marketing efficiency for selected flowers (Rose, Gerbera and Jasmine) of Karnataka

Flowers being a perishable commodity and lack of proper storage and marketing facilities along with fragmented value chain lead to wide fluctuations in prices. Being a high value commodity, proper mode of marketing can yield higher returns to the farmers. Hence price spread was studied through different channels for Rose, Gerbera and Jasmine to identify the marketing cost and margin. Average and percentage analysis were used to study the marketing cost, margin and price spread. Marketing efficiency was measured using the Shepherd Index.

Price Spread: There is an inverse relation between farmer's net share and the length of the marketing channel, the larger the marketing channel i.e., the greater the price spread, the lower the farmers net share in the consumer rupee.

Price Spread: Price paid by consumer **–**Net price received by farmer

Producer's share in consumer's price:

Net price received by producer/Consumer's price X100

Marketing efficiency

Shepherd (1972) used the ratio of total value of goods marketed to the marketing cost as a measure of marketing efficiency. Higher the ratio, higher will be the efficiency.

$$\text{Marketing efficiency} = \frac{\text{Value of goods sold or price paid by the consumers}}{\text{Total marketing cost plus margin}}$$

Table 39. Price Spread and Marketing efficiency for selected flowers:

S. No	Particulars	Rose			Gerbera			Jasmine	
		Channel I P-CA-W-R-C	Channel II P-R-C	Channel III P-W-R-C	Channel I P-CA-R-C	Channel II P-R-C	Channel III P-W-R-C	Channel I P-CA-W-R-C	Channel II P-W-R-C
1	Cost incurred by farmers		2.0	2.0	0.35	1.0	1.0	3.0	3.0
2	Producers' selling Price	50 (50.00)	60 (60.00)	60 (60.00)	35 (43.75)	40 (50.00)	50 (62.50)	30 (20.00)	40 (26.67)
3	Net Price received by farmer	50 (50.00)	58 (58.00)	58 (58.00)	34.65 (43.31)	39 (48.75)	49 (61.25)	27 (18.00)	37 (24.67)
4	Commission agents' Purchasing Price	50 (50.00)			35			30 (20.00)	
5	Costs incurred by Commission agent	1.0			3.0				
6	Commission agents' Selling Price	55 (55.00)			55 (68.75)			60 (40.00)	
7	Commission agents' margin	4.0 (4.0)			17 (21.25)			30 (20.00)	
8	Wholesalers' Purchasing Price	55 (55.00)		60 (60.00)			40	60 (40.00)	40 (26.67)
9	Costs incurred by Wholesaler	1.0		1.0			1.0		
10	Wholesalers' Selling Price	65 (65.00)		65 (65.00)			55 (68.75)	100 (66.67)	100 (66.67)
11	Wholesalers' margin	9.0		4.0			14 (17.5)	40 (26.67)	60 (40.00)
12	Retailers' Purchasing Price	65 (65.00)	60 (60.00)	65 (65.00)	55	50	55	100 (66.67)	100 (66.67)
13	Costs incurred by Retailer	4.0	4.0	4.0	3.0	3.0	3.0	5.0	
14	Retailer selling price	100 (100.00)	100 (100.00)	100 (100.00)	80 (100.00)	80 (100.00)	80 (100.00)	150 (100.00)	150 (100.00)
15	Retailer's Margin	31 (31.00)	36 (36.00)	31 (31.00)	22 (27.5)	27 (33.75)	22 (27.5)	45 (30.00)	45 (30.00)
16	**Producer's share in Consumer rupee**	50.00	58.00	58.00	43.31	61.25	48.75	18.00	24.67
17	**Price Spread (percent)**	50	42	42	56.69	38.75	51.25	82.00	75.33
18	**Shepherd Index for Marketing Efficiency**	2.0	2.38	2.38	1.76	2.58	1.95	1.21	1.38

It was observed that the flowers reached the market through various marketing channel for all the three flowers namely rose, gerbera and jasmine. (Detailed price

spread study has been presented in Table 39) It was found that producers share in Consumer rupee was higher in all the three flowers i.e rose, gerbera and jasmine when he himself brought the product to market and sold to wholesaler or retailer rather than sale through the commission agents. It was highest when the producer sold directly to the retailer as observed in case of rose (58%) and gerbera (61.25%). Thus the shorter the marketing channel, the greater is the farmers share in consumer rupee and price spread was lower.

Producers' share in consumer rupee was lower compared to other channel when the producer sold his produce to the middlemen at farm gate. It was 50% in rose, 43.31% in gerbera and 18% in Jasmine.

For the Channel Producer – Wholesaler – Retailer – Consumer, producer's share in Consumer's rupee was highest in Rose (58%) followed by Gerbera (48.75%) and Jasmine (24.67 %).

Overall, producers share in consumer rupee for all the channels was more consistent in case of rose followed by Gerbera. Producers share in consumer rupee was found to be comparatively low in case of traditional flower like Jasmine while it was higher in case of hi –tech flowers like rose and Gerbera. Hence price spread was highest in Jasmine.

Wholesaler's margin was less than that of retailer for rose and gerbera. However, for Jasmine, wholesaler's margin was higher than that of retailer. Retailer's margin was highest when they purchased directly from the farmers 36% for rose and 27% for Gerbera.

Marketing cost in roses is 2% for farmers (Channel II &III) and even less for wholesalers (1 % by Channel 1 and III).For retailer, marketing cost is 4% but the margin for retailer is also very high.

Marketing cost in gerbera is 1.25% for farmers (Channel II &III) and 0.5 % (Channel I), for wholesalers 1.25 % and 3.75 % for commission agent. However

margin of Commission agent is higher than wholesaler. For retailers, marketing cost is 3.75% but the margin for retailer is the highest.

For Comparative study of the three flowers i.e Rose, Gerbera and Jasmine, the marketing channel common for the three flowers: **Producer –wholesaler –Retailer –Consumer** was selected. Producers share in consumer rupee was highest in case of rose followed by Gerbera and Jasmine. Alternately, price spread was lowest in rose followed by Gerbera and Jasmine. Higher the price, lower is the producers share in consumer rupee.

Marketing efficiency was calculated using Shepherd's index. Marketing efficiency for the Channel **Producer –Wholesaler –Retailer –Consumer** was highest in rose (2.38) followed by Gerbera (1.95) and Jasmine (1.38). However, marketing efficiency for gerbera was higher i.e 2.58 as compared to rose i.e 2.38, when the producer directly sold to the retailer. However, marketing efficiency of rose was more consistent among all the channels and on an average higher than that of Gerbera and Jasmine.

Among all the Channels, ***Marketing efficiency was highest for the Channel Producer –retailer –wholesaler. Hence this channel was found to be the most efficient.*** *Marketing efficiency was lowest when commission agent was involved in the marketing channel.*

The price spread and marketing efficiency study indicates that both rose and gerbera have good market potential. At present, rose by virtue of being a more popular flower, is giving good return to the farmers but Gerbera is also not far behind. However, efforts are needed to boost the marketing potential of traditional flowers like Jasmine.

Both rose and gerbera were found to be market efficient flowers and fetched handsome returns. Efforts for direct marketing can be strengthened to get higher profits. In case of jasmine, direct marketing by farmers is not being practiced. It should be encouraged which may help them to get higher returns.

4.5 Economics Of Production And Marketing Of Hi-Tech Flowers in Karnataka

This section provides an insight of the economics of floriculture. An analysis of cost and return of the hi tech rose and Gerbera would help to understand the economics of these flowers. However, no comparison across the taluks have been made. The cost and return for a farmer having cultivation under one hectare land has been studied for a particular flower and average of 5/6 farmers across different taluks have been taken for the study. Analysis has been restricted to a particular flower cultivated on at least one hectare of land. Where sample farmer had land more than one hectare, the cost has been converted to per hectare. The study is strictly based on primary data collected during field survey.

Cost and return of Gerbera Cultivation:

Among the sample farmers cultivating gerbera under polyhouse condition, 6 farmers belonging to different taluks were selected for this study having cultivation in land area on one hectare and above.

Cost of cultivation of gerbera can be classified into fixed cost, variable cost and marketing costs. The fixed costs are setting up of polyhouse, machinery, drip irrigation and cold storage. The variable cost include cost of planting materials, land /bed preparation, fertilizers, pesticides, labour, maintenance, irrigation and bank loan repayment cots. The marketing costs mainly include transportation and grading/packaging costs.

The establishment cost includes fixed costs such as setting up of polyhouse, machinery, drip irrigation, cold storage and variable costs like land preparation, planting material, fertilizers, pesticides etc.

Costs for 1st year includes both fixed cost as well as variable cost and marketing costs. Land preparation and planting material are variable cost but sowing is done once in three years. Hence cost for 2nd year does not included fixed cost as well as cost for land preparation and planting material. The cost and return of gerbera for 1st year is presented in table 40 and for 2nd year is placed in table 41.

Table 40. Establishment cost of Gerbera and return for 1st year

Production Cost (Gerbera)	Cost in Rs. Per year 1st Year						Average Cost 1st year	% of Total Cost
Components	Anekal	Nelamangala	Mandya	Mandya	Mysore	Anekal		
Fixed Cost (one time)								
Machinary	400000	350000	416666	416666	416666	416666	402777.3	3.73
Drip	250000	300000	250000	250000	208333	250000	251388.8	2.33
Polyhouse set up (for 25 years)	4500000	4650000	5500000	5500000	4800000	5000000	4991667	46.19
Cold Storage	450000	450000	250000	250000	208333	250000	309722.2	2.87
Total fixed cost	**5600000**	**5750000**	**6416666**	**6416666**	**5633332**	**5916666**	**5955555**	55.11
Variable Cost								
Seeds & Planting material Sown once in 3 years	1820000	2080000	2250000	2000000	1770833	1983333	1984028	18.36
Land/Bed Preparation	50000	80000	**50000**	**50000**	**50000**	**50000**	55000	0.51
Fertilizers	180000	216,000	125,000	125,000	104,166	125,000	145861	1.35
Pesticides	180000	180000	166666	125000	125000	125000	150277.7	1.39
Manure, Cowdung								
Labour & Maintenance	600000	600000	600000	600000	600000	600000	600000	5.55
Irrigation water	10000	15000	25000	25000	30000	25000	21666.67	0.20
Bank loan repayment	2400000	1520000	1333000	1666666	1666666	1666666	1708833	15.81
Total Variable cost	**5240000**	**4691000**	**4549666**	**4591666**	**4346665**	**4574999**	**4665666**	43.18
								0.00
Total FC + VC	**10440000**	**10441000**	**10966332**	**11008332**	**9979997**	**10491665**	**10621221**	98.29
Marketing Cost								
Transportation								
Grading	200000	200000	208333	166666	166666	166666	184721.8	1.71
Total Marketing Cost	**200000**	**200000**	208333	**166666**	**166666**	**166666**	**184721.8**	1.71
Total VC +MC	5440000	4891000	4757999	4758332	4513331	4741665	4850388	44.89
Total FC + VC +MC	**11040000**	**10641000**	**11174665**	**11174998**	**10146663**	**10658331**	***10805943**	100.00
Yield (Cut flowers/year/ha)	**2250000**	**2500000**	**2500000**	**2500000**	**2083000**	**2500000**	**2388833**	
Handling loss in %	12	12	12	12	12	12	**12**	
Average Cost per stick	4.91	4.26	4.47	4.47	4.87	4.26	**4.54**	
Average Price per stick	3	3.5	3.5	3.5	3	3.25	**3.29**	
Net yield	**1980000**	**2200000**	**2200000**	**2200000**	**1833040**	**2200000**	**2102173**	
Gross Income	**5940000**	**7700000**	**7700000**	**7700000**	**5499120**	**7150000**	****6948187**	
Net income over VC +MC	**500000**	**2809000**	**2942001**	**2941668**	**985789**	**2408335**	**2097799**	
Total deficit over total cost							**-3857756**	

** Average of total cost of Six sample farmers from different taluks*

***Average of gross income of Six sample farmers from different taluks*

Table 41. Operating cost and return of gerbera cultivation for 2nd year

Production Cost (Gerbera)	Cost in Rs. Per year 2nd Year						Average Cost 2nd year	% of Total Cost
Components	**Anekal**	**Nelamangala**	**Mandya**	**Mandya**	**Mysore**	**Anekal**		
Fixed Cost (one time)								
Machinary								
Drip								
Polyhouse set up								
(for 25 years)								
Cold Storage								
Total fixed cost								
Variable Cost								
Seeds & Planting material								
Sown once in 3 years								
Land/Bed Preparation								
Fertilizers	180000	216,000	125,000	125,000	104,166	125,000	145861	5.19
Pesticides	180000	180000	166666	125000	125000	125000	150277.67	5.35
Manure, Cowdung								
Labour & Maintenance	600000	600000	600000	600000	600000	600000	600000	21.34
Irrigation water	10000	15000	25000	25000	30000	25000	21666.667	0.77
Bank loan repayment	2400000	1520000	1333000	1666666	1666666	1666666	1708833	60.78
Total Variable cost	**3370000**	**2531000**	**2249666**	**2541666**	**2525832**	**2541666**	**2626638.3**	93.43
Marketing Cost								
Transportation &								
Grading	200000	200000	208333	166666	166666	166666	184721.83	6.57
Total Marketing Cost	**200000**	**200000**	208333	**166666**	**166666**	**166666**	**184721.83**	6.57
								0.00
TotalVC +MC	3570000	2731000	2457999	2708332	2692498	2708332	***2811360.2**	100.00
Deficit from 1st year							**3857756.00**	
Yield (Cut flowers/year/ha)	**2250000**	**2500000**	**2500000**	**2500000**	**2083000**	**2500000**	**2388833.33**	
Average Cost per stick	**1.59**	**1.09**	**0.98**	**1.08**	**1.29**	**1.08**	**1.19**	
Handling loss in %	**12**	**12**	**12**	**12**	**12**	**12**	**12.00**	
Net yield	**1980000**	**2200000**	**2200000**	**2200000**	**1833040**	**2200000**	**2102173.33**	
Average Price per stick	**3**	**3.5**	**3.5**	**3.5**	**3**	**3.25**	**3.29**	
Gross Income	5940000	7700000	7700000	7700000	5499120	7150000	****6948186.7**	
Net income over VC +MC	**2370000**	**4969000**	**5242001**	**4991668**	**2806622**	**4441668**	**279070.50**	

** Average of total cost of Six sample farmers from different taluks*

***Average of gross income of Six sample farmers from different taluks*

Table 42. Cost and return of Gerbera for 1st to 4th year of Cultivation*

Components	Average Cost in Rs. 1st year	% of Total Cost	Average Cost in Rs. 2nd year	% of Total Cost	Average Cost in Rs. 3rd year	% of Total Cost	Average Cost in Rs. 4th year	% of Total Cost
Fixed Cost (one time)								
Machinary	402777.3	3.73						
Drip	251388.8	2.33						
Polyhouse set up (for 25 years)	4991667	46.19						
Cold Storage	309722.2	2.87						
Total fixed cost	**5955555**	55.11						
Variable Cost								
Seeds & Planting material	1984028	18.36					1984028	40.90
Sown once in 3 years								0.00
Land/Bed Preparation	55000	0.51					55000	1.13
Fertilizers &Manures	145861	1.35	145861	5.19	145861	5.19	145861	3.01
Pesticides	150277.7	1.39	150277.7	5.35	150277.7	5.35	150277.7	3.10
Labour & Maintenance	600000	5.55	600000	21.34	600000	21.34	600000	12.37
Irrigation water	21666.67	0.20	21666.67	0.77	21666.67	0.77	21666.67	0.45
Bank loan repayment	1708833	15.81	1708833	60.78	1708833	60.78	1708833	35.23
Total Variable cost	**4665666**	43.18	**2626638**	93.43	**2626638**	93.43	**4665666**	96.19
		0.00						
Total FC + VC	**10621221**	98.29						
Marketing Cost								
Transportation								
Grading	184721.8	1.71	184721.8	6.57	184721.8	6.57	184721.8	3.81
Total Marketing Cost	**184721.8**	1.71	**184721.8**	6.57	**184721.8**	6.57	**184721.8**	3.81
								0.00
Total VC +MC	**4850388**	44.89	**2811360**	100.00	**2811360**	100.00	**4850388**	100.00
Total FC + VC +MC	**10805943**	100.00						
Deficit from 1st year			**3857756**					
****Gross Income**	**6948187**		**6948187**		**6948187**		**6948187**	
Net income			**279070**		**4136827**		**2097799**	
Total deficit over total cost	**-3857756**							
Average Cost per stick	**4.54**		**1.19**		**1.19**		2.03	
Average Price per stick	**3.29**		**3.29**		**3.29**		**3.29**	

**Projections based on primary data collected*

***Average of gross income of Six sample farmers from different taluks*

The total cost for Gerbera cultivation and marketing is 1,08,05,943/-. The establishment cost including fixed cost and variable cost for 1st year is 1,06,21,221. The total fixed cost is Rs.59,55,555/- which is 55% of total cost. The marketing cost is less than 2% (1.71%) for 1st year and 6.5% for second year. Seeds and planting material account for a substantial 18.36% which is near about one fifth of total cost. However, planting is done once in 3 years.

Fertilizers and pesticides together account for about 2.74% in 1st year and 10.54% in 2nd year. Setting of drip irrigation facilities costs 2.33% of total cost but annual water cost is 0.2 % in 1st year and 0.77% in 2nd year.

Since establishing polyhouses requires huge initial investments, bank loan repayment costs are high 15.8% in 1st year and 60.78% in 2nd year. But as the return from polyhouse flower cultivation is also very high, most farmers are able to repay their loans within a short period.

Gross income from one hectare cultivation of Gerbera is about 69 lakh 48 thousand rupees. Total deficit in 1st year is 38,57,756 while in second year income after deducting variable and marketing cost as well as deficit from 1st year is 2,79,070/-. This means that in 2nd year of cultivation, they can break even and earn profit as well.

As per projections, 3rd year profit is expected to be around 41 lakhs as deficit of first year is recovered in the 3rd year of cultivation. In the fourth year, there is a substantial expenditure on planting materials around 20 lakhs. However, gerbera cultivation continues to yield profit and in 4th year after deducting the variable costs including planting materials, net income from one hectare land is nearly Rs. 21 lakhs. Profits are even higher after farmers repay their loan.

Cost per stick for gerbera cultivation is Rs. 4.54 (including fixed costs) in the first year while it is lower in 2nd and 3rd year about Rs.1.19. In the fourth year, it is slightly higher, around Rs. 2 per stick since cost of planting material is incurred. Price received per stick on an average is Rs.3.29. Although in the first year, there is a loss

of Rs.1.25, in the subsequent year, the cultivation yield a profit of Rs. 2.1 per stick in the 2nd and 3rd year. In the fourth year, due to replanting, the profit is Rs.1.26 per stick.

From the projections, it is evident that gerbera cultivation in a polyhouse is a profitable venture and yields good returns.

Cost and return of Rose Cultivation:

Among the sample farmers cultivating rose under polyhouse condition, 5 farmers belonging to different taluks were selected for this study having cultivation in land area on one hectare and above.

Cost of cultivation of rose can be classified into fixed cost, variable cost and marketing costs. The fixed costs are setting up of polyhouse, machinery, drip irrigation and cold storage. The variable cost include cost of planting materials, land /bed preparation, fertilizers, pesticides, labour, maintenance, irrigation and bank loan repayment costs. The marketing costs mainly include transportation and grading/packaging costs.

The establishment cost includes fixed costs such as setting up of polyhouse, machinery, drip irrigation, cold storage and variable costs like land preparation, planting material, fertilizers, pesticides etc.

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Costs for 1st year includes both fixed cost as well as variable cost and marketing costs.

Land preparation and planting material are variable cost but sowing is done once in three years. Hence cost for 2nd year does not included fixed cost as well as cost for land preparation and planting material. The cost and return of rose for 1st year is presented in table 43 and for 2nd year is placed in table 44.

Table 43. Establishment cost of Rose and return for 1st year

Production Cost Rose	Anekal	Cost in Rs. Per year Doddaballapur	1st Year Chickballapur	Tumkur road	Anekal	Average 1st year	Total Cost
Fixed Cost (one time)							
Machinary	500000	500000	500000	500000	500000	500000	5.84
Drip	250000	200000	300000	300000	200000	250000	2.92
Polyhouse set up (for 25 years)	4700000	4700000	4750000	5000000	4700000	4770000	55.68
Cold Storage	600000	650000	600000	800000	400000	610000	7.12
Total fixed cost	**6050000**	**6050000**	**6150000**	**6600000**	**5800000**	**6130000**	71.55
Variable Cost							
Seeds & Planting material	390000	405000	350000	451562	375000	394312.4	4.60
Land/Bed Preparation	150000	100000	180000	150000	125000	141000	1.65
Fertilizers &manures	215000	333,333	400,000	400,000	416,666	352999.8	4.12
Pesticides	300000	333333	375000	450000	333333	358333.2	4.18
Labour	360000	320000	280000	250000	250000	292000	3.41
Irrigation water	15000	15000	15000	15000	15000	15000	0.18
Bank loan repayment	320000	426666	575000	480000	466666	453666.4	5.30
Maintenance	300000	300000	300000	300000	300000	300000	3.50
Total Variable cost	**2050000**	**2233332**	**2475000**	**2496562**	**2281665**	**2307312**	26.93
Total FC + VC	8100000	8283332	8625000	9096562	8081665	8437312	98.48
Marketing Cost							
Transportation Grading &Packing	150000	200000	100000	100000	100000	130000	1.52
Total Marketing Cost	**150000**	**200000**	**100000**	**100000**	**100000**	**130000**	1.52
TotalVC +MC	2200000	2433332	2575000	2596562	2381665	2437312	28.45
Total FC + VC +MC	**8250000**	**8483332**	**8725000**	**9196562**	**8181665**	**8567312**	100.00
Yield (Cut flowers/year /ha)	**1200000**	**1600000**	**1912500**	**1625000**	**1680000**	1603500	
Average Cost per stick	**6.88**	**5.30**	**4.56**	**5.66**	**4.87**	5.45	
Handling loss in %	**15%**	**15%**	**15**	**15**	**15**	15	
Average price per stick	**3**	**3**	**2.75**	**3.75**	**3.25**	3.15	
Net yield	**1020000**	**1360000**	**1625625**	**1381250**	**1428000**	1362975	
Gross Income	**3060000**	**4080000**	**4470468.8**	**5179687.5**	**4641000**	**4286231**	
Net income over VC +MC	**860000**	**1646668**	**1895468.8**	**2583125.5**	**2259335**	**1848919**	
Total deficit over total cost						**-4281081**	

** Average of total cost of Six sample farmers from different taluks*

***Average of gross income of Six sample farmers from different taluks*

Table 44. Operating cost and return of rose cultivation for 2nd year

Production Cost Rose	Cost in Rs. Per year		2nd Year			Average	Total
	Anekal	Doddaballapur	Chickballapur	Tumkur road	Anekal	2nd year	Cost
Fixed Cost (one time)							
Machinary							
Drip							
Polyhouse set up							
(for 25 years)							
Cold Storage							
Total fixed cost							
Variable Cost							
Seeds &							
Planting material							
Land/Bed Preparation							
Fertilizers &manures	215000	333,333	400,000	400,000	416,666	352999.8	18.56
Pesticides	300000	333333	375000	450000	333333	358333.2	18.84
Labour	360000	320000	280000	250000	250000	292000	15.35
Irrigation water	15000	15000	15000	15000	15000	15000	0.79
Bank loan repayment	320000	426666	575000	480000	466666	453666.4	23.85
Maintenance	300000	300000	300000	300000	300000	300000	15.77
Total Variable cost	**1510000**	**1728332**	**1945000**	**1895000**	**1781665**	**1771999**	93.17
Marketing Cost							
Transportation	150000	200000	100000	100000	100000	130000	6.83
Grading &Packing							0.00
Total Marketing Cost	**150000**	**200000**	**100000**	**100000**	**100000**	**130000**	6.83
TotalVC +MC	1660000	1928332	2045000	1995000	1881665	1901999	100.00
Deficit from 1st year						**4281081**	
Yield (Cut flowers/year /ha)	**1200000**	**1600000**	**1912500**	**1625000**	**1680000**	1603500	
Average Cost per stick	**1.38**	**1.21**	**1.07**	**1.23**	**1.12**	1.20	
Handling loss in %	**15%**	**15%**	**15**	**15**	**15**	15	
Average price per stick	**3**	**3**	**2.75**	**3.75**	**3.25**	3.15	
Net yield	**1020000**	**1360000**	**1625625**	**1381250**	**1428000**	1362975	
Gross Income	**3060000**	**4080000**	**4470469**	**5179688**	**4641000**	**4286231**	
Net income over VC +MC	**1400000**	**2151668**	**2425469**	**3184688**	**2759335**	**2384232**	
Total deficit over total cost						**-1896849**	

** Average of total cost of Six sample farmers from different taluks*

***Average of gross income of Six sample farmers from different taluks*

Table 45 Cost and return of Rose for 1st to 3rd year of Cultivation*

Components	Average Cost in Rs. 1st year	% of Total Cost	Average Cost in Rs. 2nd year	% of Total Cost	Average Cost in Rs. 3rd year	% of Total Cost
Fixed Cost (one time)						
Machinary	500000	5.84				
Drip	250000	2.92				
Polyhouse set up (for 25 years)	4770000	55.68				
Cold Storage	610000	7.12				
Total fixed cost	**6130000**	71.55				
Variable Cost						
Seeds & Planting material	394312.4	4.60				
Land/Bed Preparation	141000	1.65				
Fertilizers &Manures	352999.8	4.12	352999.8	18.56	352999.8	18.56
Pesticides	358333.2	4.18	358333.2	18.84	358333.2	18.84
Labour	292000	3.41	292000	15.35	292000	15.35
Irrigation water	15000	0.18	15000	0.79	15000	0.79
Bank loan repayment	453666.4	5.30	453666.4	23.85	453666.4	23.85
Maintenance	300000	3.50	300000	15.77	300000	15.77
Total Variable cost	**2307312**	26.93	**1771999**	93.17	**1771999**	93.17
Total FC + VC	8437312	98.48				
Marketing Cost						
Transportation, Grading and	130000	1.52	130000	6.83	130000	6.83
Packing				0.00		0.00
Total Marketing Cost	**130000**	1.52	**130000**	6.83	**130000**	6.83
Total VC +MC	2437312	28.45	**1901999**	100.00	**1901999**	100.00
Total FC + VC +MC	**8567312**	100.00				
Deficit from previous year			**4281081**		**1896849**	
****Gross Income**	**4286231**		**4286231**		**4286231**	
Net income					**487383.2**	
Total deficit over total cost	**-4281081**		**-1896849**			
Average Cost per stick	**5.45**		**1.20**		**1.20**	
Average Price per stick	**3.15**		**3.15**		**3.15**	

**Projections based on primary data collected*

***Average of gross income of Six sample farmers from different taluks*

The total cost for rose cultivation and marketing is 85,67,312/-. The establishment cost including fixed cost and variable cost for 1st year is 84,37,312/-. The total fixed cost is Rs.61,30,000/- which is 71.5% of total cost. The marketing cost is 1.5% for 1st year and 6.8% for second year.

Fertilizers and pesticides together account for about 8.3 % in 1st year and 37% in 2nd year. Setting of drip irrigation facilities costs about 3% of total cost but annual water cost is 0.2 % in 1st year and 0.8% in 2nd year.

Since establishing poly houses requires huge initial investments, bank loan repayment costs are high 5% in 1st year and 23% in 2nd year. But as the return from poly house flower cultivation is also very high, most farmers are able to repay their loans within a short period.

Gross income from one hectare cultivation of rose is about 42 lakh 86 thousand rupees. Total deficit in 1st year is 42,81,081 while in second year the deficit comes down to 18,96,849/-. In the 3rd year, farmer is able to break even and generate profit and the net income is around 4 lakh 87 thousand. After overcoming the deficit, hitech rose cultivation can yield a profit of more than 20 lakhs per hectare per year. Profits are even higher after farmers repay their loan.

Cost per stick for rose cultivation is Rs. 5.45 (including fixed costs) in the first year while it is lower in 2nd and 3rd year about Rs.1.20. Price received per stick on an average is Rs.3.15. Although in the first year, there is a loss of Rs.2.30, in the subsequent years the cultivation yields a profit of about Rs. 2 per stick in the 2nd and 3rd year.

From the projections, it is evident that rose cultivation in a polyhouse is a profitable venture and yields good returns.

4.6 Market Infrastructure for Floriculture in Karnataka and Potential for Public Private Partnership

Floriculture has become a booming industry in the World today and flowers have emerged as an important commercial crop. Floriculture, besides fulfilling our aesthetic and social requirement also ensures a higher rate of return to the rural people. Floriculture generates a lot of economic activity from production till marketing and export.

Recognizing the importance of floriculture, Ministry of Commerce and Industry, Govt. of India has declared floriculture as an extreme focus area and the sector has gained a special status in the basket of India's export commodities.

From the study of economics of production and marketing, it is evident that floriculture industry requires large investments and has tremendous potential to yield greater returns.

Over the years, there has been a growth of floriculture units throughout the Country. Growers/ exporters are provided assistance under its various schemes for making improvements in packaging, creation of infrastructure etc.

Infrastructure in Karnataka Floriculture

Modern floriculture under greenhouse has gained momentum in Karnataka. Many farmers are cultivating modern flowers like hi tech Gerbera, Carnation etc on a commercial basis under green house condition. They have developed their floriculture units on their own land through bank assistance.

However, marketing infrastructure facilities for floriculture is largely required in Karnataka. Although Karnataka has got International Flower Auction at Bangalore (IFAB), which is not only India's first flower auction Centre but also has sophisticated infrastructure including electronic auction system, cold storage etc. However, at present auction takes place only for roses. Also, the market has a limited clientele

while majority of farmers sell their flowers in K.R. market which is highly unorganized and does not have any infrastructure facilities.

Considering the fact that flowers are high value highly perishable commodity and require delicate handling, there is need to develop modern infrastructure markets for flowers in Karnataka. With Govt. of India providing attractive subsidy, there is scope for such markets coming up under public private partnership.

Design and Plan of Flower markets should include:

- Market yard under a management committee
- Auction platform
- Management of facilities and infrastructure
- Post harvest infrastructure
- Electronic auction facility
- Pack house facility
- Cold Storage
- Transparency in operation
- Regular payment to growers

4.7 Constraints and Problems in Floriculture and suggested remedial measures

This section presents the various problems faced by the flower growers. This information was collected during primary survey which gives us an insight into the requirement of the flower growers in the State. The floriculture sector has immense income potential and hence the constraints and problems need to be addressed for enhancing the prospects of this field. The remedial measures presented in this section are the suggestions and need of the flower growers.

Lacunae in Marketing system and Constraints faced by growers:

Rose and Gerbera

1. Very Unorganized Market
2. Lack of proper platform for sale of cut flowers –limited area
3. Fragmented marketing Channel
4. Exploitation by middleman
5. Lack of Storage facilities
6. Need for cold storage in market area
7. Need for organized market channel
8. Transparent auction to get good price
9. Need for good hygiene facilities
10. Low price due to lack of storage facility in market
11. Time constraint (3 am to 7.30 am)
12. Lack of market information
13. Price fluctuations
14. Need for an organized wholesale market for flowers

Jasmine

1. Labour
2. Marketing –unorganized market
3. bad roads
4. less price
5. Distress sale

The constraints in Marketing of flowers can be summarized as below:

Unorganized Market: Since flowers are not a notified commodity in Karnataka, there is no regulated market yard for flowers. Although, there is an International Flower auction Centre (IFAB) at Bangalore, it has limited clientele and majority of farmers sell there produce in a local Krishna Rajendra Market (KR Market) which is highly unorganized. The market operates along the road side near bus stand from morning 3.00 am to 7.30am. Then the flower growers and traders are forced to close there activities and move out of that place. Karnataka, being a leading State in

floriculture in India, there is an immediate need for an organized wholesale market for flowers in Karnataka.

Lack of proper infrastructure: Being a road side market, there is no market infrastructure available for sale of flowers. There is lack of platform, storage etc in the market area. Being a highly perishable commodity, there is need for cold storages near the market place. Storage facilities are a prerequisite for maintaining the freshness of the flowers particularly the modern flowers. Lack of storage facilities leads to post harvest losses and distress sale.

Lack of facilities in the market area: The market also lacks the basic hygiene facilities. The flowers are traded under unhygienic conditions. Many flowers also get mutilated. There is also need for a transparent auction system which would help the growers to get better price for their produce.

Lack of organized market channel: At present the marketing channel for floriculture is highly fragmented. Hence the farmers are also subject to exploitation by the middlemen. The farmers end up getting less price for their high value crop.

Lack of Market information: Demand for flowers is seasonal and hence proper price discovery is necessary to get the right price for their produce. At present, there is no mechanism for price discovery. The farmers assume the demand based on previous years experience, marriage seasons, Valentines etc and upon visit to the market. Since there is no regulated market, there is no market information system on price and demand.

Lack of database on floriculture:

There is also lack of record of total transactions and trade that takes place in Karnataka as it takes place under unorganized condition except IFAB. Being a commercial and revenue earning crop, there is an immediate need to develop a database of trade in floriculture across the State.

Constraints for Export

1. Lack of post harvest infrastructure and cold storages leading to prolonged exposure of flowers to open condition.

2. Quarantine procedures delay export affecting quality of the flowers

3. Export is seasonal (Valentines Day and New year) and takes place during winter months when European countries experience extreme cold

4. High freight charges reduce the economic viability of exports

Suggestions by flowers growers to remove the lacunae in Marketing of flowers Rose and Gerbera (Hi-tech cut flowers)

1. Development of organized wholesale market for flowers
2. Development of cold storage facilities
3. Transparent auction system to fetch higher price
4. Government intervention required to promote marketing of flowers in Karnataka
5. Developing mode of market price dissemination to growers
6. Decreasing the involvement of middlemen
7. Govt. intervention for Transfer to modern technology to improve quality of flowers
8. Encourage crop diversification through floriculture
9. Financial support from the banks
10. Attractive subsidies
11. Modern infrastructure facilities to be developed by the Govt.
12. Promotion of Export and assistance to be provided to the growers

Jasmine (Traditional flower)

1. Good marketing facilities
2. Organized market
3. Good infrastructure facilities in the Market
4. Govt involvement
5. Reducing middlemen

CHAPTER 5

SUMMARY AND RECOMMENDATION

Major findings of the Study

The Study is summarized as below:

1. In India, floriculture is emerging as an important commercial crop. Post liberalization, the Government of India identified this activity as a sunrise industry and accorded it 100 per cent export-oriented status. However, the records of commercial activity in the field are very few. There are not many large farms engaged in organized floriculture and cultivation of flowers is carried out on small holdings, mainly as a part of the regular agriculture systems.

2. The estimated area under floriculture in the country has increased from 106'000 hectares in 2001-02 to 161'000 hectares in 2007-08. The production of loose flowers increased from 535 000' Metric Tonnes in 2001-02 to 870 000'Metric Tonnes in 2007-08.

3. The year 2006-07 witnessed a boom in floriculture in the State with a sharp rise in both cut flowers and traditional flower cultivation.

4. In the year 2007-08, the top ten States in floriculture were West Bengal, Tamil Nadu, Andhra Pradesh, Karnataka, Maharashtra, Gujarat, Uttar Pradesh, Haryana, Delhi and Rajasthan. These 10 states accounted for 93% of the total area in the Country. The Southern States namely Tamil Nadu, Andhra Pradesh and Karnataka accounted for 45% of the area in the country. West Bengal alone accounts for 17 % of the total area in the Country which is more than 1/6th of the total area. Karnataka on the other hand was holding second position in land area in the year 2005-06 and 2006-07 but has dropped to 4th position in the year 2007-08. There has been a gradual decline in the area under floriculture in Karnataka over the past three years.

5. Major loose flower producing States in the Country in 2007-08 were Tamil Nadu (24.63% of the total Country's Production) followed by Karnataka (19.43 %), Andhra Pradesh (14.51 %), Punjab (8.95 %), Maharashtra (7.98 %), Haryana (7.10 %), Gujarat (5.69 %) and West Bengal (5.57 %). These eight States accounted for 94 % of India's total loose flower production. The Southern States Viz. Tamil Nadu, Karnataka and Andhra Pradesh accounted for 58% of India's total loose flower production.

6. From the data available, major cut flower producing States are West Bengal, Tamil Nadu, Karnataka and Maharashtra.

7. India's Export of floriculture has increased from Rs. 299.41 Crores in 2005-06 to Rs. 649.83 Crores in 2006-07. U.S.A, Japan, U.K, Netherlands and Germany are major countries which imports flowers from India. More than 50% of the floriculture units are based in South zone mainly in Karnataka, Andhra Pradesh, Tamil Nadu. The liberalized economy has given an impetus to the Indian entrepreneurs for establishing export oriented floriculture units under controlled climatic conditions. In spite of this, the share of Indian flower exports is less than 1% in International Market.

8. In the year 2006-07, Floriculture contributed about 3% of the total value of India's export which was significantly higher than that of the previous year i.e. 2005-06 at 1.60%. This is a clear indicative of the growing demand for flowers in the International Market and India's growing presence in the global platform. However, dropped sharply to 1.06 % in 2007-08.

9. Karnataka is a major floriculture State in the Country with 22,340 hectares of area under floriculture accounting for 14% of Country's total area and a production of 169,120 metric tones of loose and 5550 Lakh number cut flowers accounting for 20% of loose and 13% of cut flower production of the Country.

10. Karnataka occupied second position in land area in the year 2005-06 and 2006-07 but has dropped to 4th position in the year 2007-08. There has been a gradual decline in the area under floriculture in Karnataka over the past three years. However, in loose flower production, Karnataka has consistently maintained second position from 2005-06 to 2007-08.

11. The top 10 districts in terms of area under Floriculture in Karnataka in 2006-07 were Kolar, Tumkur, Bangalore Rural, C.R. Nagar, Haveri, Mysore, Davanagere, Mandya, Bangalore Urban, , and Chitradurga. These districts cover Three fourth of the total area under floriculture in Karnataka, the remaining 17 districts contributing only one fourth.

12. Tumkur continues to dominate in terms of highest production under floriculture in the State both in 2005-06 and 2006-07 followed by Kolar. However, total percent share in production has gone down for both Tumkur and Kolar in 2006-07 as compared to 2005-06.

13. Inspite of vast potential for floriculture in the State, productivity of many flowers has decreased in 2006-07 as compared to 2005-06. This is mainly due to reduction in area under floriculture. One of the reasons may be lack of organized wholesale market and adequate infrastructure facilities. Floriculture requires vast investment. Due to small land holdings, lack of technical know-how and supply of improved planting materials, farmers are often hesitant to take risk in doing large scale flower cultivation.

14. Kolar district has the highest area under rose cultivation followed by Bangalore rural and Bangalore Urban. Bangalore rural has highest area for Jasmine cultivation. For Gerbera cultivation, Bangalore Urban has the highest area, while Bangalore rural ranks 3rd and Mandya ranks 5th.

15. Districts selected for Primary Study were Bangalore Rural, Bangalore Urban, Kolar, Mysore and Mandya. These districts are among the top ten districts of Karnataka dominating in Floriculture in both area and production.

16. Under National Horticulture Mission, there is budgetary provision for floriculture development in Karnataka. However, it is observed that the target realized is far below both in terms of physical and financial targets.

17. Bangalore is one of the major flower trading Centre of the Country. Marketing of flowers mainly taken place at Krishna Rajendra Market (K.R. Market) in Bangalore City which is the primary wholesale market. All the major cut flowers such as Roses, Gerbera, Anthurium, Carnation etc from major districts of Karnataka are sold in this market. Besides, Gerbera from Ooty, orchids from Bangkok and flowers from Hosur are also traded here. Even though Tamil Nadu leads the flower production in India, the flowers are sold in the Bangalore K. R. Market.

18. Inspite of the fact that this market is the only option to sell commercial cut flowers in Bangalore and Karnataka in general, it is largely unorganized and is situated near the bus stand and trading of high value cut flowers take place along the road side under unhygienic conditions. There are no marketing infrastructure facilities available and no market management in the market.

19. India's first flower auction Centre was set up at Bangalore. In order to run the flower auction, a joint venture company under the name and style of M/S INTERNATIONAL FLOWER AUCTION BANGALORE LIMITED (IFAB) was incorporated on 1st May 2002 with GOK and SIFA (South Indian Floriculture Association) as the main share holders. IFAB is a joint venture under public private partnership scheme.

20. IFAB has the facility of Transparent Auction System by the electronic & digitally controlled operations; Receiving centers, grading-cum-quality checking area, cold storages & packing halls, distribution area, visitors gallery; Material handling equipments; Immediate payment to farmers; and hassle free trading through the computer network from anywhere in the world.

21. The market is open daily and auction takes place all 365 days. At present flower auction takes place for cut roses. Dutch auction system is followed which begins at the top and comes down. Only registered producer/buyers are allowed to bid here. Quality of the flowers is checked before putting them to the auction. Registration fees is Rs. 5000/- for life member. Market service charge is 2.5% levied on both the farmers and buyers i.e 5% for each transaction amount. There are about 15 -20 transactions each day.

22. Malleswaram market has retail shop of flowers. It is a daily market. Here, flowers are sold in bunches as well as sold after value addition i.e. in the form of bouquets and garlands. Since Malleswaram has retail shops, prices are higher than the wholesale price of KR Market and auction price of IFAB.

23. Devaraj Market is an unorganized wholesale market for flowers in Mysore. The major flower sold is Jasmine. It is a daily market. About 100 -150 villages are covered by this market within a radius of 5 to 50 Km. Commission agent purchases the flowers (Jasmine) from the farmers and bring to Mysore Market. The farmer pays for the transport. The commission agent then sells to the retailer who sell after preparing garlands (value addition). Mysore malligae and Kakra are two common varieties of Jasmine sold in this market.

24. Rose is a popular floriculture crop which is cultivated both traditionally under open field conditions and as modern cut flowers under controlled conditions in a greenhouse (commonly known as Polyhouse). Polyhouse cultivation is mostly

under G.I structure which is high cost while some are wooden structures which are low cost Poly house.

25. Traditional roses are marketed only domestically, cut flowers are cultivated both for export as well as local market. While export takes place only during winter months when European countries face chilling cold, rose is sold throughout the year in local market. The peak time for export is during valentines' day. In local market also, the peak seasons are marriage and festival seasons, Valentines Day and New Year.

26. Most of the farmers doing poly house cultivation are medium to large having an area ranging mostly between 4 to 10 acres. All the polyhouses are built on growers own land. The harvested flowers are graded based on the stem length, wrapped in cardboard wrappers in bundles of 20 number. These are then packed into specifies size cardboard boxes based on the ultimate destination. In local market, they are carried in buckets.

27. Many firms are doing hi-tech rose cultivation on large scale using modern equipments. Two such cases studied were *cultivation of Hi –tech Rose in 14 acres farm in Neelamangala and cultivation of Hi –tech Rose by 'Ferns and Roses' Company using Greenhouse technplogy imported from Israel*. The galvanized structure with 205 microns UV transparent, sulphur resistant sheets and the irrigation system for the green house used for rose cultivation has been imported from Gineger Company and Plastro, Israel respectively. Ferns and Roses have adopted the latest technology in Hi tech rose cultivation. They are a very good example of progressive development of floriculture in the Country. Besides, the case study of Karuturi, the king of roses, is a classical success story in floriculture.

28. Gerbera is another important modern flower usually grown in greenhouses and are used for cut flowers. They are sold in bunches of 10 flowers. Most of the

farmers doing poly house cultivation are small to medium having an area ranging mostly between 0.5 to 3 acres. The product is marketed in the local market (KR Market). Before marketing, the cut flowers are graded and packed. Grading is done on the basis of size and colour. Then the stems are packed in bunches of 10 flowers per bunch.

29. A noteworthy observation was that Gerbera cultivated in Ooty, TamilNadu is also marketed in K.R. Market. Gerbera is cultivated on a large scale in Ooty. 30% of the produce is sold locally, 30% within the state and 40% transported to Karnataka and Kerala.

30. Jasmine is a traditional flower and cultivated under open field condition. Area under cultivation of Jasmine under open field condition varies from as low as 0.1 acre to 8.0 acres. Most of the farmers cultivating Jasmine under open field condition are small to medium having an area ranging mostly between 0.25 (10 guntas) to 5 acres.

31. The product is marketed in the local market (Devaraj Market, Mysore). The flowers are marketed loose and sold on weight basis (per Kg rate).Mostly, commission agents visit the farmers field buy the flowers from the farmers and sell at Devraj Market. Farmers bear the transportation cost. The commission agents sell the produce to the wholesalers who sell it to retailers. Both wholesalers and retailers trade from Devaraj Market. No marketing cost is incurred by wholesaler.

32. Price spread was studied through different channels for Rose, Gerbera and Jasmine to identify the marketing cost and margin. Average and percentage analysis were used to study the marketing cost, margin and price spread. Marketing efficiency was measured using the Shepherd Index.

33. It was observed the flowers reached the market through various marketing channel for all the three flowers namely rose, gerbera and jasmine.

34. It was found that producers share in Consumer rupee was higher in all the three flowers i.e rose, gerbera and jasmine when farmer himself brought the product to market and sold to wholesaler or retailer rather than sale through the commission agents. It was highest when the producer sold directly to the retailer as observed in case of rose (58%) and gerbera (61.25%). Thus the shorter the marketing channel, the greater is the farmers share in consumer rupee and price spread was lower.

35. Producers' share in consumer rupee was lower compared to other channel when the producer sold his produce to the middlemen at farm gate. It was 50% in rose, 43.31% in gerbera and 18% in Jasmine.

36. For the Channel Producer – Wholesaler – Retailer – Consumer, producer's share in Consumer's rupee was highest in Rose (58%) followed by Gerbera (48.75%) and Jasmine (24.67 %).

37. Producers share in consumer rupee was found to be comparatively low in case of traditional flower like Jasmine while it was higher in case of hi –tech flowers like rose and Gerbera. Hence price spread was highest in Jasmine.

38. Wholesaler's margin was less than that of retailer for rose and gerbera. However, for Jasmine, wholesaler's margin was higher than that of retailer. Retailer's margin was highest when they purchased directly from the farmers 36% for rose and 27% for Gerbera.

39. Comparative study of the three flowers i.e Rose, Gerbera and Jasmine, was done for the marketing channel: **Producer –wholesaler –Retailer –Consumer** was selected. Producers share in consumer rupee was highest in case of rose

followed by Gerbera and Jasmine. Alternately, price spread was lowest in rose followed by Gerbera and Jasmine. Higher the price, lower is the producers share in consumer rupee.

40. Marketing efficiency for the Channel **Producer –Wholesaler –Retailer – Consumer** was highest in rose (2.38) followed by Gerbera (1.95) and Jasmine (1.38). However, marketing efficiency for gerbera was higher i.e 2.58 as compared to rose i.e. 2.38, when the producer directly sold to the retailer. However, marketing efficiency of rose was more consistent among all the channels and on an average higher than that of Gerbera and Jasmine.

41. Among all the Channels, Marketing efficiency was highest for the Channel Producer –retailer –wholesaler. Hence this channel was found to be the most efficient. Marketing efficiency was lowest when commission agent was involved in the marketing channel.

42. Both rose and gerbera were found to be market efficient flowers and fetched handsome returns. Efforts for direct marketing can be strengthened to get higher profits. In case of jasmine, direct marketing by farmers is not being practiced. It should be encouraged which may help them to get higher returns.

43. An analysis of cost and return of the hi tech rose and Gerbera helped to understand the economics of these flowers.

44. The total cost for Gerbera cultivation and marketing for 1st year is 1,08,05,943/- including establishment cost and bank loan. Gross income from one hectare cultivation of Gerbera is about 69 lakh 48 thousand rupees. In the 2nd year of cultivation, one can break even and earn profit as well. As per projections, 3rd year profit is expected to be more around 41 lakhs as deficit of first year is recovered in the 3rd year of cultivation. Profits are even higher after farmers repay their loan.

45. The total cost for rose cultivation and marketing is 85,67,312/- including establishment cost and bank loan. Gross income from one hectare cultivation of rose is about 42 lakh 86 thousand rupees. After overcoming the deficit, hitech rose cultivation can yield a profit of more than 20 lakhs per hectare per year. Profits are even higher after farmers repay their loan.

46. From the projections, it is evident that gerbera and rose cultivation in a polyhouse is a profitable venture and yields good returns.

47. Modern floriculture under greenhouse has gained momentum in Karnataka. However, marketing infrastructure facilities for floriculture is largely required in Karnataka. Although Karnataka has got International Flower Auction at Bangalore(IFAB) with sophisticated infrastructure including electronic auction system, cold storage etc, at present auction only for roses takes place. Also, the market has a limited clientele while majority of farmers sell their flowers in K.R. market which is highly unorganized and does not have any infrastructure facilities.

48. Considering the fact that flowers are high value highly perishable commodity and require delicate handling, there is need to develop modern infrastructure markets for flowers in Karnataka. Prospects for public private partnership for developing such markets need to be explored.

49. As far as domestic floriculture is concerned, it is constrained by lack of awareness about its potential, lack of organized market, weak infrastructure support, lack of post harvest facilities, exploitation by middlemen, weak database, lack of market information and absence of information on income generation and employment generation from different flower cultivation and export barriers. It is also viewed that a majority of the flower growers belong to small and marginal farmers' category, facing many problems.

50. Some of the remedial measures as suggested by the flower growers include development of organized wholesale markets for flowers, development of post harvest infrastructure facilities including cold storages, transparent auction system, Govt. intervention in technology transfer and marketing, mode of price discovery and dissemination, strengthening the supply chain and reducing middleman, attractive subsidies and financial assistance,, export promotion etc.

Recommendation

The Central and State Governments, the state horticulture department, government agencies like APEDA, NHB etc have taken several initiatives for developing floriculture in the Country. All these efforts indicate the government's commitment for improving the sector and creating a positive environment for entrepreneurship development in the field.

The developmental initiatives of the Government have to keep in mind the low knowledge base, small land holdings, unorganized marketing and poor infrastructural support.

Some of the Suggestions as derived from the Study to improve floriculture (with special reference to Karnataka) are as follows:

- There has been a decline in area under floriculture in Karnataka in 2007-08 as compared to 2006-07. Although it has maintained its second position in loose flower production from 2005-06 to 2007-08, there has been a decline in cut flower production in 2007-08. Also, the growth within the state has not been uniform and is mainly concentrated in few districts. Since Karnataka is a leading floriculture State in the Country with tremendous potential, efforts are required to increase the area under floriculture across the State. **More and more growers should be encouraged to take up commercial floriculture by providing technical know-**

how, supply of improved planting materials and attractive subsidies. Support of Horticulture department would play a key role in this regard.

- **Crop diversification through floriculture:** Lack of awareness regarding the potential of this sector has also been a constraint in floriculture development. **Extensive extension services are required to spread awareness about floriculture potential throughout the State of Karnataka.**

- **Guidance in technology transfer for good quality produce:** Modern cut flowers require expertise and technical know how. However, such guidance is not available to the growers and they depend on foreign agencies and end up paying high service charges.

In order to reduce production risks, Indian growers use unlimited/ over-prescribed fertilizers and pesticides. This reduces the inherent quality of flowers for export. Awareness and guidance to use minimum prescribed or less chemicals and grow flowers which meet International Standards is required. The production technology for flowers under protected environment of green houses needs to be standardized. Government intervention is required to provide expert guidance to the growers to produce quality products which would fetch higher returns. International exposures can also be arranged to understand the processes and methods towards systemic entrepreneurship support.

- **Developing organized Markets for Flowers in Karnataka:** A major constraint that has come up from the Study is lack of organized market for flowers in Karnataka. Since flowers are not a notified commodity in Karnataka, there is no regulated market yard for flowers. Considering the huge prospect of floriculture in this State, there is an immediate need for an organized Wholesale market for flowers. Although Karnataka is famous for the International flower auction Centre (IFAB), it has a limited clientele and at present operates only for rose. Majority of growers sell their produce in Krishna Rajendra Market (KR Market) which is highly unorganized. The cut flower market operates along the road side of bus Stand

Kalashipalyam from morning 3.00 am to 7.30am. Then the flower growers and traders are forced to close their activities and move out of that place. Since it is not a proper market and there is no Storage facility, there is a lot of wastage involved.

Flowers need to be placed under notified commodity and a regulated market yard for flowers need to be established. Karnataka State Agricultural Marketing Board/ Department of Agricultural Marketing need to take a proactive role in this regard.

- **Establishing Market Management:** With the increase in floriculture production, arrival of flowers, both cut flowers and traditional flowers have increased in KR market. However, due to lack of proper marketing system and market management, there is no agency to compile the market arrivals of flowers as well as record the sale and transaction details. Since flowers are an important commercial crop which yields high revenue, establishing a separate market yard for flowers would regulate the market activities under supervision and guidance of a Management Committee.

Development of Market infrastructure: In the absence of an organized market, there is lack of proper market infrastructure. Flowers being a highly perishable commodity need proper post harvest handling and storage. The market yard for flowers should have proper market infrastructure facilities like auction platform, electronic weighment; pack house, cold storage etc.

At present, due to lack of a proper market yard and cold storage in market area, growers are often forced to sell their produce at whatever price prevailing in the Market. This problem can be addressed by establishing cold storage facility near market area.

- **Improving Post harvest handling and transportation of flowers:**

There is hardly any post harvest management of flowers for the domestic market. The packaging and transportation of flowers from the production centres to the market

is at present very unscientific. The flowers, depending on the kind, are packed in old gunny bags, bamboo baskets, simple cartons or just wrapped in old newspapers, kept in buckets and transported to markets.

In recent years, the government has provided some assistance for buying refrigerated carriage vans. A large number of export oriented units have built up excellent facilities of pre-cooling chambers, cold storage and reefer vans and their produce coming for domestic market sales are thus of very good quality and have longer vase life and command higher price. However, these facilities are at present limited to large growers and floriculture units.

Government schemes and subsidies should be targeted to reach the majority of flower growers.

- **Development of Modern Markets for flowers in PPP mode:** As development progresses, there is a need for cool chain management including refer vans, air-conditioned wholesale and retail markets etc. Development of modern markets with sophisticated infrastructure facilities need huge investment. Such ventures can be taken up under public private partnership mode.

- **Maintenance of hygiene and other facilities:** The market yard also needs proper hygienic conditions. At present, the flowers are traded under extremely unhygienic conditions. Such condition affects the quality of the produce and also distracts the buyers.

- **Transparent auction system to fetch higher price:** In the absence of regulated market, there is no price control mechanism and farmers end up being exploited by the traders and often get lower price for their high value produce. There is need to introduce transparent auction process for better price realization. This would be possible only after setting up of a regulated wholesale market for flowers.

- **Strengthening the market Channel and alternative marketing system:** At present, the market channel is highly fragmented by presence of middlemen**.** In the absence of proper marketing system, the flower growers are being exploited by the middlemen. The farmers end up getting less price for their high value crop.

Farmers should be encouraged to adopt alternative marketing practices like direct marketing, contract farming, group marketing etc. Marketing through farmers group and federation would also strengthen their bargaining power as well as bring about economies of scale. This would also encourage the growers to export their high value crop.

- **Developing a market information and dissemination system:** In the absence of a regulated market, there is no agency to regulate the prices in the market. Due to lack of market information, the farmers are dependent on intermediaries. This leads to exploitation of farmers by the middlemen. There is also no mechanism for price discovery. Farmers assume demand based on previous years' experience, marriage seasons, valentine's day and upon visit to market. There is need to develop a proper market information and dissemination system on price and demand. Agricultural marketing department and Marketing board would play a key role in this process. Market information dissemination should be publicized through media, publication and mobile services.

- **Building up a data resource on floriculture:** Floriculture is an important commercial activity in Karnataka. Over the last five years or so, this business has really boomed in India, There are huge returns from sale of flowers daily. The daily arrivals and sale has also increased in the local KR Market. However, there are no data available on total arrival, dispatch, sale and income. There is no definite record on the total revenue generated. In view of the unorganized set up, it is difficult to estimate the size of flower trade, both in terms of volume and value. Considering that flowers are an important commercial and revenue generating crop, there is an immediate need to develop a database of trade in floriculture across the State.

Utilization of funds allocated: Under National Horticulture Mission, there is budgetary provision for floriculture. However, it has been observed that the target realized is far below both in terms of physical and financial targets. Involvement of horticulture department is required for proper utilization of these funds and encouraging more growers to take benefit of the Government schemes.

National Horticulture Board and other agencies also provide financial assistance and subsidies for development of floriculture. However, to actually benefit the growers, the growers have to be made aware of the prospects of floriculture, the various Govt. assistance available and implementation of these Schemes.

Financial assistance to farmers: The initial cost and availability of finance is a critical matter in the development of large commercial projects requiring heavy investments. More options for finance, such as the soft loan scheme of the National Horticulture Board need to be identified. As commercial floriculture is in its nascent stage development, the governmental support in terms of subsidies etc. need special attention.

- **Contract Farming and Crop insurance:** Looking into the huge potential of this viable produce and its demand both at National and International level, specific commodities under demand could be systematically grown under contract farming policy and guidelines. The nature of different commodities can be well analyzed depending on the socio-environment conditions and subsequently promoted under crop promotion and insurance scheme (diminishing farmer's financial load). This will assist in revenue generation for the state through sale tax / export duties / user charges etc and also enable farmers for good returns (middle and big farmers). It is suggested that the component of contract farming with crop security can be very attractive for entrepreneurship.

Greater Research efforts: Greater research efforts are also needed for integrated pest management, development of location specific package of practices for flowers, value addition of flowers, produce good quality flowers for both domestic and international markets etc.

- **Boosting Export:** Constraints like lack of post harvest infrastructure, quarantine procedures, high freight charges etc affect the export of flowers from our Country. India's presence in International market is negligible. Export takes place only during winter months when European Countries experience extreme cold.

Karnataka has been leading in export. However, data on State exports is not available. From all India export data, it is not possible to determine the exports from Individual States. Data on State exports is necessary to further boost exports and overcome the gaps.

Since exporting flowers is often not economically viable for an individual farmer, farmer group may be formed and export through group marketing can help to achieve economies of scale.

At present, only rose is being exported from India. India's export of rose is facing threat from African Countries like Kenya. Indian growers should diversify their flower cultivation in terms of export and grow varieties of cut flowers depending upon the demand in the International market.

However, such efforts would require proper post harvest infrastructure, quality produce and export promotion by Government agencies by providing attractive subsidies.

The Agricultural and Processed Food Products Export Development Authority (APEDA), the nodal organization for promotion of agri-exports including flowers, has introduced several schemes for promoting floriculture exports from the country. Such

efforts need to be strengthened further to make India's presence significant in the International floriculture trade.

- **Capacity building for commercial floriculture:** There is lack of expertise to handle commercial floriculture activity. The demand of this growing export oriented industry needs adequate attention for human resource development, particularly at the supervisory level.

The growing demand of flowers in the domestic as well as the export market need concerted effort for its marketing on the part of the government as well as the private entrepreneurs. Developing an integrated approach for floriculture including input needs, technology and guidance, resource management, infrastructure development, marketing facilities, financial assistance, export promotion, entrepreneur friendly policies etc would lead to a balanced growth of the floriculture industry.

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