Floriculture: A Sector Study

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FLORICULTURE: A SECTOR STUDY

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Project Team:

Mr. S. Prahalathan, Deputy General Manager, Research and Planning Group, HO

Mr. O'Neil Rane, Manager, Research and Planning Group, HO

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FLORICULTURE: AN INTRODUCTION

Floriculture is an activity with immense potential for generating remunerative self-employment among small and marginal farmers and earning of foreign exchange. Floriculture activity can be defined as cultivation/production and marketing of flowering and foliage plants, garden-bedding plants, cut flowers and greens under controlled conditions mainly for export.

The world floriculture market is estimated to be worth US$ 60 billion. The production is growing at a rate of 8 – 10% per annum. There are nearly 120 countries, which are active in floriculture production on a large scale. The economy of some countries - the Netherlands, Israel, and Colombia - is dependent on floriculture industry. The estimated area under floriculture in the world is over 220,000 hectares. Developing countries have emerged as additional production centers in the past few decades. Countries such as Ecuador, Kenya, Israel, Costa Rica, Thailand, Poland, India, China, Republic of Korea and Mexico have emerged as producers and exporters of cut flowers and plants in the world.

WORLD FLORICULTURE TRADE

The global exports for floriculture products stood at US$ 12.39 billion in the year 2004. Fresh cut flowers and foliage account for around 48.2% (US$ 5.97 billion) of world exports of floriculture in 2004. World exports of bulbs, cuttings and live-plants accounted for US$ 6.42 billion (51.8%). Developed countries in Europe, America and Asia account for more than 90% of the total world exports in floriculture products. The Netherlands continues to dominate the world floricultural exports. It was estimated that in 2004 almost 51% (US$ 6.27 billion) of world floriculture exports came from the Netherlands.

With an 8% annual growth rate, world exports are expected to reach US$ 16 – 18 billion by 2010. India ranks 23rd amongst world exporters of floriculture products and its share in world exports is negligible at around 0.38% (US$ 47 million).

The world imports of floriculture products stood at US$ 12.61 billion. Germany (US$ 2,231 mn) was the largest importer followed by USA (US$ 1,607 mn), United Kingdom (US$ 1,604 mn) and France (US$ 1,254 mn). In 2004, the total value of cut flowers and foliage imported by the world was about US$ 6.40 billion. The worldwide import value of plants was US$ 6.21 billion in 2004. Major importing markets of floriculture products are Germany (18%), the United States (13%), the United Kingdom (13%), France (10%), the Netherlands (8.8%), Italy (4%) and Japan (3.65%). These seven countries account for almost 70% of all imports of floriculture products.

PROFILE OF SELECT COUNTRIES

The Netherlands

The floricultural sector is important for the Dutch economy. The production of floricultural products grown in greenhouses was worth nearly US$ 3.75 billion in 2004. Dutch floricultural businesses employ about 50,000 people. Most floricultural production is sold through one of the many floral markets located throughout the country. The Netherlands is the largest exporter of cut flowers and plants in the world. Between 2000 and 2004, the value of floriculture exports in The Netherlands increased from US$ 4,087 million to US$ 6,272 million (11.3% CAGR). Its share in the world market is about 52.14% (US$ 3.11 billion) for cut flowers and foliage and 49.2% (US$ 3.16 billion) for bulbs, cuttings and live plants in 2004.

USA

The United States Department of Agriculture estimated that in 2002, there were 8,000 hectares in floriculture production with a wholesale value of sales estimated at US$ 5 billion. The total sales of bedding plants was valued at US$ 2.28 billion, followed by potted flowering plants (US$ 822 mn), potted foliage plants (US$ 663 mn), cut flowers and foliage (US$ 521 mn). Between 2000 and 2004, the value of floriculture exports increased from US$ 291 million to US$ 312 million (1.72% CAGR).

Colombia

Colombia accounts for approximately 2% of the total flower-cultivated area in the world. The floriculture sector in Colombia employs about 94,000 people directly and another 80,000 are employed indirectly. Colombia is the second largest floriculture exporter in the world after the Netherlands. Between 2000 and 2004, the value of floriculture exports has increased from US$ 586 million to US$ 706 million (4.77% CAGR). In 2004, the exports amounted to 5.7% of total world exports (US$ 706 million).

Colombia's market share in the world trade has grown considerably over the last few years.

Ecuador

In 2004, exports of floriculture products were valued at US$ 344 million (2.8% of world exports). Between 2000 and 2004, the value of floriculture exports has increased from US$ 158 million to US$ 344 million (21.5% CAGR). However, almost 99% of its exports are made up of cut flowers and foliage (US$ 341 million).

Kenya

Kenya is the largest producer in Africa and the leading supplier to Europe. Kenya exported approximately US$ 273 million worth floriculture products in 2004; nearly 94% (US$ 257 million) of its exports are to Europe. Between 2000 and 2004, the value of floriculture exports has increased from US$ 100 million to US$ 273 million (28.5% CAGR). Kenya's success has had a significant spillover effect, serving as a model for development of flower industries in other Sub-Saharan African countries such as Zimbabwe, Uganda, and Tanzania.

Zimbabwe

Zimbabwe has about 900 hectares under floriculture with over 27,000 workers. Between 2000 and 2004, the value of floriculture exports has declined from US$ 26 million to US$ 22 million (-4.09 CAGR). Zimbabwe is currently the second largest exporter of cut-flowers in Africa (after Kenya).

Ethiopia

Floriculture has become a flourishing business in Ethiopia in the past five years. Ethiopia exported approximately US$ 6.5 million worth floriculture products in 2004. The industry's export earnings is set to grow to US$ 100 million by 2007. A score of investors from the Netherlands, Germany, India and Israel have secured licenses for floriculture development. Ethiopia has advantages in commercial floriculture farming due to its suitable climate, low unit cost of production, tax holidays, 100% customs exemption on import of capital goods/consumables and low lease prices of land.

Thailand

Thailand is Southeast Asia's leading orchid producer, and contributes 85% of the world export of orchids. Between 2000 and 2003, the value of floriculture exports has increased from US$ 42 million to US$ 69 million (18.0% CAGR).

Israel

Flowers are Israel's leading agricultural export with the value of exports estimated at US$ 225 million in 2004. Between 2000 and

2004, the value of floriculture exports increased from US$ 197 million to US$ 225 million (3.4% CAGR). Much of the exports are based on person-to-person contractual arrangements.

INTERNATIONAL REGULATIONS

There are a number of health, phyto-sanitary, quality and regulatory requirements that are important to the global agribusiness trade. Many are government-mandated regulations, while others are standards and specifications established by the industry. All such regulations are pertinent to agribusiness suppliers including growers, packers, processors and shippers, along the farm-to-market value chain, with special significance to those marketing the produce internationally.

INDIAN FLORICULTURE INDUSTRY

India has an ancient heritage when it comes to floriculture. Commercial floriculture however is of recent origin. A consistent increase in demand for cut and potted flowers has made floriculture as one of the important commercial trades in Indian agriculture. Emphasis has been shifting from traditional flowers to cut flowers for export purposes.

The total area under floriculture cultivation was estimated to be more than one lakh hectare. Maharashtra, Karnataka, Andhra Pradesh and Haryana have emerged as major floriculture centres. Tamil Nadu is estimated to have the highest area under floriculture production followed by Karnataka, West Bengal, Andhra Pradesh and Maharashtra.

A number of Export Oriented Units have been set up in the floriculture segment in the last decade and half. Liberalization and the Plant, Fruits and Seeds (Regulation of Import into India) Order, 1989, also known as the New Seed Policy have already made it feasible to import international varieties of planting materials.

Most EOUs have been largely dependent on foreign collaborations for technical support as the cultivation of cut flowers for export purposes under a protected environment is relatively a recent phenomenon. Most technical collaborations have taken place with units from the Netherlands and Israel. Many of these companies have also opened up offices in India.

Most of the foreign collaborators are primarily suppliers of one of the inputs of the floriculture industry, e.g., planting material, greenhouses or they are specialised in marketing. Most of the Indian companies are family owned, medium sized businesses. However, the entrepreneurs have looked upon these tie-ups as turnkey collaborations. The entrepreneurs have depended on the overseas companies for setting up of their projects and sourcing of all inputs with buy back arrangement for the produce.

Exports from India

India's share in the international market for flowers is still negligible. India's exports of floriculture products amounted to US$ 18 million in 1995 and it stood at around US$ 47 million in 2004, which is only 0.38% of the world exports of floriculture products (US$ 12.4 billion). During 2004-05, exports of floriculture products from India decreased and were estimated to be valued at US$ 47.5 million. In 2004-05, exports of cut flowers and foliage were valued at US$ 41.8 million, while bulbs and live plants exports stood at US$ 5.7 million. Over 95% of Indian cut flower exports comprise different varieties of roses.

The potential is enormous which can be exploited scientifically with proper management of resources and technology. Efforts by some successful growers have demonstrated the feasibility of entering this trade on a very large scale.

Government Incentives/ Initiatives

Government of India acknowledges the potential of the floriculture industry and has conferred 100% export oriented industry status. The Government is offering various incentives, which have enabled the setting up of a number of floriculture units for producing and exporting flowers. Most of these units are located near Mumbai, Bangalore and Delhi. These units have obtained technical know-how from Dutch and Israeli consultants.

Tax benefits are offered to new export oriented floriculture companies in the form of income-tax holidays and exemption from certain import duties. 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.

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 operational Agri Export Zones for floriculture development in India.

CHALLENGES, STRATEGIES AND OPPORTUNITIES

CHALLENGES

In spite of the export potential of the sector, the performance of units in this sector is not encouraging.

Some of the challenges that need collective attention are outlined below:

Supply Infrastructure

The success of floriculture sector depends on a carefully designed infrastructure. The availability of dedicated perishable carriers is low in India and the freight rates are high. Paucity of air cargo space for flowers is also another challenge, especially in the context of airlines preferring to transport relatively less-volume cargo. The production centers are concentrated only where international cargo handling facilities are available and thus much of the production potential is not optimally utilized. Availability of dedicated cold storage facilities at farmyards as also at airports is minimal. In addition, the adequacy levels of cooling facilities in domestic transportation need to be examined in the context of the growing international flower business.

Availability of Basic Inputs, Including Seeds and Planting Materials

The seed and planting material industry in India is relatively not well established. Mostly imported varieties are preferred for exports, for which breeders charge high royalty and thus the cost of planting material becomes high. In addition to non-availability of elite planting material, prevalence of production as well as preservation technology is also relatively low. There is need for increasing the investments in technology that allows a better control over production climate, enhancing of quality and reduction of pollution and waste.

Quality Parameters

In the international arena, competition is such that anything less than the acceptable quality is not tolerated. Quality has several dimensions, viz. free from plagues and diseases and proper physical handlings at various stages of transportation for enhanced vase life.

Operation of Economies of Scale

Small unit size of the flower farms in India is also considered a constraint due to absence in economies of scale. The average size of Indian farms is approximately 4 ha. as compared to the size of 40 ha. in some African countries. African units are thus able to leverage from their capacities and capture more market-share as a result of the production volumes. Besides being cost competitive, high volume enables them to offer a wide range of colours, in the quantities of batch sizes that international market demands.

Diversification of Products

Another challenge for Indian flower exporters is to diversify and reduce the dependence on producing cut rose alone.

Re-plantation

The floriculture plants in India, majority of them are roses, are mostly of the older varieties. Also, they are old plants ranging from 7-9 years, whereas the peak productive phase of the plants on an average is only 3 to 5 years. India is estimated to be replanting approximately 25 ha. per annum as compared to 200 ha in some African countries. Only some of the units in India are equipped with the requisite resources for re-plantation.

Environmental Issues

Environmental issues have become very prominent in recent years. Consumers are concerned about the impact of use of chemicals on environment and on the workers. Cut flowers are no exception to such environmental guidelines.

STRATEGIES

Concrete steps are being undertaken by India to develop the floriculture sector as a viable export sector. The new economic policy has further accelerated the pace of development of the floriculture sector to meet the requirements of stringent international markets at competitive prices. However, more strategies need to be adopted to consolidate the strengths of India in this sector. These include:

Infrastructure Support

Post harvest handling is as important as growing for delivering an attractive product to the consumer. In that sense, the reliability of air connections is as crucial as its costs. Since, flowers are highly perishable in nature, speed of delivery is of utmost importance, besides taking adequate temperature control measures during transit. Hence, it is important to invest in adequate infrastructure facilities such as cold chains, testing and cargo handling facilities and internal container depots suitable to floriculture products. The infrastructure at airports, including perishable cargo handling facilities need to be improved besides creating additional cargo space. The frequency of international flights and chartered flights handling floriculture cargo needs to be increased.

Government Support

The Government of India has a transport assistance scheme for Indian flower exporters, but the quantum of airfreight subsidy is limited to 20% of airfreight or 20% of FOB value at a specific rate per kg. of flowers. The rates vary from country to country, between Rs. 7/- per kg. to Rs. 25/- per kg. However, the assistance provided does not fully make the Indian flower exporters cost competitive vis-à-vis some of the African exporters. Also periodic re-plantation is necessary in order to maintain the acceptable freshness in variety and quality. The existing varieties often become obsolete with the constantly changing market trends and demands. High capital costs for re-plantation is one of the major hurdles, which may be tackled with appropriate re-plantation support.

Supply Chain

The consumption channel for floriculture business is gradually shifting from specialty shops and florist shops to the super market chains, mainly in Europe. Supermarket chains are mass consumers and seek importing of large quantities of flowers, with latest varieties and a well defined supply chain network.

Economies of Scale

Increase in size also enables units to integrate and move up in the value chain. Vertical integration between producers and buyers for instance, has helped East African units to effectively control the distribution and marketing process with direct interaction with the buyers.

Selection of Product Mix

Selection of product mix and variety is one of the crucial factors for the success of a floriculture project. Majority of the projects presently operating in India have chosen production of rose in their projects. The rose has the major market share and hence marketing it internationally will not pose any problems for the Indian producers. However, diversification of product mix is also essential considering the changing pattern of demand. New varieties fetch higher prices, which could be up to seven times higher than those of regular varieties.

Supply of Quality Inputs

Cut flower projects aimed for exports should follow the latest trend in demand and produce the popularl varieties of plants being imported by various markets. Accordingly, floriculture projects should import the planting material from abroad. Varieties could also be developed through tissue culture laboratories in India. Though raw materials and packaging materials are available locally, high-grade materials have to be imported. Establishment of model nurseries for supplying genuine planting materials, and distribution of environment friendly production and packaging materials are thus important parameters to achieve internationally acceptable quality.

Research and Development

There is enough presence of agriculture universities carrying out research related to floriculture in most regions of India. However, the orientation of such research is not towards commercial purposes and hence their findings are not directly applicable to the present greenhouses. A strong need is felt by the entrepreneurs of this industry that there should be a common research and development center, which would not only give inputs / solutions to the problems faced in the industry, but would also develop good varieties suited to local environmental conditions. Select Indian Agriculture Universities could establish partnership with overseas research institutes, viz., PTC+, Holland, for developing new varieties of flowers and foilages.

Technology Development

During the last few years, some of the early starters in this industry have indigenised their technology requirements, like poly houses and parent plant material, and developed local cultivation and post harvest techniques. However, when a new entrepreneur wants to start, the technology is required to be imported. The project cost becomes high with imported green houses / technologies. Hence, indigenous technology for the construction of green houses/glass/ poly/shade houses are required to be developed to suit the Indian climate conditions. The raw materials and technical know-how required to build greenhouses are available in India now.

Quality and Labeling

Only high-quality flowers are traded internationally. Production conditions are also becoming a new dimension of quality. This has led to initiatives by traders and growers alike to provide consumers with a guarantee that the flowers they buy are clean. MPS flower label is increasingly getting international acceptance in the flower business.

Indian exporters must ensure that their produce is free from disease and that it is carefully treated once harvested. Exporters should also plan and monitor effective quality control measures right from production to post harvest stage including storage, and transportation. Post harvest management, including cold treatment, proper packaging and application of preservatives, may need to be strengthened. Attention may also be required for achieving the flower labeling and certification requirements.

Packaging

In an industry where non-price factors are the basis for competition, distinguishing quality products through the use of innovative packaging is another way to gain competitive advantage.

The floriculture industry needs to examine current packaging practices and learn from the success of other countries.

Human Resource Development

To cater to the increasing global trade, there is a need for trained personnel at various levels. One of the major challenges faced by India is shortage of trained / experienced technical and commercial managers. Thus, private initiatives to train individuals in the floriculture/horticulture sector could be beneficial to the industry in the long run. Training centres for diploma courses, on the pattern of ITI, for training the personnel in floriculture may be set up to address this challenge. APEDA, in association with respective state agencies, may provide orientation to Indian growers on the need to conform to International Union for the Protection of New Varieties of Plants (UPOV) and Breeders Rights.

Developing Joint Ventures

Indian firms need to increase the volume of sales to receive benefits of economies of scale. Although Indian rose production is comparable and competitive in terms of costs and returns, increasing export volume will help to achieve higher profitability. Developing vertical integration and joint ventures is thus another strategy that could be adopted by Indian growers.

Establishment of Support Systems

The greenhouse industry in India has great potential for growth, provided it is supported by institutional systems. Establishing a network of support systems with the involvement of Government, private sector and research institutions / universities will be another strategy for development of floriculture sector. This will help the industry to plan forward and evaluate the business plans periodically. A number of private and government agencies provide such support system in the green house industry in USA. A network of agri-business consultants and academia provide specialized services for skill development of the industry in USA.

Setting up of an International Flower Auction Market

An international flower auction market, on the lines of Dutch model, may be considered for strengthening the flower business in India. The objectives of this market will be to change fundamentally the marketing channels of flowers in India and to improve the product quality considerably, in order to realize India's potential in floriculture. India may seek technical guidance from agencies such as International Trade Centre (ITC), Geneva, or the Centre for Promotion of Imports from Developing Countries (CBI), The

Netherlands, for conceptualization, feasibility study and design of the auction market, and training of the personnel, eventually.

Environmental Strategies

Flowers are often offered as gifts for special occasions. The consumers want to be seen as giving an item that is of high quality and environmentally friendly. Adequate care must be taken in usage of chemicals and pesticides. Besides, it is recommended that the floriculture projects should be geographically spread out in order to avoid other environmental issues. Considering the cost of production and utilization of common facilities, co-operative farming in select areas would be an ideal strategy.

Marketing Strategies

Indian exporters should adopt customized marketing strategies while targeting various markets. Selling through agents has now been replaced by direct marketing in many regions. Direct marketing gives better remuneration, eliminates middlemen and provides flexibility to position in niche markets, thereby avoiding the risk of excessive concentration on a single market. The use of information technology, and particularly, Internet for trading should also be promoted. Co-operative florist organizations may be established at regional level, to pursue business interests of member organizations and to act as supply chain.

Consortia Approach

A “consortium” approach may be encouraged among the units for branding, grading, packaging, transporting, quality control, supply assurance, market development, market promotion, and research and development. For this purpose, it is necessary to encourage some of the successful and experienced entrepreneurs to take a lead in forming such consortia.

OPPORTUNITIES FOR INDIA

The market for cut flowers consists of a range of product groups, which offer varying opportunities for countries like India, as potential suppliers. It is a highly competitive market in which importers are continually seeking new, special and different products. They tend not to change easily from one supplier to another but co-operation with a company supplying a new product is considered attractive. The market is clearly searching for novelty products. A new product also offers the prospect of making higher profits than those gained from selling conventional floricultural products.

Demand for foliage varieties is still increasing in Europe, particularly for small leafed foliage for use in bouquets. Furthermore, European importers do not have any reticence about using tropical foliage. The opportunities are optimal for tropical countries like India in supplying products during periods when these products are scarce in the western markets.

In order to compete, Indian exporters must be able to supply products of consistent quality and on a regular basis. With a strong preference for direct marketing and private R & D for developing proprietary products, the industry will have to develop an unique selling proposition to increase the competitiveness. Joint initiatives may be taken for creation of appropriate infrastructure for production, post-harvest handling and transportation of floriculture products. The marketing and distribution channels are also need to be strengthened. With all such initiatives, it may be deduced that the structure and composition of the Indian floriculture industry may undergo major changes in the future.

1. FLORICULTURE: AN INTRODUCTION

1.1 FLORICULTURE ACTIVITY

Floriculture is an activity with immense potential for generating remunerative self-employment among small and marginal farmers and earning the much-needed foreign exchange.

Floriculture can be defined as cultivation/production and marketing of flowering and foliage plants, garden-bedding plants, cut flowers and greens under controlled conditions mainly for exports.

Floriculture products mainly consist of cut flowers, pot plants, cut foliage, seed bulbs, tubers, rooted cuttings and dried flowers or leaves. The important floricultural crops in the international cut flower trade are Rose, Carnation, Chrysanthemum, Dahlia, Gargera, Gerbera, Gladiolus, Gypsophila, Liastris, Nerine, Orchids, Poinsettia, Archilea, Anthurium, Tulip, and Lilies. The most traded flower in the international market is Rose.

1.2 PRODUCTION

World floriculture production is growing at a rate of 8 – 10% per annum. The world floriculture market is estimated to be worth US$ 60 billion. Europe, USA and Japan together account for two-third of world floriculture market.

There are nearly 120 countries that are active in floriculture production on a large scale. It is estimated that the total area under floriculture in the world, both under protected area as well as open cultivation is over 2,20,000 hectares.

The economy of some countries - the Netherlands, Israel, and Colombia - is dependent on floriculture industry. Being a major market for floriculture, Netherlands also imports and re-exports the flowers.

Since the production in the traditionally recognized centres - the Netherlands and the USA - have reached the threshold level, developing countries have emerged as additional production centers in the past few decades. Countries such as Ecuador, Kenya, Israel, Costa Rica, Thailand, Poland, India, China, Republic of Korea, Mexico have emerged as major producers and exporters of cut flowers and plants in the world. These countries export

Table 1.1:
ESTIMATED MARKET VALUE OF FLORICULTURE IN 2002

(million €)

Country	Cut flowers	Plants	Total
Germany	3129	3777	6906
United Kingdom	2394	738	3132
France	1929	1151	3080
Italy	1920	557	2477
Netherlands	958	534	1493
Spain	768	412	1180
Switzerland	658	297	955
Belgium	436	264	700
Sweden	305	385	690
Austria	355	272	627
Norway	233	224	458
Russia	423	—	423
Denmark	200	214	414
Poland	277	125	402
Finland	171	139	310
Greece	179	77	256
Portugal	166	68	234
Hungary	125	65	190
Ireland	122	43	165
Czech Republic	92	51	143
Slovenia	50	33	83
Croatia	34	36	69
Slovakia	37	11	48
Europe	14962	9471	24433
USA *	7286	—	7286
Japan *	3850	—	3850
China *	840	—	840

SOURCES: VBN, PT, BvGB (Netherlands) (Further sources: National statistics about production, imports and exports and consumer panels, as far as available have been used.)
*SOURCE: AIPH/Union Fleurs: International Statistics Flowers and Plants 2004

Table 1.2:
PER CAPITA CONSUMPTION OF FLORICULTURE PRODUCTS (2002)

Country	Consumption in € Cut flowers	Plants	Total
Switzerland	94	42	136
Norway	59	56	114
Netherlands	60	33	93
Denmark	40	43	83
Germany	38	46	83
Austria	44	34	78
Sweden	34	43	77
Belgium	44	26	70
Finland	34	28	62
France	33	20	52
United Kingdom	40	12	52
Italy	33	10	43
Ireland	31	11	41
Slovenia	25	16	41
Spain	19	10	30
Greece	16	7	23
Portugal	17	7	23
Hungary	13	7	19
Croatia	7	7	14
Czech Republic	9	5	14
Poland	7	3	10
Slovakia	7	2	10
Russia	3	1	4
Europe	25	16	40
Japan *	31	—	31
USA *	26	—	26
China *	1	—	1

SOURCES: VBN, PT, BvGB (Netherlands) (Further sources: National statistics about production, imports and exports and consumer panels, as far as available have been used.)
*SOURCE: AIPH/Union Fleurs: International Statistics Flowers and Plants 2004

their floricultural produce to the USA and European countries.

Most of the flowers are grown under protected conditions in covered structures like green houses and poly/glass houses in Europe and other countries. Due to intense cold and high energy cost, production in these countries is curtailed during winter months (October to April). Thus, they have to depend largely on import to meet their domestic demand as most of the festivals fall during this period when the demand for flowers is at its peak.

The production value of floriculture products, which stood at US$ 14 billion in 1994, has gone up almost 4 times to an estimated US$ 60 billion in 2003. The European production roughly meets 35-40% of its demand, while USA meets roughly 70% of its domestic demand.

As regards per capita consumption, Europe as a whole had a per capita consumption of € 40 in 2002. Switzerland had the highest per capita consumption followed by Norway and Germany. The estimated per capita consumption in Japan was € 31, while that of USA was € 26.

2. WORLD FLORICULTURE TRADE

2.1 INTRODUCTION

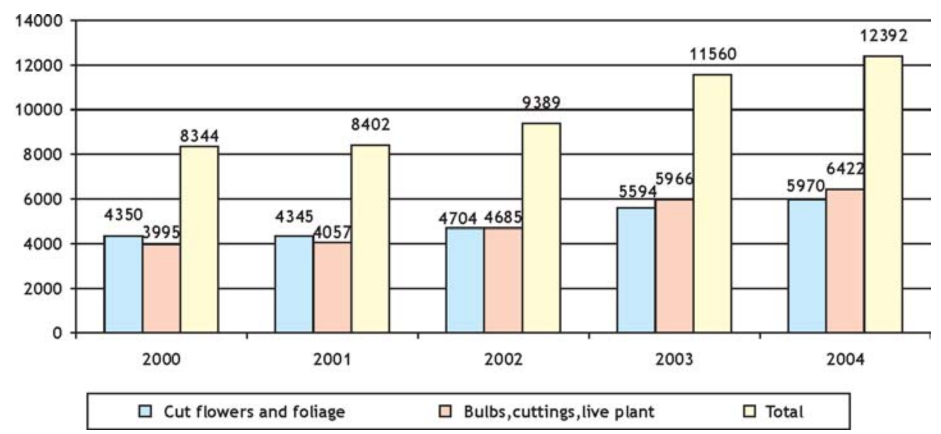
Developed countries in Europe, America and Asia account for more than 90% of the total world trade in floriculture products.

The global exports for floriculture products stood at US$ 12.39 billion in the year 2004. With an 8% annual growth rate, world exports are expected to reach US$ 16 – 18 billion by 2010. Fresh cut flowers and foliage account for around 48.2% (US$ 5.97 billion) of world exports of floriculture in 2004. World exports of bulbs, cuttings and live-plants accounted for US$ 6.42 billion (51.8%). India ranks 23rd among world exporters of floriculture products and its share in the world exports is negligible at around 0.38% (US$ 47 million) in 2004.

The forex earning capacity of the floriculture sector is estimated to be higher than that of other agriculture products. Major markets are Germany, the United States, the United Kingdom, France, the

Exhibit 2.1:
EXPORTS OF FLORICULTURE PRODUCTS IN THE WORLD

(US$ million)



SOURCE: UN Comtrade 2004

Netherlands, Italy and Switzerland. These seven countries account for almost 70% of all imports of floriculture products.

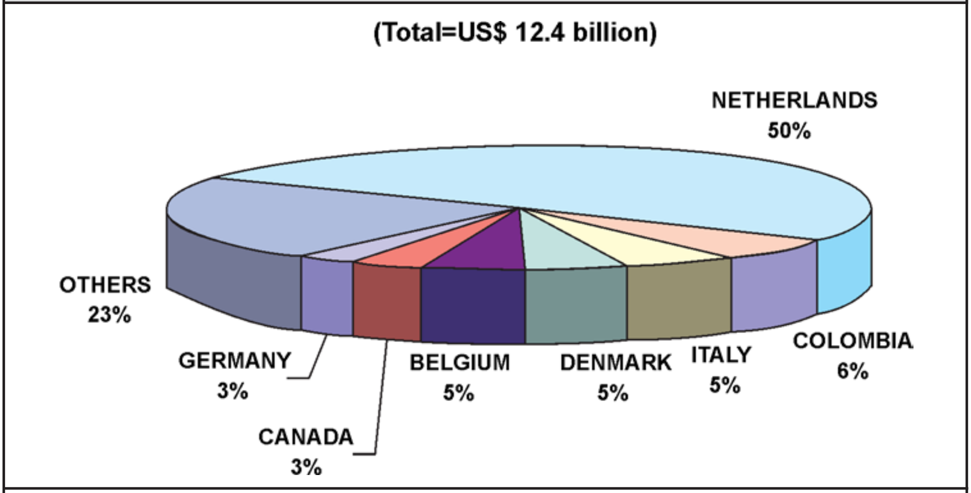
Russia leads the pack of world's high growth markets in floriculture trade for the period 2000-2004 with a CAGR of 45% followed by Hungary (28%), China (24.8%), Poland (22.3%), Czech Republic (19.2%), Greece (18.5%) and United Kingdom (16.3%).

2.2 EXPORTS

Eight countries, viz., the Netherlands, Columbia, Italy, Belgium, Denmark, Germany, Canada and Ecuador, account for over 80% of the total export value of the world's floriculture crops. The Netherlands continues to dominate the world floriculture industry; it is becoming the epicenter for world flower trading. It was estimated that in 2004 almost 50.6% (US$ 6.27 billion) of world floriculture exports came from the Netherlands; this figure includes crops that are grown domestically and crops that are imported, brokered, and then resold.

Colombia was the second largest exporter with a share of 6% (US$ 706 million) in world floriculture exports followed by Italy - 5.3% (US$ 652 million), Belgium - 5% (US$ 613 million), Denmark - 4.5% (US$ 565 million), Germany - 3.2% (US$ 401 million), and Canada - 2.8% (US$ 351 million). Other major exporters are the USA, Kenya, Spain, Israel, France, Costa Rica, Ecuador, United Kingdom and Poland.

Exhibit 2.2:
SHARE OF TOP FLORICULTURE EXPORTERS IN THE WORLD (2004)



SOURCE: UN Comtrade 2004

Table 2.1: TOP EXPORTING COUNTRIES (2004) OF FLORICULTURE PRODUCTS IN THE WORLD

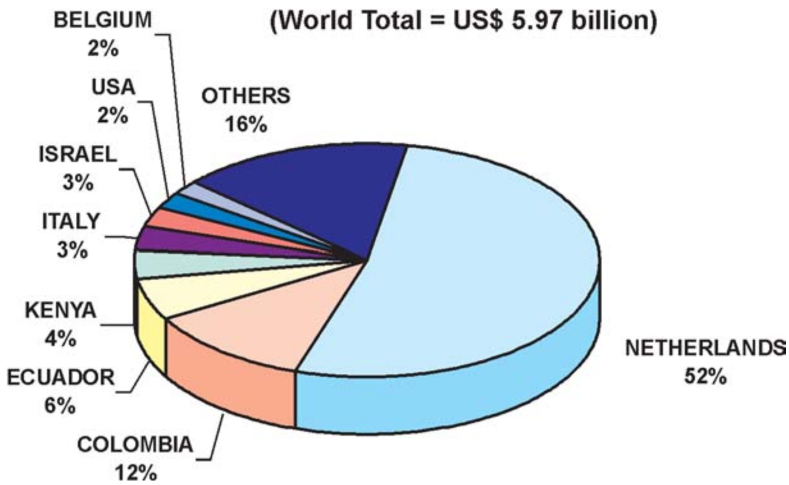
Rank	Exporter	(US$ mn)	Share (%)
1	World	12392	100.00
2	Netherlands	6272	50.61
3	Colombia	706	5.70
4	Italy	652	5.26
5	Belgium	613	4.95
6	Denmark	565	4.56
7	Germany	401	3.24
8	Canada	351	2.83
9	Ecuador	344	2.78
10	USA	312	2.52
11	Kenya	273	2.20
12	Spain	266	2.15
13	Israel	225	1.82
14	France	223	1.80
15	Costa Rica	163	1.32
16	United Kingdom	80	0.65
17	Poland	80	0.65
18	Taiwan	66	0.53
19	China	64	0.52
20	South Africa	55	0.44
21	New Zealand	53	0.43
22	Korea Republic	50	0.40
23	India*	47	0.38
24	Mexico	43	0.35
25	Malaysia	43	0.35

SOURCE: UN Comtrade 2004
*DGCIS

Cut Flowers and Foliage

The worldwide export value of cut flowers and foliage amounted to US$ 5.97 billion in 2004. Europe still maintains its position as the leading exporter in the world with a share of 65% of total world exports of cut flowers and foliage. However, European exports (US$ 3.8 billion) of cut flowers are largely intra-European in nature, with only 8-10% exported to other countries. The share of non-European countries in the

Exhibit 2.3:
SHARE OF TOP CUT FLOWER EXPORTERS IN THE WORLD (2004)



SOURCE: UN Comtrade 2004

worldwide export value of cut flowers was about 25% in 1994, which has gone up to 28% in 2004. Re-exports are very common in Italy and in the Netherlands.

The Netherlands is the largest exporting country of cut flowers and foliage in the world. Its share in the world export markets for cut flowers and foliage stood at 52.14% (US$ 3.11 billion). The Netherlands has been experiencing a dip in the last few years in terms of revenue and share due to increased export from other third-world countries. The share of third-world countries like Colombia, Ecuador, Kenya, Israel, Costa Rica, Mexico and Turkey has witnessed growth in the last decade.

Bulbs, Cuttings and Live Plants

The world exports in bulbs, cuttings, and live plants is estimated to be about US$ 6.42 billion in 2004. This is more than twice the value of exports recorded in 1994 (US$ 2.8 billion).

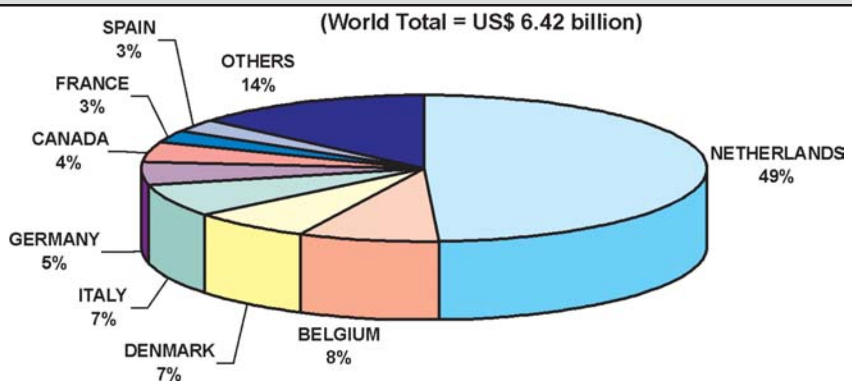
The market share of European exporters has fallen in the reported five years. The major European exporters are the Netherlands, Belgium, Denmark, Italy, Germany, France and Spain. Again, as in the case of cut flowers, plant exports by European countries is predominantly intra-European. European countries also export to the

Table 2.2:
LEADING EXPORTERS OF CUT FLOWERS AND FOLIAGE IN THE WORLD

Sr. No.	Exporter	2000	2001	2002	2003	2004
		(US$ million)				
1	World	4350	4345	4704	5594	5970
2	Netherlands	2192	2065	2275	2962	3113
3	Colombia	585	612	673	683	704
4	Ecuador	156	229	290	295	342
5	Kenya	92	136	101	179	235
6	Italy	174	167	172	187	196
7	Israel	150	136	144	147	168
8	USA	142	145	139	144	138
9	Belgium	77	74	81	84	106
10	Denmark	72	72	93	109	103
11	Costa Rica	87	84	87	84	92
12	Spain	91	96	89	97	88
13	Germany	42	46	54	63	80
14	Canada	75	80	74	74	74
15	India	26	23	33	48	41
16	France	43	36	38	39	38
17	United Kingdom	31	32	29	40	38
18	Korea Republic	22	25	23	30	36
19	Malaysia	14	15	26	27	35
20	South Africa	22	19	22	30	34
21	Mexico	42	41	39	33	32
22	China	20	22	24	25	32
23	Turkey	8	11	17	25	29
24	New Zealand	25	24	21	23	26
25	Singapore	22	19	18	18	25

SOURCE: UN Comtrade 2004

Exhibit 2.4:
SHARE OF COUNTRY WISE EXPORTS OF BULBS, CUTTINGS AND LIVE PLANTS (2004)



SOURCE: UN Comtrade 2004

Table 2.3: LEADING EXPORTERS OF BULBS, CUTTINGS, AND LIVE PLANTS IN THE WORLD						
Sr. No.	**Exporter**	(US$ million)				
		2000	**2001**	**2002**	**2003**	**2004**
1	World	3995	4057	4685	5966	6422
2	Netherlands	1895	1862	2203	3003	3160
3	Belgium	287	315	349	449	507
4	Denmark	345	352	388	454	462
5	Italy	281	277	330	393	455
6	Germany	166	195	237	305	322
7	Canada	228	253	260	272	277
8	France	136	129	156	179	185
9	Spain	81	98	119	155	179
10	USA	149	133	130	145	175
11	Costa Rica	55	55	59	66	71
12	Israel	48	41	48	48	57
13	Poland	23	27	31	44	57
14	Taiwan	46	47	49	54	52
15	United Kingdom	28	27	27	30	42
16	Kenya	8	17	23	42	39
17	China	12	13	19	24	32
18	Uganda	0	6	8	7	28
19	New Zealand	10	11	15	20	27
20	Hungary	12	13	14	19	23
21	South Africa	10	11	14	16	20
22	Portugal	11	13	15	20	19
23	Austria	9	12	13	15	18
24	Brazil	10	11	12	15	17
25	Japan	10	8	11	12	15

SOURCE: UN Comtrade 2004

USA, Canada, Japan and other Asian countries.

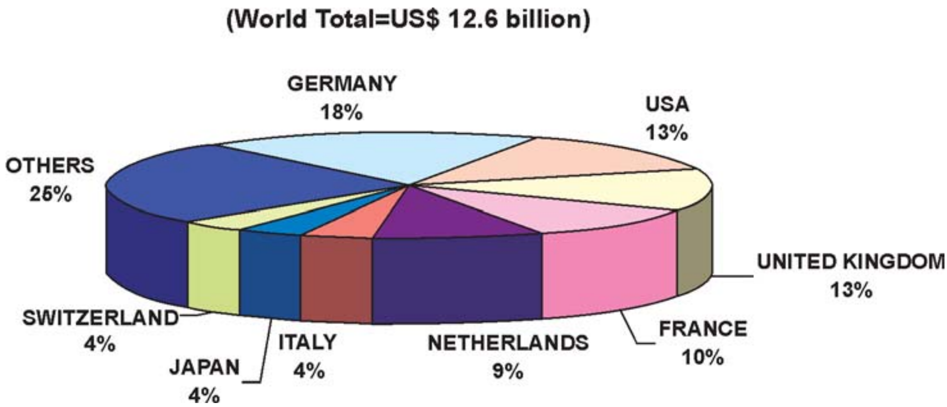
2.3 IMPORTS

The following factors may influence a country's decision to import cut flowers and plants:

- Lack or shortage of products to meet domestic demand.
- Import of products to extend the range of export products.
- The processing of products for re-exports.

Major importing markets of floriculture products are Germany (18%), the United States (13%), the United Kingdom (13%), France (10%), the Netherlands (8.8%), Italy

Exhibit 2.5:
SHARE OF TOP FLORICULTURE IMPORTERS IN THE WORLD (2004)



SOURCE: UN Comtrade 2004

Table 2.4:
SHARES OF TOP IMPORTING COUNTRIES IN THE WORLD (2004)

Rank	Importer	Value in 2004 (US$ mn)	(%)
1	World	12613	100.00
2	Germany	2231	17.69
3	USA	1607	12.74
4	United Kingdom	1604	12.72
5	France	1254	9.94
6	Netherlands	1107	8.78
7	Italy	489	3.88
9	Japan	461	3.65
8	Switzerland	450	3.57
10	Belgium	444	3.52
11	Austria	304	2.41
12	Canada	277	2.20
13	Denmark	257	2.04
14	Sweden	256	2.03
15	Spain	234	1.86
16	Russian Federation	186	1.47
18	Poland	141	1.12
17	Norway	138	1.09
19	Czech Republic	93	0.74
20	Finland	89	0.71

SOURCE: UN Comtrade 2004

(4%) and Japan (3.65%). These seven countries account for almost 70% of all imports of floriculture products. Other major importers are Switzerland, Belgium, Austria, Canada, Denmark and Sweden.

The world imports of floriculture products stood at US$ 12.61 billion. Germany (US$ 2,231 mn) was the largest importer followed by USA (US$ 1,607 mn), United Kingdom (US$ 1,604 mn) and France (US$ 1,254 mn).

Cut Flowers and Foliage

In 2004, the total value of cut flowers and foliage imported by the world was about US$ 6.40 billion. Europe has maintained its position as the top importer of cut flowers in the last decade. Europe along with North America account for almost 80% of worldwide import value.

The major importing countries of cut flowers are Germany, UK, USA, Netherlands, France, Japan, Italy and

Table 2.5:
WORLD'S HIGH GROWTH IMPORTING MARKETS (CAGR 2000-2004)

World Average: 10.21%

S. No.	Exporter	%
1	Russian Federation	45.07
2	Hungary	27.95
3	China	24.84
4	Poland	22.31
5	Czech Republic	19.24
6	Greece	18.52
7	United Kingdom	16.29
8	Spain	15.83
9	Finland	14.94
10	Sweden	14.88
11	Belgium	13.88
12	Ireland	13.27
13	Denmark	11.38
14	Norway	11.28
15	Germany	11.26
16	Portugal	11.07
17	France	10.73

SOURCE: UN Comtrade 2004

Switzerland. Germany leads with a global share of 18% followed by the United Kingdom (17%) and the USA (16%).

Most imports take place during the winter season between November and May.

Import values of cut flowers across Europe have risen over the last five years. Import of cut flowers in the North American region has remained quite stable. The main importers being the USA and Canada. Colombia, Ecuador and the Netherlands are the major exporters to North America.

Japan, Singapore, Hong Kong, Republic of Korea, Thailand and Malaysia have been the major importers in Asia. The main exporters to this region are the Netherlands, the USA, Thailand and India. Japan ranks as the 7th largest importer of cut flowers in the world.

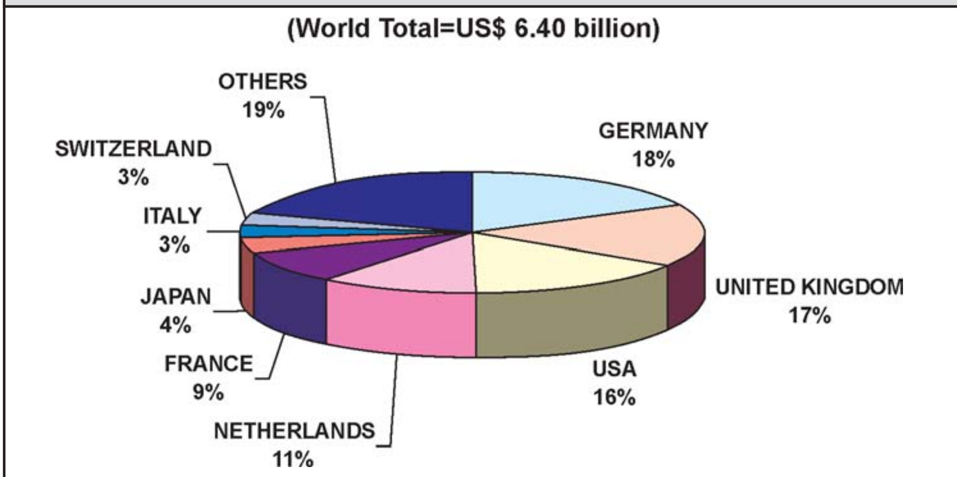
Plants: Bulbs, Cuttings, Live Plants

The worldwide import value of plants was US$ 6.21 billion in 2004. Phytosanitary regulations and high transport costs of plants have made the trade regionally concentrated. In fact, only 8% of the total European exports are imported by non-European countries. The import of plants is also mainly by Europe with almost 80% of the total import value.

2.4 TRADE RESTRICTIONS

In the last ten years, there has been a shift in export shares for cut flowers and plants from

Exhibit 2.6:
SHARE OF TOP IMPORTERS OF CUT FLOWERS AND FOLIAGE IN THE WORLD (2004)

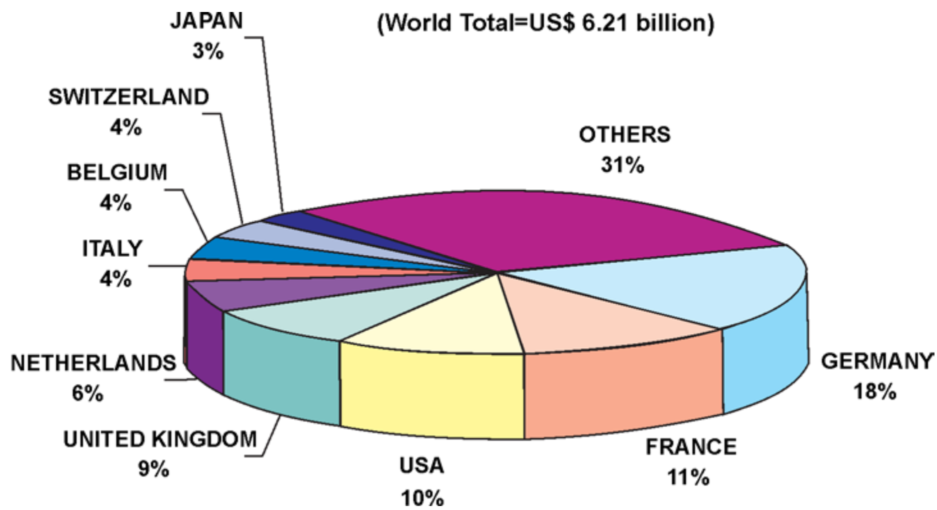


SOURCE: UN Comtrade 2004

Table 2.6: LEADING IMPORTERS OF CUT FLOWERS AND FOLIAGE IN THE WORLD						
Sr. No.	**Importer**	**(US$ million)**				
		2000	**2001**	**2002**	**2003**	**2004**
1	World	4672	4741	5110	5707	6401
2	Germany	848	944	945	999	1123
3	United Kingdom	572	622	855	955	1066
4	USA	867	814	781	876	1001
5	Netherlands	599	583	628	682	703
6	France	418	397	446	526	556
7	Japan	207	195	191	215	265
8	Italy	170	158	174	205	217
9	Switzerland	162	160	172	190	201
10	Belgium	126	125	135	147	174
11	Russian Federation	26	50	52	61	124
12	Austria	88	97	99	107	111
13	Canada	82	87	89	93	104
14	Denmark	68	72	69	89	102
15	Spain	43	44	52	71	80
16	Sweden	43	47	52	69	75
17	Poland	23	27	31	31	55
18	Norway	34	32	34	41	45
19	Czech Republic	26	27	33	40	45
20	Ireland	32	34	33	35	43
21	Greece	21	15	19	29	34
22	Singapore	27	27	26	26	26
23	Finland	17	16	17	20	25
24	Hungary	5	5	8	13	23
25	Mexico	22	23	20	22	21
SOURCE: UN Comtrade 2004						

traditional leaders (Europe, Japan and the USA) to many Asian, African, South American and Central and Eastern European countries. However, many of these emerging economies have not been able to reap the benefits of their potential due to trade restrictions imposed by the EU countries as well by USA and Japan. Various phytosanitary issues are also posing a major hurdle for exports by these developing countries.

Exhibit 2.7:
SHARE OF TOP IMPORTERS OF BULBS, CUTTINGS AND LIVE PLANTS (2004) IN THE WORLD



SOURCE: UN Comtrade 2004

European Union

a) Import duties

In order to support exports from developing countries, the EU operates the Generalised System of Preferences (GSP). The conventional import duty set by EU is 12%. However, exceptions are made in terms of lower tariffs (0-8.5%) to countries depending upon the group they fall under:

- SPGA: Countries included in the special arrangements for Least Developed Countries (LDC), following the Everything But Arms (EBA) initiative.
- SPGE: Countries included in the special arrangements to combat drug production and trafficking: Andean Group (Colombia, Venezuela, Ecuador, Peru, Bolivia) the Central American Common Market (Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Panama), plus Pakistan.
- SPGL (countries benefitting from Generalized System of Preferences (GSP) minus the countries of the SPGA and SPGE groups)

Instances of such preferential treatment are:

- All SPGA and SPGE countries excluding Myanmar can export to EU countries without any import duty imposed on it.

Table 2.7:
LEADING IMPORTERS OF BULBS, CUTTINGS, LIVE PLANTS IN THE WORLD

Sr. No.	Exporter	(US$ million) 2000	2001	2002	2003	2004
1	World	3875	4124	4723	5627	6212
2	Germany	608	728	835	1010	1108
3	France	416	393	464	593	698
4	USA	495	529	540	578	606
5	United Kingdom	305	341	414	480	538
6	Netherlands	220	218	277	372	403
7	Italy	232	220	244	250	271
8	Belgium	139	156	178	228	270
9	Switzerland	165	167	194	236	249
10	Japan	183	181	185	193	195
11	Austria	126	134	156	207	193
12	Sweden	104	115	135	168	181
13	Canada	133	138	139	155	172
14	Denmark	99	110	126	151	155
15	Spain	87	102	120	151	155
16	Norway	56	58	66	81	93
17	Poland	40	49	58	71	86
18	Finland	34	36	40	52	64
19	Russian Federation	16	25	41	51	61
20	Portugal	28	30	37	46	50
21	Czech Republic	20	24	31	44	49
22	China	19	21	31	43	49
23	Hungary	20	21	26	37	44
24	Greece	16	15	21	26	40
25	Korea Republic	26	28	32	30	39

SOURCE: UN Comtrade 2004

However, this relaxation is not absolute. It is subject to a volume restriction, i.e., it should not exceed the volume of one of the preceding four years.

- Bilateral/Multilateral agreements, with countries such as Israel, Morocco, Jordan and Cyprus, allow them to export to EU without any import duties. However, quotas and a minimum price level restriction limit their exports.

The non-EU European countries like Norway impose protectionist measure like tariff quotas in the summer period (June-October). Import license is a must for importers in Switzerland and Norway.

b) Non-tariff barriers

- Phytosanitary regulations on country of origin.
- Product and packaging requirements set by the Vereniging van Bloemenveilingen (VBN), the Dutch Flower Auctions Association, the umbrella organization of the Dutch auctions.
- Environmental requirements with regard to packaging and waste.

USA

The cut flowers and plants imported into the USA are also subject to import duties. Furthermore, plant quarantine regulations also apply on imports. Among other things, it also applies on import of soil.

Preferential agreements/ restrictions:

- Colombia and Ecuador are exempt from any import duties. However, an anti-dumping levy is imposed on them.
- North American Free Trade Agreement (NAFTA) provides free trade between Mexico, Canada and the USA.
- Phytosanitary certification is required for most cut flowers and plants into the USA. Import into the USA is allowed only through airports having plant inspection services. (Los Angeles, Seattle, Washington, Orlando, New York, Newark, Miami and San Fransisco).

Asia

Japan does not levy any import duty. However, it carries out strict phytosanitary inspections. Imported flowers are carefully inspected for insects. However, this inspection is very time consuming and poses problems in terms of quality/ freshness of flowers.

In order to reduce the risks and costs of exports to Japan, a pre-inspection system has been set up in the Netherlands and Colombia.

2.5 INTERNATIONAL REGULATIONS

There are a number of health, phytosanitary, quality, and regulatory requirements that are important to the global agribusiness trade. Many are government-mandated regulations, while others are standards and specifications established by the industry. All such regulations are pertinent to agribusiness suppliers including growers, packers, processors and shippers, along the farm-to-market value chain, with special significance to those marketing produce internationally.

2.6 SUM UP

The trade value (exports) of floriculture products in 2004 was US$ 12.4 billion. This is a major jump as compared to 1994 (US$ 6 billion). This is attributed to improved production, distribution and transportation measures as well as due to an increase in the number of players in the market.

Trade between third world countries and developed world has improved by leaps and bounds. Many Asian, African and South American countries are exporting to European countries. The USA still mainly imports from Colombia and Ecuador. Taiwan, Thailand and other countries in Asia mainly export to Japan.

The emerging economies are gaining due to various environmental and economic advantages along with preferential treatment meted out to them. Western markets are regulated by strict phytosanitary regulations. Along with these, environmental requirements with regard to production and packaging of flowers also play a major role.

3. IMPORT MARKETS AND CHANNELS

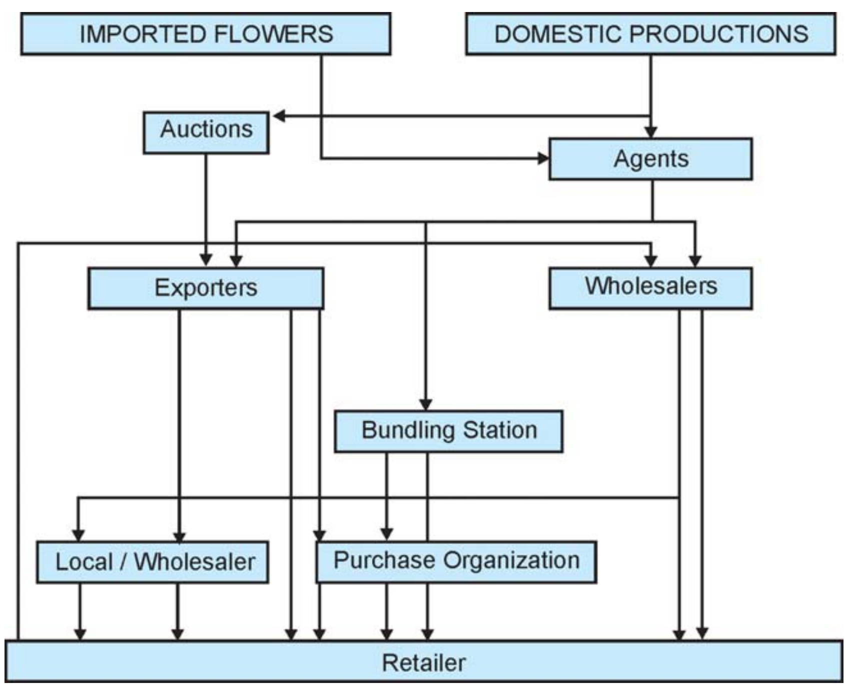
3.1 INTRODUCTION

Europe, Japan and the USA are the major producers as well as buyers of cut flowers and plants. However, over the last decade and half, many of the countries in the above regions have started importing substantial volume of cut flowers and plants from emerging markets due to non-availability all through the year and cost advantage over domestically produced flowers and plants. In this chapter, the main characteristics, similarities and differences of major import channels will be discussed.

3.2 THE FLOWER CHAIN

The parties that trade in cut flowers and plants, from the producer to the final consumer are depicted in

Exhibit 3.1:
THE FLOWER CHAIN



the flower chain diagram. The chain provides an insight into the various distribution channels of cut flowers and plants.

Flowers and plants are perishable. This characteristic forms an important criterion while considering their distribution. The manner in which they are distributed across different countries is not similar. However, the main parties and processes involved are almost the same.

3.3 PRODUCERS

Producers mainly sell their cut flowers and plants through auctions and wholesalers. The auction system is used in the Netherlands and Japan. In the western markets, producers sell their products directly to the wholesale traders or through wholesale markets. Some producers also sell their produce directly to the retail traders. This mode avoids intermediates/ middlemen and also they can produce according to the specific needs of the buyer. However, this method limits producers' market access and diversification possibilities. Also they don't enjoy economies of scale. So far direct selling has been more common among plant producers.

3.4 AUCTIONS

Auctions are sales organizations for producers. The producers try to obtain the highest possible price for their products through these sales organizations. In the Netherlands, these auctions are conducted by sales cooperatives and the producers are members of such cooperatives. The cooperatives aim at realising the highest possible sales price for the affiliated members and suppliers. The suppliers of flowers also have to be affiliated with the auctioning organizations.

The Dutch sales cooperatives make use of two methods:

1) *The auction*

The products supplied by the members of the sales cooperatives are sold via the auction. A clock is used for this purpose. A clock is an instrument for realising the highest possible price for the product. In order to do so, the principle of decreasing price per stem or per plant has been established.

The buyers of a wholesale or a retail store buy the auctioned products on the basis of the highest possible price bid by them. The price that the buyer pays for the flowers is closely related to the supply on a specific day and on his orders. The supply per day depends on weather conditions and on the supply by local and foreign flowers.

In this form of transaction, the producer does not have any direct control over the price. A producer can, however, try and realize a higher price by supplying flowers that meet the highest product requirements of the auction. The flowers sold through the auction clock are subjected to product inspections before being sold.

2) The mediating agency

The mediating agency mediates on behalf of sales cooperatives in direct sales between the producer and a wholesaler or retailer. The mediating agency is an outlet that is used by producers and traders to guarantee sales and to cater to wishes and needs. In auctions, before the clock, there is hardly any opportunity to match the needs of the producer to those of the buyer.

The prices and sales quantities are laid down in contracts, thereby ensuring that the prices are based on that day's clock price, orders received, available supply, the hallmark and packaging of the product.

Dutch Auction System

The Dutch auction system has proven its value. More than 60% of the international trade in cut flowers and 40% of that in plants is conducted from the Netherlands. Breeding and propagation businesses, producers, auctioners, traders and retailers supported by banks, marketing companies, packaging companies and agrotechnical firms, transport agencies and logistical services, knowledge networks, interest groups, research institutes and government agencies together form a tight cluster that forms the basis for the success of the Dutch floriculture industry.

In the Netherlands, majority of the supply to the sales cooperatives is sold through the auction clock. However, certain changes and modifications in the modes of transaction are taking place. The mediating agency will be developed further as an adequate outlet for sales cooperatives.

Information technology is beginning to play a major role in sales cooperatives. This leads to a further separation between products and prices. Already, interactive media and electronic auction clocks are being used in various markets.

Vereniging van Bloemenveilingen (VBN), the Dutch Flower Auctions Association is the umbrella organisation for the following Dutch cooperatives for floricultural auctions:

- FloraHolland
- Bloemenveiling Aalsmeer
- Bloemenveiling Oost Nederland
- Bloemenveiling Vleuten.

The VBN coordinates the joint activities of these auctions with regard to quality, promotion of their interests, logistics, market information, legal issues, lobbying and communication.

The larger flower auctions in the Netherlands aim at the wholesale trade while smaller flower auctions cater to the retail trade. The two main flower auctions in the Netherlands are the VBA in Aalsmeer and Bloemenveiling Holland in Naaldwijk.

3.5 WHOLESALE

In countries that do not have auctions, flowers are sold to the wholesale and retail trade through producer markets. The wholesale market has both collecting and distributing function. The collecting function consists of purchasing a wide range of cut flowers and plants. The distributing function consists of the wholesaler catering to the needs of his clients in their demand for flowers.

Forms of Wholesale

Wholesalers could be specialised in cut flowers and/or plants alone and may sell only one type of flower, such as the rose.

Different types of wholesalers are:

1) Breeder/Wholesaler

A breeder/wholesaler may purchase and sell or auction flowers of other producers to widen his own product range.

2) Domestic wholesaler

Domestic wholesalers supply only to the domestic wholesale and retail markets.

3) Cash and carry

A cash and carry is a cooled sales hall where both the wholesale and retail traders may purchase cut flowers and plants in similar numbers.

4) Exporter

Exporting wholesalers supply a wide range of flowers to foreign florists, wholesalers and/or supermarkets. A further distinction can be made between wholesalers who sell 'door-to-door', the so-called Flying Dutchmen, and wholesalers who deliver to order.

5) Commission agent/importer

This type of wholesaler specialises in import flowers, bouquets, painted flowers and/or the sale of flowers that were purchased at other auctions.

Purchase

The wholesale trade purchases its cut flowers and plants from producers, auctions, foreign exporters and/or commission agents. The degree to which wholesalers purchase import flowers depend on the domestic supply and on the price.

Sales

Cut flowers and plants of a wholesaler/exporter may be intermediate products or end products for the customer. An intermediate product is one that is to be further processed into an end product for the customer. An end product for instance would be a bouquet that a wholesaler has made suitable to be sold directly in a shop. Some wholesalers make these bouquets themselves, while other wholesalers contract the same out to specialised businesses.

The customers of the wholesaler/exporter are florists, supermarkets and other wholesalers. Marketing channels used by the wholesalers/exporters are:

1) End-use specialist

Specialising in certain consumer segments such as bouquets.

2) Vertical level specialist

Specialising in deliveries to a specific link in the flower chain, such as supermarkets or florists.

3) Geographic specialist

Sales only take place in a specific geographic area, such as the Netherlands or the United Kingdom.

4) Customer-size specialist

Exporters concentrate on segments that are neglected by other exporters, such as cash and carry and garden centres.

Normally, wholesalers are able to cater to retailers within a radius of 1000 km. Customers outside this radius are generally importers and/or wholesalers.

The relationship between the customer and the seller is of great importance in the flower trade. Sales in the wholesale trade take place by telephone, fax, internet or by personal visits. The gross profit margins are in the range of 10-15% for commissioned agents and approximately 15% for other wholesalers. Deviations in these estimates occur due to transport costs and customers' wishes.

Trade fairs and promotional events are commonly used by wholesalers for publicity and market penetration. Advertisements and trade names are hardly an issue in this trade.

Logistics

Cut flowers and plants are perishable products. The wholesale trade bears this in mind in its approach, furnishing and facilities. The wholesalers approach is that cut flowers are top priority over plants to be sold on the day they are purchased. The cut flowers are kept fresh by storage in water, cooling of storage rooms and means of transport, efficient and fast delivery and proper packaging.

The wholesaler decides the purchase quantity and types of flowers. These are then stored in refrigerated rooms. Ordered flowers are then collected and packaged according to customer's needs and placed in boxes or on water. These are then shipped to the wholesaler's own shipment department. From the shipment department they are further delivered to the customers through own or third party transport.

The trade in cut flowers and plants is mainly regional due to its unfavourable price/volume ratio.

The wholesale trade supplies to customers within a range of 1,500 km. radius by trucks.

Transport by sea is used only for the export of few plants. Inter-continental deliveries are handled by air. Due to increased inter-continental trade over the last decade, few airlines have started offering door-to-door service or have a branch of their own at important wholesale markets or auctions. There are also a few companies who specialise in the transport of flowers between markets and to airports.

The choice of packaging and the means of transport are extremely crucial to wholesalers in order to maintain the freshness of the flowers and plants and also to achieve a favourable price/volume ratio.

International supplies can be hindered by lengthy customs formalities, phytosanitary inspections and other unforeseen circumstances. The solution lies in fast custom clearance, inspection and setting up of pre-shipment inspection centres like the centres set-up in the Netherlands and Colombia.

Packaging is also crucial in order to preserve the freshness and optimal condition as well as to prevent damage. Apart from this role, packaging also has a promotional and presentational significance for sellers.

3.6 RETAIL TRADE

This is the link between the wholesaler and the customer. The consumer can choose from four types of retailers:

1) *Florist*

A florist supplies cut flowers and plants to buyers. They could be exclusive florists as well as franchise florists. Exclusive florists will generally have excellent service and high prices, while the franchise florists will position themselves in a low-value segment.

2) *Supermarkets*

Supermarkets are increasingly becoming an important source of retail trade. They sell at competitive prices and offer very little in terms of customised services. The importance of supermarkets in retail trade of flowers has been steadily growing in major European, North American and Japanese markets. This trend is further expected to continue in future as well.

3) *Street vendors*

They sell at very low prices with minimum services.

4) *Garden centres*

Cut flowers and plants are part of a wide range of garden products sold at garden centres. The market shares of each of these types of retailers vary across countries and markets.

Purchase

Retailers normally purchase from several wholesalers. There are exclusive contracts, but they usually relate to specific products rather than an entire range of flowers and plants. The links between producer and retailer vary across nations, with Japan having the most number of links.

Sales

In Europe and Japan, the retail trade uses personal sales. In USA, most sales happen over telephones. Telemarketing is also a major medium of sales in many developed countries.

3.7 CONSUMERS

Consumers can be divided into two types:

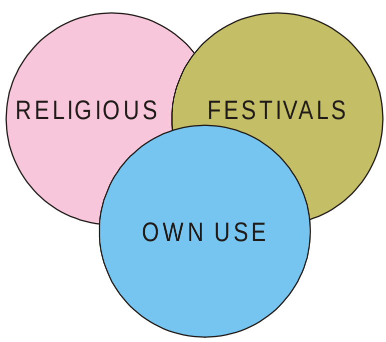
1) Individual households
2) Institutional markets (include government institutions, hotels and other profit/non-profit businesses).

Use

Cut flowers and plants are bought for one's own use, as a gift or for occasions. The purchase of cut flowers is concentrated around holidays such as Easter, Valentine's Day, Mother's Day and other religious/non-religious festivals and cultural holidays. Most of these festivals fall during the winter period, i.e., November to May. But this is not a strict transition. Many countries in Europe like Germany and the Netherlands buy flowers for own use. While this segment is still not so well developed in the USA and Japan.

The segments according to the nature of cut flowers are:

Exhibit 3.2:
CONSUMPTION PURPOSES



1) Basic segment

Cut flowers and plants bought in memory of someone or for a festive event fall under this segment. The demand in this segment is fairly stable. Florists, street vendors and garden centres are particularly active in this segment.

2) Mass segment

Cut flowers and plants are supplied by supermarkets and street vendors at competitive prices fall under this segment. This includes standard mono-bunches and bouquets.

3) Speciality segment

Customised orders are central in this segment. Importance is paid to type of flowers, colours and shape that are crucial in the order. Garden centre's and florists operate in this segment.

The mass and speciality segments normally belong to the 'own use' segment. For the consumer, the concept of quality usually means 'freshness', and other subjective aspects such as type of flower, colour, leaf size and price. Quality is not a uniform concept and is applied flexibly. Many times, suggestions or advice by retailers also play an important role in a consumer's choice.

3.8 MARKET DEVELOPMENTS

1) Computerization

There is an increasing use of online trading and sales systems in flower business. This is evidently making the trade more efficient and effective. Prices and services have become more uniform and transparent. This is also gradually reducing the number of links in flower trade.

2) Product life cycle

Cut flowers and plants have a Product Life Cycle (PLC) that corresponds to various phases in the sale and pricing of these products. Depending on the degree of familiarity with flowers,

Exhibit 3.3:
PRODUCT LIFE CYCLE (PLC) IN OWN USE SEGMENT

Introduction (e.g. India)

↓

Growth (e.g. Japan, USA)

↓

Saturation (e.g. European Union)

↓

Decline

countries, products, segments and consumption are classified into any one of the phases in the PLC. Applying the life cycle to 'own use' segment, the following picture usually emerges:

The later phases are usually characterized by increased supply and greater price competition.

PLC is also related to fashion trends, economic situation of a country and supply of the relevant type in the world market. However, with increasing supply and varieties, the PLC is getting shorter. There is market for those who offer lower prices and newer varieties and products.

3.9 SUM UP

Due to increased international trade, the flower chain is subject to changes. Parties involved are in search of more opportunities. As a result import auctions and increased use of IT is being witnessed. In the wholesale trade, there are opportunities with regard to supplying to cash & carry, for wholesalers who supply to supermarkets, and directly to supermarkets.

The mass and speciality segments will become more important, not just in the western markets, but also in newer markets of South and South East Asia. This is due to increasing flower consumption for own use.

For the bulk market, price is a decisive factor. Specialty segment offers opportunities for high-quality suppliers of flowers.

4. PROFILE OF SELECT PRODUCER COUNTRIES

4.1 INTRODUCTION

The international trade in floriculture products is primarily to meet the consumer demands in the markets of developed economies. The consumer market for flowers has become much more sophisticated in the past few decades, and today only the high quality flowers are traded in the world market.

In this chapter, apart from major developed flower exporting countries, the emphasis would be on the emerging and developing countries that have gained a fair share of export markets in the past decade. Focus would be on emerging and notable exporting economies like Colombia, Ecuador, Kenya, Zimbabwe, Thailand and Israel. Factors that will be in focus would be market shares of these economies in the world flower trade, employment and foreign exchange revenue.

4.2 EUROPE

The Netherlands

The floricultural sector is important for the Dutch economy. The production of floricultural products grown in greenhouses was worth nearly US$ 3.75 billion in 2004. The Flower Council of Holland estimated that, in 2004, the total service area of greenhouses for floricultural products was almost 6,000 hectares, divided over 6,000 businesses. An additional 2,600 hectares of land are used for the open-air production of floricultural products. Dutch floricultural businesses employ about 50,000 people. This does not include the employment offered by trading businesses, seed suppliers, greenhouse builders and other suppliers.

The Dutch auction system has proven its value. More than 60% of the international trade in cut flowers and 40% of that in the house plants is originated from the Netherlands. Most floricultural production is sold through one of the many floral markets located throughout the country.

Factors responsible for the Netherlands' strong position in the world floriculture market are:

- Tremendous attention to research and development in cultivation technique and new and improved varieties, with focus on environmentally friendly cultivation.

- Excellent post-harvest care and handling facilities suitable for handling large volumes of trade.
- Close link between research, practice and training.
- Several institutions and associations that promote interests of producers and exporters. This is evident from the number of lobbying groups, extensive market research and other promotional activities being undertaken in the country.
- Strong demand in European market and establishment of EU and the common market.

The Netherlands is the largest exporter of cut flowers and plants in the world. Approximately 80% of Dutch floricultural products are exported, in particular to Germany, the United Kingdom and France. Between 2000 and 2004, the value of floriculture exports increased from US$ 4,087 million to US$ 6,272 million (11.3% CAGR). Its share in the world market is about 52.14% (US$ 3.11 billion) for cut flowers and foliage and 49.2% (US$ 3.16 billion) for bulbs, cuttings and live plants in 2004.

The Netherlands imported US$ 1.10 billion worth floriculture products in 2004. In addition to domestic production, cut flowers arrive by the planeload from around the world and are then re-sold to other countries. Almost 80% of the Netherlands' trade happens within Europe. Dutch traders also provide imported flowers to their customers across Europe. Roughly 85% of imported flowers are re-exported by the Netherlands in this way. Countries like Israel, Zimbabwe and Kenya sell many of their products via the Netherlands, Ecuador, Colombia, Thailand and Turkey. However, they only sell a part of their exports to Europe via the Netherlands.

4.3 NORTH AMERICA

The USA

The United States Department of Agriculture estimated that, in 2002, there was around 8,500 hectares of land under floriculture production with a wholesale value of sales estimated at US$ 5 billion. California was the leading state with wholesale value of crop sales estimated at US$ 1 billion. Florida was the next largest state with sales of US$ 877 million. These two states account for 38% of the total sales by USA. The five largest producing states, California, Florida, Texas, Michigan, and Ohio, had combined sales of US$ 2.62 billion or 54% of the total.

In 2002, of the total sales of floriculture products in USA, sale of bedding plants was valued at

Table 4.1: UNITED STATES FLORICULTURE SALES (2002) (million US$)	
Product Type	**Total Sales**
Bedding plants	2,280
Potted flowering plants	822
Potted foliage plants	663
Cut Flowers	410
Cut Foliage	111
SOURCE: USDA NASS Floriculture Crops, 2002 Summary	

US$ 2.28 billion, followed by potted flowering plants (US$ 822 mn), potted foliage plants (US$ 663 mn), cut flowers and foliage (US$ 521 mn).

Between 2000 and 2004, the value of floriculture exports increased from US$ 291 million to US$ 312 million (1.72% CAGR).

Canada

Canada experienced a positive net balance of trade in floriculture products for the seventh consecutive year in 2004, reaching a record US$ 74 million. UN Comtrade Statistics estimated that Canadian floriculture exports was at US$ 351 million in 2004, up 3.74% (CAGR) since 2000 (US$ 303 million). The main export market for Canadian floriculture products is the United States. Canada exported US$ 344 million (98% of total exports) worth floriculture products to USA alone. The Netherlands was the next largest market for Canadian floriculture exports, with an export value of US$ 4 million, followed by Germany (US$ 1 million).

The UN Comtrade Statistics estimated that the Canadian imports of floriculture products was at US$ 277 million in 2004. The largest suppliers were the United States, the Netherlands, Columbia, Ecuador and Mexico. The United States supplied 48% (US$ 120 million) of all floriculture products imported by Canada. Imports of floriculture products from South American countries was more than 26% of the total imports, and the Netherlands supplied 17% (US$ 43 million).

4.4 SOUTH AMERICA

Colombia

Colombia accounts for approximately 2% of the total flower-cultivated area in the world. The floriculture sector in Colombia employs about 94,000 people directly and another 80,000 are employed indirectly. It mainly grows cut flowers. Colombia has a relatively small domestic market hence it is more focussed towards exports of floricultural products.

Colombia is the second largest floriculture exporter in the world after the Netherlands. Colombia exports more than 95% (approximately US$ 684 million) of its estimated total production. Between 2000 and 2004, the value of floriculture exports has increased from US$ 586 million to US$ 706 million (4.77% CAGR). Its main export market is the USA with a share of more than 80% (US$ 557 million) of the total exports. In 2004, the exports amounted to 5.7% of total world exports (US$ 706 million). The EU market absorbed about 9% of Colombia's total exports in 2004, amounting to US$ 64 million.

Colombia's market share in the world trade has grown considerably over the last few years. Factors responsible for such a trend are:

- Favourable climatic conditions.
- Low labour costs.
- Products that meet international standards and requirements.
- Proximity to markets, e.g. North America.
- Efficient and effective air transport to the USA.
- Sales organizations that regulate and monitor the export markets.
- Pre-inspection facility for export of cut flowers to Japan.
- Preferential market access in the USA and EU.
- Environmentally friendly cultivation.

Ecuador

Ecuador has become an important player in the world floriculture trade in the last decade and half. In 2004, exports of floriculture products valued at US$ 344 million (2.8% of world exports). Between 2000 and 2004, the value of floriculture exports has increased from US$ 158 million to US$ 344 million (21.5% CAGR). However, almost 99% of its exports are made up of cut flowers and foliage (US$ 341 million).

The main export products are rose, chrysanthemum and carnation. Factors responsible for its increasing position in world floriculture trade are:

- Favourable climatic conditions.
- Low labour costs.
- Products that meet international standards and requirements.
- Assistance of foreign consultants.
- Favourable location in terms of market access, e.g. North America.
- Efficient and effective air transport to the USA.

- Marketing of flowers via Colombian and American distribution channels.
- Environmentally friendly cultivation.

4.5 AFRICA

Kenya

Kenya has now become the largest producer in Africa and the leading supplier to Europe. Floriculture industry in Kenya is second major foreign exchange earner. The industry employs over 70,000 people directly and 500,000 people indirectly. According to Kenyan Flower Council, the industry has witnessed an average growth of 20% per annum and exported over 60,000 tonnes of cut flowers compared with 52,000 tonne in 2002.

Rose flower is the leading Kenyan variety with a share of 70% in total flower exports. Other major product groups are Mixed bouquets (11%), Carnations 5%, Statice 3%. The Kenyan floriculture sector has been dynamic enough to move into higher value production. Ideal natural conditions for floriculture, experience gained from fresh produce exports, the presence of a commercial farming community, favoured access to European markets and government support are reasons for attracting large investments in floriculture. Earlier, the production focused on hard plants, primarily carnations, that could withstand relatively crude open field growing conditions and less than optimal handling and transport conditions. The industry has moved up from low input open field flower production to greenhouse production at higher altitudes to produce higher value flowers. An open policy that permits movement of production factors including technology across its borders, recognition of breeder rights, collective efforts of producers and an emerging productive relationship with the government have helped the sector upgrade itself and remain globally competitive.

Changes in supply chain relationships made by large Kenyan producers in the past decade give them the ability to aggressively seek new markets for Kenyan floriculture products. In an attempt to more effectively control the distribution chain and increase competitiveness through vertical integration, various intermediaries have taken on new roles and have established new types of linkages in the value chain. Flowers that were initially sent largely through Dutch auctions are now sold directly to retailers, wholesalers and through alternative auctions, to avoid bans and quotas. Many Kenyan exporters have opened up their own European offices.

Kenya exported approximately US$ 273 million worth floriculture products in 2004; nearly 94% (US$ 257 million) of its exports are to Europe. Between 2000 and 2004, the value of floriculture exports has increased from US$ 100 million to US$ 273 million (28.5% CAGR). Kenya has been the leader in cut flower production and exports, with about 60% share in African flower trade. Kenya's success has had a significant spillover effect, serving as a model for development of flower industries in other sub-Sahara African countries such as Zimbabwe, Uganda, and Tanzania.

Zimbabwe

Zimbabwe has about 900 hectares under floriculture cultivation with over 27,000 workers engaged in the activity. The Zimbabwean cut-flower industry is a highly export-oriented sector, with close to 100% of commercially grown flowers finding their way into foreign markets. It has been an extremely fast growing sector, as compared to other Zimbabwean exports, and in terms of its rise in its world share of the cut flower market.

Number of factors have contributed to the success of Zimbabwe in floriculture sector. The climate and southern hemisphere seasons give Zimbabwe an advantage over other major competitors in its main export market, Europe. A relatively literate workforce has made the necessary training and skills-acquisition easier. A high level of farm management enables the production of top quality flowers and demonstrates a great awareness of market demands. Growers have formed effective production and marketing groups to maintain quality control. Recent improvements in air transport and the removal of the monopoly, previously held by the state carrier, have strengthened the logistics for this sector. Although the depreciation of the Zimbabwean dollar has increased the viability of the industry, the land reform policies have reduced the fortunes of the horticulture industry. The new farmers have been grappling with shortage of capital, chemicals and general technical know-how.

Between 2000 and 2004, the value of floriculture exports has declined from US$ 26 million to US$ 22 million (-4.09 CAGR). Zimbabwe is currently the second largest exporter of cut-flowers in Africa (after Kenya).

Ethiopia

Floriculture has become a flourishing business in Ethiopia in the past five years. According to Ethiopian Floriculture Producers and Exporters Association, Ethiopia's floriculture business could become prime agro product exports overtaking coffee. Ethiopia exported approximately US$ 1.5 million worth flowers to Europe in 2002, with the amount increasing to US$ 4.13 million in 2003 and US$ 6.5 milllion in 2004. The industry's export earnings is set to grow to US$ 100 million by 2007, a five-fold increase on the US$ 20 million earned in 2005. A score of investors from the Netherlands, Germany, India and Israel have secured licenses for floriculture development. The number of flower growers is expected to increase five-fold by December 2006 due to migration of flower producers from Kenya.

Ethopia has the following advantages in commercial floriculture farming:

– Climate: The appropriate climate gives Ethiopia the potential to achieve high growth rates of flower cuttings and to produce high yields of small roses which meets the European market demand.
– Low unit cost of production: Ethiopia has a small cost advantage over neighbouring countries, although the benefits of these low costs depend on maintaining quality standards.
– Other support:
    - Loans are provided to the tune of 60% of the project cost through their Development Bank.
    - Floriculture units are given 5 year tax holiday. Foreign companies are exempted from tax for three years after commencement of their projects.
    - Import of capital goods / consumables are 100% exempted from customs and local purchases are exempted from VAT.
    - Lease prices of land are very cheap. Allotment of land is made by the Government for 33 years with subsidy in lease rent for the first three years.
    - Raw material plus input cost amount to approximately 18% of the gross revenues.
    - Interest plus principal repayment (for a six year loan) amounts to 20% of gross revenue.
    - Freight is about 25% of gross revenue.

According to Ethiopian Investment Commission, 35 Indian companies have received investment licenses for investment in floriculture sector.

4.6 ASIA

Thailand

Thailand is Southeast Asia's leading orchid producer, and contributes 85% of the world export of orchids. Between 2000 and 2003, the value of floriculture exports has increased from US$ 42 million to US$ 69 million (18.0% CAGR). The greater part of the flower exports consists of orchids. Major export markets are USA, Japan and Europe.

Thailand has also become successful in the export of plantlets, produced under tissue culture. The country is one of the world's largest plant cloners, and, moreover, breeds its own orchid varieties. International plant breeders are sending their plants to Thailand for sub-cloning.

Thailand has encountered the same problem as many other countries; limited airfreight space, which restricts its ability to keep up with the growing international demand for its flowers. It is estimated that the exporters are able to meet only 70% of the orders received. In order to fend off potential competitors in Latin America, and to facilitate the penetration in the US market, the Bangkok Flower Centre has established a farm in Costa Rica.

Israel

About half of all the area devoted to flower growing in Israel consists of advanced, computerized greenhouses and about 12% of the area is under protective netting. Individual farms in Israel together occupy about 2% of crop-producing land. These units are small by international standards and have been highly profitable in the past. However, the depreciation of the New Israeli Shekel (ILS) against the European currencies has sharply reduced income and profitability in recent years. The expertise of the farmers, backed by private and government research and development and field service supervision, contributes to production and exports of high quality and wide variety of flowers. These include cut flowers such as roses, gypsophila, carnations, solidago, limonium, gerbera, anemone, and ornamental plants.

The Israeli green industry is world renowned for the breeding of various plants. The advanced growing systems, whether in greenhouses, undercover or in open fields, result in year round production of floriculture products. The growing systems are monitored for water consumption, pest management and harvesting and are approved by international plant regulations. The Israeli floriculture industry exports green leaves, cut flowers, ornamental plants, bulbs, tissue culture and seeds around the globe both by air and by sea. Several Israeli plant producers have farms outside Israel in countries such as Kenya, Ethiopia, China, Tanzania, Italy and Turkey, among others.

Today, some of the innovative growers are connected on-line with the auctions and follow transactions in real time. Some are selling their flowers directly to buyers in the flower auctions in countries such as the Netherlands, Belgium and Germany. However, marketing, as well as shipping, are handled by a new private company - Aviv - and by the long-established government-growers joint export company Agrexco, which has special air and sea terminals in Israel and Europe, and ensures quality and timely arrival at the markets. The Flower Production and Marketing Board of Israel provides each grower with daily results of sales.

Flowers are Israel's leading agricultural export with the value of exports estimated at US$ 225 million in 2004. Between 2000 and 2004, the value of floriculture exports increased from US$ 197 million to US$ 225 million (3.4% CAGR). Much of the exports are based on person-to-person contractual arrangements.

4.7 SUM UP

Success of important flower suppliers in the world trade is based on the market share.The Netherlands is still the biggest exporter of flowers and owes this to modern production machinery, efficient logistics and its locational advantage being in Europe. Colombia, Ecuador, Israel, Kenya, Zimbabwe and Thailand have been experiencing great success mainly due to favourable climatic conditions, low labour costs, geographic location and well developed distribution channels in the western markets. Most trade happens directly through importers and auctions.

Direct sales to wholesale trade is more common than direct sales to retail trade, because, realising supplies to the retail trade is too expensive and difficult due to:

- Lack of distribution networks.
- Unfamiliarity with demand and individual needs.
- Ability to meet only part of the demand and choices.

5. INDIAN FLORICULTURE INDUSTRY

5.1 INTRODUCTION

India has an ancient heritage when it comes to floriculture. It has grown flowers for various purposes ranging from aesthetic to social and religious. However, commercial floriculture has been of recent origin. A consistent increase in demand for cut and potted flowers has made floriculture as one of the important commercial trades in Indian agriculture. Emphasis has been shifting from traditional flowers to cut flowers for export purposes. The liberalisation of economy since 1991-92 has given an impetus to the Indian entrepreneurs for establishing export oriented floriculture unit under controlled climatic conditions.

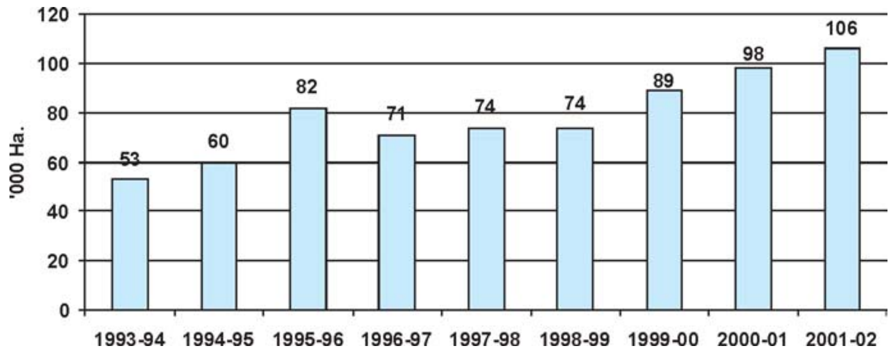
Today, floriculture as a commercial venture has become a hi-tech activity under controlled climatic conditions inside greenhouse. India has the advantage of a perfect climatic and economic setting for a potentially profitable floricultural sector. A mild winter, abundant sunlight, a suitable agro-climatic condition, low labour costs, availability of skilled manpower are factors that are beneficial for the growth and development of this sector into a potential earner of foreign exchange.

5.2 PRODUCTION SCENARIO

In 2001-02, the total area under floriculture cultivation was estimated to be 106,000 ha. with an estimated production of 535,000 MT of loose flowers and about 2,565 million (numbers) of cut flowers. Maharashtra, Karnataka, Andhra Pradesh and Haryana have emerged as major floriculture centres in recent times. Tamil Nadu is estimated to have the highest area under floriculture production followed by Karnataka, West Bengal, Andhra Pradesh and Maharashtra.

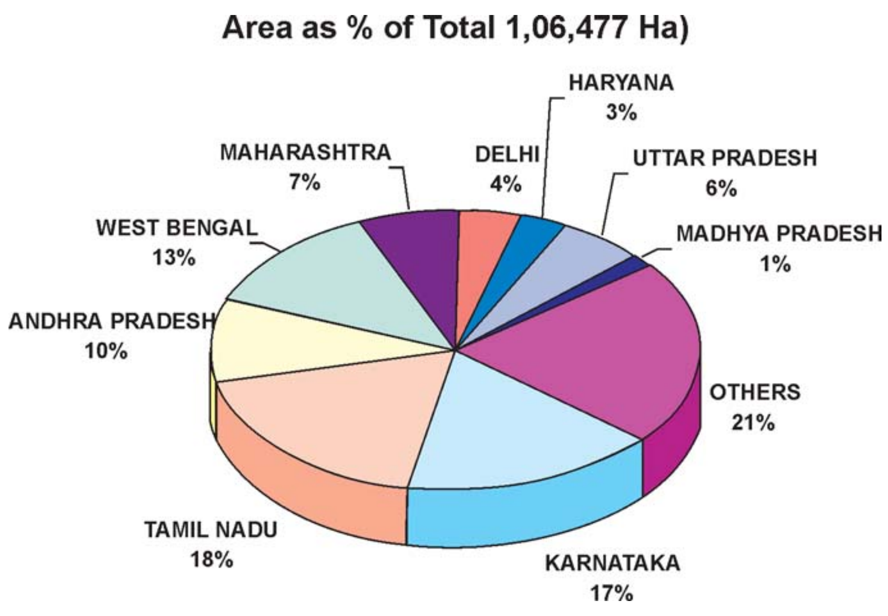
The focused attention to horticulture has paid dividends and resulted in an increased production and export. Large areas were brought under improved cultivation, with quality planting materials, training, and innovative technology like drip irrigation, green house cultivation. Consequently, cultivation

Exhibit 5.1:
ALL INDIA AREA UNDER FLORICULTURE PRODUCTION



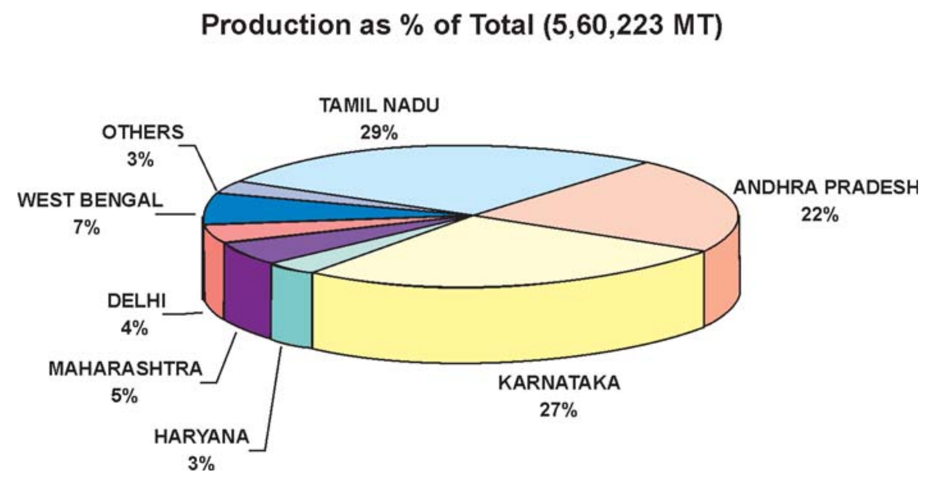
SOURCE: Indian Horticulture Database 2003, National Horticulture Board

Exhibit 5.2:
STATE-WISE AREA UNDER FLORICULTURE CULTIVATION (2001-02)



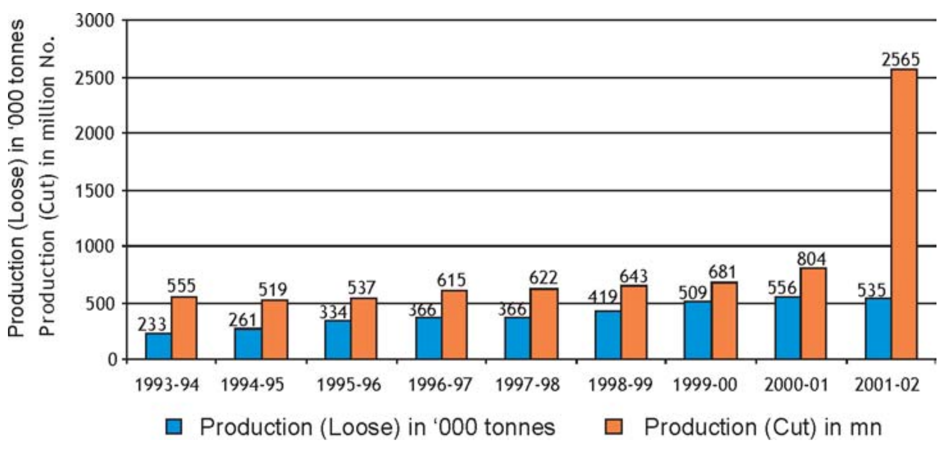
SOURCE: Indian Horticulture Database 2003, National Horticulture Board

Exhibit 5.3:
STATE-WISE PRODUCTION OF FLOWERS (1999-00)



SOURCE: Indian Horticulture Database 2003, National Horticulture Board

Exhibit 5.4:
PRODUCTION TREND OF FLOWERS IN INDIA



SOURCE: Indian Horticulture Database 2003, National Horticulture Board of flowers along with other horticulture products like fruits and vegetables increased.

5.3 CONDUCIVE CONDITIONS

Floriculture cultivation and exports can create sound economic future for India. The prospects are good for floriculture trade because of the following reasons:

- Climatic conditions are ideal during the winter months (October to April).
- Low cost of inputs including labour.
- Strategic location to cater to major flower consumption centres like Europe, Japan and Middle East countries.
- High foreign exchange earning capability, 20 to 30 times higher than any other agricultural product.
- Treasure house of tropical and temperate plants, particularly orchids and roses.
- Wide choice of cut flower species and cultivars suitable for growing in different climatic regions.
- Low capital intensity.

5.4 EXPORT ORIENTED FLORICULTURE DEVELOPMENT AND GROWTH PATTERN

A number of Export Oriented Units have been set up in the floriculture segment in the last decade and half. Liberalization and the Plant, Fruits and Seeds (Regulation of Import into India) Order, 1989, also known as the New Seed Policy have already made it feasible to import planting material of international varieties.

According to Agricultural and Processed Food Products Export Development Authority (APEDA), more than 170 EOUs have been approved in the sector. But many of them operate at less than their capacity. These units export roses, carnations, orchids, gladioli and anthodium to Japan, Netherlands, USA, Germany and France. India also exports seeds, bulbs, dried flowers, ferns, leaves and grass. Indian producers and traders are now also sending flowers directly to the European countries rather than through Netherlands.

With the growing competitiveness and fall in international prices, floriculture units in India have been facing constraints. With redressal of the problems, the industry may turn to be a viable one earning foreign exchange.

Majority of the floriculture units are based in South zone mainly in Karnataka, Andhra Pradesh, and Tamil Nadu. 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.

Factors such as suitability of climate and proximity to international airports have been critical for development of production clusters. A number of projects have come up near Mumbai, Bangalore, Hyderabad and New Delhi due to this reason.

5.5 FOREIGN COLLABORATION

Most EOUs have been largely dependent on foreign collaborations for technical support as the cultivation of cut flowers for export purposes under a protected environment is relatively a recent phenomenon. Most technical collaborations have taken place with units from the Netherlands and Israel. Many of these companies have also opened up offices in India.

Most of the foreign collaborators are primarily suppliers of one of the inputs of the floriculture industry, e.g., planting material, greenhouses or they are specialised in marketing. Most of the Indian companies are family owned, medium sized businesses. However, the entrepreneurs have looked upon these tie-ups as turn-key collaborations. The entrepreneurs have totally depended on the overseas companies for setting up of their projects and sourcing of all inputs with buy back arrangement for the produce.

5.6 EXPORTS FROM INDIA

Floriculture has been identified as a thrust sector for development of exports in the post-liberalization era. The global markets offer a vast potential and advantages for India. However, India's share in the international market for flowers is still negligible. India's exports of floriculture products amounted to a mere US$ 18 million in 1996 and it stood at around US$ 47 million in 2004, which is only 0.38% of the world exports of floriculture products (US$ 12.4 billion). India is thus a negligible player in the international trade (exports) in fresh cut flowers which is dominated by Netherlands, Colombia and Ecuador, the African countries, South Korea and Israel.

During 2004-05, exports of floriculture products from India decreased and were estimated to be valued at US$ 47.5 million. While, the estimated value of exports for the first six months of the financial year 2005-06 stood at US$ 25 million.

In 2004-05, exports of cut flowers and foliage were valued at US$ 41.8 million, while bulbs and live plants exports stood at US$ 5.7 million. Over 95% of Indian cut flower exports comprise different varieties of Roses.

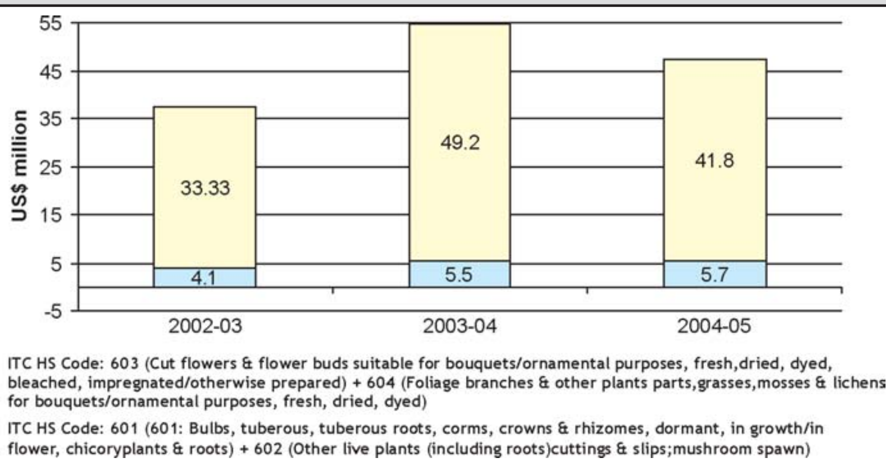
The potential is enormous which can be exploited scientifically with proper management of resources and technology. Efforts by some successful growers have demonstrated the feasibility of entering this trade on a very large scale.

Table 5.1:
BREAK-UP OF FLORICULTURE EXPORTS BY INDIA

ITC HS Code	Product Description	US$ million		
		2002-03	2003-04	2004-05
6	Live trees, and other plants; bulbs, roots and the like; cut flowers and ornamental foliage.	37.45	54.65	47.44
601	Bulb, tubers, tuberous roots, corms, crowns and rhizomes, dormant, in growth or in flower, chicory plants and roots.	0.71	0.72	0.74
602	Other live plants (including their roots), cuttings and slips; mushroom spawn.	3.4	4.79	4.92
603	Cut flowers and flower buds of a kind suitable for bouquets or for ornamental purposes, fresh, dried, dyed bleached, impregnated or otherwise prepared.	21	24.91	21.18
604	Foliage, branches and other parts of plants, without flowers or flower buds, and grasses, mosses and lichens, being goods of a kind suitable for bouquets or for ornamental purposes, fresh dried, dyed.	12.34	24.24	20.59

SOURCE: DGCIS

Exhibit 5.5:
COMPOSITION OF FLORICULTURE EXPORTS



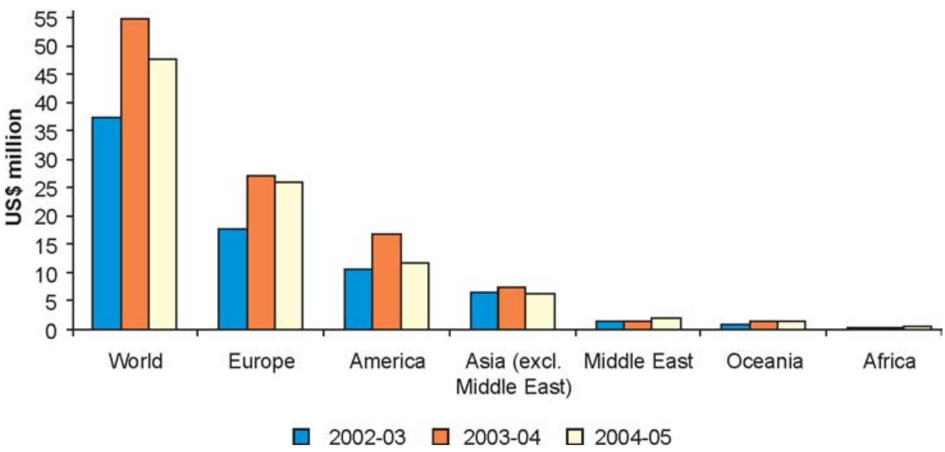
SOURCE: DGCIS

Table 5.2:
REGION-WISE BREAK-UP OF FLORICULTURE EXPORTS

Region	US$ million		
	2002-03	2003-04	2004-05
World	37.45	54.65	47.44
Europe	17.61	27.05	25.89
America	10.55	16.81	11.62
Asia (excl. Middle East)	6.66	7.43	6.13
Middle East	1.49	1.48	1.97
Oceania	0.83	1.55	1.31
Africa	0.21	0.34	0.52

SOURCE: DGCIS

Exhibit 5.6:
REGION-WISE EXPORT OF INDIAN FLORICULTURE PRODUCTS



SOURCE: DGCIS

Exhibit 5.6 shows the trend values of Indian floriculture exports to major importing regions of the world. Europe is the largest destination for Indian floriculture exports followed by USA, Asia, the Middle-East, Oceania and Africa.

Table 5.3: LEADING IMPORTERS OF INDIAN FLORICULTURE PRODUCTS (2004-05) Commodity Code: 6: ITC – HS Cut flowers, ornamental foliage, live trees, other plants; bulbs, roots and the like	
Importer	**US$ million**
World	47.44
USA	10.88
Netherlands	6.21
UK	5.67
Germany	4.67
Japan	3.5
Italy	2.02
France	1.19
UAE	1.11
Others	12.19
SOURCE: DGCIS	

5.7 GOVERNMENT INCENTIVES / INITIATIVES

The liberalization of industrial and trade policies paved the way for development of export-oriented production of cut flowers. Commercial floriculture is becoming an important segment from the export angle. It is being viewed as a high growth segment. Government of India acknowledges the potential of the floriculture industry and has conferred the industry a 100% export oriented status.

Various incentives are being offered by the Government of India, which have enabled the setting up of a number of floriculture units for producing and exporting flowers. Most of these are located near Mumbai, Bangalore and Delhi. These units have obtained technical know-how from Dutch and Israeli consultants.

The new seed policy has already made it feasible to import planting material of international varieties. Tax benefits are offered to new export oriented floriculture companies in the form of income-tax holidays and exemption from certain import duties. Import duties have been reduced on cut flowers, flower seeds and tissue-culture plants. Financial support upto 50% for the pre-cooling and cold storage units is available, as well as financial support for using improved packaging material.

The Agricultural and Processed Food Products Export Development Authority (APEDA), is responsible for export promotion and development of floriculture in India. APEDA provides financial support for establishing cold storage, pre-cooling units, refrigerated vans and green houses, and provides airfreight support to floriculture exports.

The Ministry of Agriculture, Government of India, has established several model floriculture units and tissue culture units to support this sector. Setting up of walk-in type cold storage has been allowed at the international airports for storage of export produce.

Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India is providing a scheme, Integrated Development of Commercial Floriculture, with the following objectives:

- To improve production and productivity of traditional as well as cut flowers through availability of quality planting material and transfer of technology.
- To improve human resource capabilities for growing flowers scientifically.
- To promote production of off season and quality flowers through protected cultivation.
- To improve on-farm post harvest handling of flowers.

The pattern of assistance under this program includes:

- Specific attention for development of traditional flowers.
- Strengthening of Model Floriculture Centres (MFC) for additional facilities and extension of MFC in other potential states.
- Improvement in productivity and production through higher use of inputs and area expansion.
- Assistance for off-season production of flowers.
- Emphasis on on-farm post-harvest management of flowers.
- Encouragement for greenhouse cultivation of flowers.
- Farmer participatory demonstration of cultivar technology.
- Dissemination of information through training and media support.

The Technology Mission for Integrated Development of Horticulture in North-Eastern States including Sikkim, by the Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, has the following objectives:

- To establish convergence and synergy among numerous ongoing governmental programme in the field of horticulture development to achieve horizontal and vertical integration of these programmes.
- To ensure adequate, appropriate, timely and concurrent attention to all the links in the production, post harvest and consumption chain.
- To maximise economic, ecological and social benefits from the existing investment and infrastructure created for horticulture development.
- To promote ecologically sustainable intensification, economically desirable diversification and skilled employment.
- To generate value addition, promote the development and dissemination of eco-technologies based on the blending of the traditional wisdom and technology with frontier knowledge such as bio-technology, information technology and space technology; and to provide the missing links in ongoing horticulture development projects.

The Technology Mission comprise of four Mini Missions, viz. Mini Mission-I (MM-I) for research, Mini Mission-II (MM–II) for production and productivity, Mini Mission–III (MM-III) for post harvest management, marketing and export and Mini Mission-IV (MM-IV) for processing and marketing of processed products.

The Integrated Development of Horticulture in Tribal/Hilly Areas, by the Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, adopts an integrated compact area development approach that will address crop production with forward and backward linkages, such as, availability of genetically improved planting material and seeds of high yielding varieties; supply of inputs; post-harvest infrastructure facilities, like, collection centres, storage, transport and marketing.

Agri Export Zones (AEZ)

Government of India promotes, assists and facilitates the setting up of Agri Export Zones (AEZ), in association with State Governments for the purpose of providing access to international markets for agricultural produce/products from the country. The objective is to provide remunerative returns to farming community in a sustained manner and to increase their competitiveness. There are at present six operational Agri Export Zones for floriculture development in India.

Table 5.4: LIST OF OPERATIONAL AGRI EXPORT ZONES FOR FLORICULTURE DEVELOPMENT		
S No	**State**	**District/Area**
1	Tamil Nadu	Dharmapuri
2	Uttranchal	Districts of Dehradun, Pantnagar
3	Maharashtra	Pune, Nasik, Kolhapur and Sangli
4	Karnataka	Bangalore (Urban), Bangalore (Rural), Kolar, Tumkur, Kodagu and Belgaum
5	Sikkim	East Sikkim
6	Tamil Nadu	Nilgiri District
SOURCE: APEDA		

The National Committee on formulating a rehabilitation package for the floriculture industry has decided to form zonal committees for working out a suitable package for floriculture units on a case-to-case basis. Each zonal committee will have five members, comprising among others, representatives of the Reserve Bank of India (RBI), APEDA, concerned lending institution, and the borrower. The zonal committees have been directed to chalk out appropriate package for the development of the industry.

5.8 INFLUENCE OF EXOGENOUS FACTORS

Exogenous factors are those that are not inherent to floriculture, but significantly affect the viability and competitiveness, and influence the growth of the industry. With technology gaps narrowing, these exogenous factors will be critical in determining the competitiveness of this industry. In this section, the role and influence of exogenous factors such as infrastructure, temperatures, including government policies are discussed.

1) Infrastructure

Floriculture products are highly perishable. The consistency and stability of quality depends on the procurement, cold storage and supply chain infrastructure available from the place of harvest. There is high capital cost involved in setting up of cold storages, discouraging entrepreneurs getting into floriculture business.

2) Airports

Domestic and international airports at strategic locations are essential for the growth and development of the floriculture industry. One can find large number of floriculture projects around Bangalore, Pune, Delhi and Hyderabad, where airport facilities are available.

3) Temperature

Optimum temperature of a location is a very important criterion where there is abundant sunlight and good soil available. The optimum temperature for most floriculture products ranges between 15 and 28 degrees centigrade. An analysis based on the maximum temperature and corresponding relative humidity for 12 months for each sector would categorise them under the following three zones:

- **Zone I**: A temperature below 28 degrees centigrade is the ideal natural climatic condition and no additional care is required to maintain it.
- **Zone II**: Temperate versus relative humidity zone where temperature could be cooled down by low cost cooling system such as wetpad method or fog method. But such methods could be more expensive than regular greenhouses.
- **Zone III**: In this zone the temperature could be reduced to the optimum level only with the help of air conditioners, which is very expensive.

4) Policies

Import restrictions, for import of specific pesticides / insecticides, which may be required to tackle unexpected or non-prevalent diseases and insects, may also be considered as another exogenous factor.

Region-wise Zone Compatibility

Bangalore Sector

From July to January the conditions are ideal in Bangalore and only two months (May and June) fall under high heat zone, needing air conditioning for cooling. In practice, by pruning the plants and giving them rest during May and June, one can easily take care of the climatic situation.

Pune Sector

Only July to August fall under the ideal zone, while from November to March it falls under the Zone II. Pune has only 7 months as ideal for rose and 5 months come under the Zone III, where cooling is expensive.

Hyderabad Sector

Due to the high temperature, plants grown between the months of April and October will be adversely affected and in turn there will be a reduction in the quality of flowers produced. With the help of misting or the wetpad method, the plants can be grown under ideal temperatures from November to March.

Delhi Sector

Extreme fluctuations in weather conditions are observed in Delhi between May and October and during these months maintaining the temperature to the optimum level is expensive, since wetpad method will not be able to achieve the desired level. Hence, only six months, from November to April are relatively suitable months.

6 CHALLENGES AND STRATEGIES FOR DEVELOPING FLORICULTURE EXPORTS

6.1 CHALLENGES TO EXPORT ORIENTED FLORICULTURE

In spite of the export potential of the sector, the performance of units in this sector is not encouraging. Some of the challenges that need collective attention are outlined below:

a) Supply infrastructure

The success of floriculture sector depends on a carefully designed infrastructure. The availability of dedicated perishable carriers is low in India and the freight rates are high. Although production cost of Indian flowers is competitive, the high freight cost puts the industry at a cost disadvantage position. (50-60% higher than the pricing of the competitors). Freight charges are estimated to be around US$ 2.5 per kg. This is approximately US$ 1 per kg. higher than the costs incurred by the African counterparts. India's geographical disadvantage to Europe may be one reason for such high airfreight cost; but, there are also additional costs incurred by Indian flower exporters such as landing and route navigation charges and air turbine fuel surcharge. Paucity of air cargo space for flowers is also another challenge, especially in the context of airlines preferring to transport relatively low-volume cargo. Airlines also do not offer airfreight discounts to Indian exporters due to their low volume business. The low volume prevents the Indian exporters to charter an exclusive aircraft for flower cargo. The production centers are concentrated only where international cargo handling facilities are available and thus much of the production potential is not optimally utilized.

Clean handling and better storage environment is also important in floriculture supply chain. Adverse conditions in the supply chain could cause bacterial growth which blocks flower stems, or fungi growth, which infects flower blooms. In short, avoiding high temperature fluctuations, careful handling and good air circulation reduce the risk of fungi and other diseases. Thus, temperature and humidity controlled transportation is needed at all stages of the transportation process to ensure that the flowers do not deteriorate in their quality. In India, the availability of dedicated cold storage facilities at farmyards as also at airports is minimal. In addition, the adequacy levels of cooling facilities in domestic transportation need to be examined in the context of the growing international flower business.

b) *Availability of basic inputs, including seeds and planting materials*

The seed and planting material industry in India is relatively not well established. Mostly the imported varieties are preferred for exports, for which breeders charge high royalty and thus the cost of planting material becomes high. In addition to elite planting material, prevalence of production as well as preservation technology is also low. There is a need for increasing the investments in technology that allows a better control over production climate, enhancing of quality and reduction of pollution and waste.

c) *Quality parameters*

In the international arena, competition is such that anything less than the acceptable quality is not tolerated. Quality has several dimensions. Flowers should be free from plagues and diseases and they should be undamaged. These elements could be judged on visual inspection. However, other quality aspects such as proper physical handlings at various stages of transportation may be very difficult to judge based on visual inspection. Yet, this is one of the important determinants of vase life.

d) *Operations of economies of scale*

It is also cited that the small unit size of the flower farms in India acts as a constraint with the absence in economies of scale. The average size of Indian farms is approximately 4 ha. as compared to the size of 40 ha. in some African countries. It has been reported that the African units are able to leverage from their capacities and capture more market-share as a result of the production volumes. Besides being cost competitive, high volume enables them to offer a wide range of colours, in the quantities of batch sizes that international market demands.

e) *Diversification of products*

Another challenge for Indian flower exporters is to diversify and reduce the dependence on producing cut rose alone. The most important strategy being adopted by greenhouse growers in Europe and USA is increasing the varieties of products cultivated. Even African exporters are constantly in search of new floriculture crops and trying new varieties. All over the world, within the broad classification of floriculture crops, the varieties of new crops grown are on the increase. The growers are also adopting new methods of product presentation, a value added strategy to expand the consumer base.

f) Re-plantation

The floriculture plants in India, majority of them are roses, are mostly of the older varieties. Also, they are old plants ranging from 7-9 years, whereas the peak productive phase of the plants on an average is only 3 to 5 years. India is estimated to be replanting approximately 25 ha. per annum as compared to 200 ha in some African countries. Only some of the units in India are equipped with the requisite resources for re-plantation.

g) Environmental issues

Environmental issues have become very prominent in recent years. Consumers are concerned about the impact of use of chemicals on environment and on the workers. Cut flowers are no exception to such environmental guidelines. Intensive use of crop protection agents and fertilizers may be acting as a barrier for exporting to developed country markets. However, Japanese market demands for complete absence of any living insect or mite in imported flowers. Thus, there needs to be a balance while considering environmental issues and addressing the requirements of consumers.

Floriculture is an environment friendly activity, as it does not create any pollution or effluents. However, concentration of floriculture in selected areas could lead to depletion of ground water resources. For example, a rose plant would require a litre of water per day, which is quite high as compared to other plants. Plants under greenhouses are an intensive horticulture activity, which naturally depletes the soil fertility. In regular agriculture, crop rotation is followed in order to avoid such a problem. However, in floriculture projects, select varieties are grown intensively and continuously due to market demand and preference, leaving no scope for rotation.

6.2 STRATEGIES

Concrete steps are being undertaken by India to develop the floriculture sector as a viable export sector. The new economic policy of the 1990s further accelerated the pace of development of the floriculture sector to meet the requirements of stringent international markets at competitive prices. However, more strategies need to be adopted to consolidate the strengths of India in this sector. These include:

a) Infrastructure support

Post harvest handling is as important as growing for delivering an attractive product to the consumer. In that sense, the reliability of air connections is as crucial as its costs. Since, flowers are highly perishable in nature, speed of delivery is of utmost importance, besides taking adequate temperature control measures during transit. Hence, it is important to invest in adequate infrastructure facilities such as cold chains, testing and cargo handling facilities and internal container depots suitable to floriculture products. The infrastructure at airports, including perishable cargo handling facilities need to be improved besides creating additional cargo space. The frequency of international flights and chartered flights handling floriculture cargo needs to be increased.

b) Government support

The Government of India does have a transport assistance scheme for Indian flower exporters, but the quantum of airfreight subsidy is limited to 20% of airfreight or 20% of FOB value at a specific rate per kg. of flowers. The rates vary from country to country; for Middle East, CIS and South East Asian countries, the rates prescribed are Rs.7/- per kg. as against Rs. 17/- per kg. for Europe and Rs. 25/- per kg for American continent. However, the assistance provided does not fully make the Indian flower exporters cost competitive vis-à-vis some of the African exporters.

Periodic re-plantation is necessary in order to maintain the acceptable freshness in variety and quality. The existing varieties often become obsolete with the constantly changing market trends and demands. High capital costs for re-plantation is one of the major hurdles, which may be tackled with appropriate re-plantation support.

In addition, the industry should undertake efforts to achieve volumes, vaieties and quality to compete effectively with other countries (such as Africa) in the international market.

c) Supply Chain

The consumption channel for floriculture business is gradually shifting from specialty shops and florist shops to the super market chains, mainly in Europe. Supermarket chains like TESCO, Salisbury, Wal-Mart, Sears and K-Mart are mass consumers and seek importing of large quantities of flowers, with latest varieties and a well defined supply chain network. Indian units must increase their capacities, product range, innovative varieties and understand the need for re-plantation.

d) Economies of scale

Increase in size also enables units to integrate and move up in the value chain. Vertical integration between producers and buyers for instance, has helped East African units to effectively control the distribution and marketing process with direct interaction with the buyers.

e) Selection of product mix

Selection of product mix and variety is one of the crucial factors for the success of a floriculture project. Over 90% of the projects presently operating in India have chosen production of rose in their projects. The rose has the major market share and hence marketing it internationally will not pose any problems for the Indian producers. However, diversification of product mix is also essential considering the changing pattern of demand. New varieties fetch higher prices, which could be upto seven times higher than those of regular varieties. While projects located in specific areas such as Hyderabad and Delhi may be suitable for growing roses and offer little scope climatically to grow other products, other production centers like Bangalore and Pune may scout for alternatives. Growers in these centers should explore other high value product alternatives, such as propagating materials of specialty crops for export purposes. This could be achieved through licensing and contractual agreements with foreign collaborators. As direct marketing is becoming a major marketing channel, production and export of varieties of flowers, rather than concentration on rose, would position India advantageously.

f) Supply of quality inputs

Cut flower projects aimed for exports should follow the latest trend in demand and produce the popularly preferred varieties of plants being imported by various markets. Accordingly, floriculture projects should import the planting material from abroad. Varieties could also be developed through tissue culture laboratories in India.

Although availability of land in most sectors is not a major constraint, varying cost of land is increasingly becoming a major constraint. Besides, restrictions in holding patterns and conversion of agricultural land into industrial land before use for floriculture, have restricted entry of new entrepreneurs in this field. Similarly, availability of labour is not a constraint. However, they require training before they can be used effectively in greenhouses. Though raw materials and packaging materials are available locally, high-grade materials have to be imported. Establishment of model nurseries for supplying genuine planting materials, and distribution of environment friendly production and packaging materials are thus important parameters to achieve internationally acceptable quality.

g) Research and development

There is enough presence of agriculture universities carrying out research related to floriculture in most regions of India. However, the orientation of such research is not towards commercial purposes and hence their findings are not directly applicable to the present greenhouses. A strong need is felt by the entrepreneurs of this industry that there should be a common research and development centre which would not only give inputs / solutions to the problems faced in the industry, but would also develop good varieties suited to local environmental conditions.

Select Indian Agriculture Universities could establish partnership with overseas research institutes, viz., PTC+, Holland, for developing new varieties of flowers and foilages.

h) Technology Development

During the last few years, some of the early starters in this industry have indigenised their technology requirements, like poly houses and parent plant material, and developed local cultivation and post harvest techniques. However, when a new entrepreneur wants to start, the technology is required to be imported either from The Netherlands or Israel. The project cost becomes high with imported green houses / technologies. Hence, indigenous technology for the construction of green houses/ glass/poly/shade houses are required to be developed to suit the Indian climatic conditions. The raw materials and technical know-how required to build greenhouses are available in India now.

i) Quality and labeling

Only high-quality flowers are traded internationally. Production conditions are also becoming a new dimension of quality. This has led to initiatives by traders and growers alike to provide consumers with a guarantee that the flowers they buy are clean. MPS flower label is increasingly getting international acceptance in the flower business. MPS is a collection of labels in various classifications (MPS A, B, C) for environmental management, social and human resource management in the flower sector. MPS was originally developed in the Netherlands and applied by Dutch producers, but has now been successfully applied by producers of other countries as well.

Efforts may also be taken by the industry to achieve international accrediation of other environmental labels like MPS-GAP, Eurep GAP, FLP and MAX HAVELLAR.

Indian exporters must ensure that their produce is free from disease and that it is carefully treated once harvested. Exporters should also plan and monitor effective quality control measures right from production to post harvesting, storage, and transportation. Post harvest management, including cold treatment, proper packaging and application of preservatives, may need to be strengthened. Attention may also be required for achieving the flower labeling and certification requirements.

j) Packaging

In an industry where non-price factors are the basis for competition, distinguishing quality products through the use of innovative packaging is another way to gain competitive advantage. The floriculture industry needs to examine current packaging practices and learn from the success of other countries.

Packaging, apart from catering to the preservation requirements, must also be perceived as being environmentally friendly, while catering to the European markets. The German market prefers to receive floriculture products in aqua-packs, as this facilitates their transportation to various outlets within the country. UK is less concerned with aqua-packs, but requires customized packaging, co-designed with the various retail chains for easy distribution. It is also necessary to keep in mind when standardizing box sizes and design. The wholesale outlets in Japan prefer small sized boxes as compared to their European counterparts.

k) Human resource development

To cater to the increasing global trade, there is a need for trained personnel at various levels. One of the major challenges faced by India is shortage of trained / experienced technical and commercial managers. Thus, private initiatives to train individuals in the floriculture/horticulture sector could be beneficial to the industry in the long run. Training centres for diploma courses, on the pattern of ITI, for training the personnel in floriculture may be set up to address this challenge. APEDA in association with respective state agencies, may provide orientation to Indian growers on the need to conform to International Union for the Protection of New Varieties of Plants (UPOV) and Breeders Rights.

l) Developing joint ventures

Indian firms need to increase the volume of sales to receive benefits of economies of scale. Although Indian rose production is comparable and competitive in terms of costs and returns, increasing export volume will help to achieve higher profitability. Developing vertical integration and joint ventures is thus another strategy that could be adopted by Indian growers.

m) Establishment of support systems

The greenhouse industry in India has great potential for growth, provided it is supported by institutional systems. Establishing a network of support systems with the involvement of Government, private sector and research institutions / universities will be another strategy for development of floriculture sector. This will help the industry to plan forward and evaluate the business plans periodically. A number of private and government agencies provide such support system in the green house industry in USA. A network of agri-business consultants and academia provide specialized services for skill development of the industry in USA.

n) Setting up of an international flower auction market

An international flower auction market, on the lines of Dutch model, may be considered for strengthening the flower business in India. The objectives of this market will be to change fundamentally the marketing channels of flowers in India and to improve the product quality considerably, in order to realize India's potential in floriculture. India may seek technical guidance from agencies such as International Trade Centre (ITC), Geneva, or Centre for Promotion of Imports from Developing Countries (CBI), The Netherlands, for conceptualization, feasibility study and design of the auction market, and training of the personnel, eventually.

o) Environmental strategies

Flowers are often offered as gifts for special occasions. The consumers want to be seen as giving an item that is of high quality and environmentally friendly. Adequate care must be taken in usage of chemicals and pesticides. Besides, it is recommended that the floriculture projects should be geographically spread out in order to avoid other environmental issues. Considering the cost of production and utilization of common facilities, co-operative farming in select areas would be ideal.

p) Marketing strategies

Indian exporters should adopt customized marketing strategies while targeting various markets. Selling through agents has now been replaced by direct marketing in many regions. Direct marketing gives better remuneration, eliminates middlemen and provides flexibility to position in niche markets, thereby avoiding the risk of excessive concentration on a single market. The use of information technology, and particularly, Internet for trading should also be promoted. Co-operative florist organizations may be established at regional level, to pursue business interests of member organizations and to act as supply chain.

q) Consortia approach

A "consortium" approach may be encouraged among the units for branding, grading, packaging, transporting, quality control, supply assurance, market development, market promotion, and research and development. For this purpose, it is necessary to encourage some of the successful and experienced entrepreneurs to take a lead in forming such consortia.

CONCLUSION

The world floriculture industry is in a state of unrest, with drastic changes in supply position. New markets as well as new suppliers are emerging and disappearing in short span of time. New exporting countries (Ecuador, Kenya) emerge only to find that other countries (such as India, China, the Republic of Korea) are pushing hard to become the next generation exporters.

The competition is fierce, continuously testing the adaptive capacity of the players involved. There has been a levelling off of the competition on technological grounds over the last few years. However, infrastructure and policy support have become important parameters in judging the competitiveness in international markets.

There has been a motivation to breed hybrids and new varieties. Major selling agents of breeders have realised increased sale of planting material while reducing the prices. The industry is witnessing healthy exchange of breeders' material and collaborative breeding programmes around the world. Such initiatives are getting further momentum due to protection policies for new plant varieties under TRIPS (WTO). Respecting plant patent rights will thus become an important parameter to establish global credibility and access to the latest varieties.

Floriculture activity has a tradition of attracting newer participants. However, only alert market participants are witnessing success, as the product is highly perishable. The participants need to be tolerant with price fluctuations, including intra-day price fluctuations. Hence, productivity becomes a crucial aspect. Producers must invest in labour-saving techniques in order to continue making profits. They need to consistently deliver an attractive product of consistent quality. Quality is paramount in the international trade of floriculture products. Producers need to conform to stringent phyto-sanitary requirements and must ensure that their produce is free from disease and that it is carefully treated once harvested. To guarantee a minimum number of days of vase life, supermarkets and other competitors demand reduction in supply lead time.

Many small units are facing problems due to uneconomic returns and high overheads leading to reorganization and restructuring of product portfolios by entrepreneurs. However, there is ample scope for even small and marginal entrepreneurs to exploit the global demand of flowers with improvements in quality of planting material, infrastructure, training programmes in production, harvesting and post-harvest management techniques backed by adequate marketing support.

OPPORTUNITIES FOR INDIA

The market for cut flowers consists of a range of product groups, which offer varying opportunities for countries like India, as potential suppliers. It is a highly competitive market in which importers are continually seeking new, special and different products. They tend not to change easily from one rose supplier to another but co-operation with a company supplying a new product is considered attractive. The market is clearly searching for novelty products. A new product also offers the prospect of making higher profits than those gained from selling conventional floricultural products.

Demand for foliage varieties is still increasing in Europe, particularly for small leafed foliage for use in bouquets. Furthermore, European importers do not have any reticence about using tropical foliage. The opportunities are optimal for tropical countries like India in supplying products during periods when these products are scarce in the western markets.

In order to compete, Indian exporters must be able to supply products of consistent quality and on a regular basis. With a strong preference for direct marketing and private R & D for developing proprietary products, the industry will have to develop an unique selling proposition to increase the competitiveness. Joint initiatives may be taken for creation of appropriate infrastructure for production, post-harvest handling and transportation of floriculture products. The marketing and distribution channels are also to be strengthened. With all such initiatives, it may be deduced that the structure and composition of the Indian floriculture industry may undergo major changes in the future.

ANNEXURE 1: AGRI EXPORT ZONES

1. AGRI EXPORT ZONE FOR FLOWERS (TANFLORA) IN TAMIL NADU

This project entails a total investment of Rs. 24.85 crores with a contribution of Rs. 3.48 crores from the Government of India. The investment level of Rs.22.47 crores has already been achieved. 198.73 acres of private land has been acquired by the TANFLORA company and a Central Packing House has been completed. 15 Grower Park units of 2 hectares each have started construction of the poly-houses. TNEB power connection has been obtained for 50 hectares of area covered under poly house cultivation for production of fresh cut roses. 15 Farmers who have taken up 30 hectares (2 Ha/Unit) in the park will get training in hitech floriculture. It is expected that export of flowers during the first five years would be more than Rs. 158.76 crores. Exports worth Rs.10.80 crores have been effected in 2003-04. Cut flowers have been exported to Japan, Singapore, Malaysia, Dubai, Jeddah, Riyadh, UK, Germany and Australia.

2. AGRI EXPORT ZONE FOR FLORICULTURE IN MAHARASHTRA

This Agri Export Zone entails an investment of Rs. 17.89 crores out of which Rs. 7.23 crores will flow from various central government agencies and the remaining Rs 10.66 crores will come from the private sector. 80 applicants have been allocated land for setting up of projects. Few entrepreneurs have already started development work for setting up of green house structure. Around 300-500 farmers will be directly benefited and it is likely to lead to an employment generation of around 1500 persons. Internal roads developed within the AEZ; work on road and river bridge completed for joining the National Highway. It is expected that the export of flowers from this Agri Export Zone will be around Rs. 75 crores in the next five years. During 2003-04 exports worth Rs 10 crores have been executed. An amount of Rs. 5 crores has already been sanctioned for setting up of a floriculture auction center in Mumbai.

3. AGRI EXPORT ZONE FOR FLOWERS IN UTTRANCHAL

A total investment of around Rs.13.76 crores is envisaged with a contribution of around Rs.1.55 crores from the central government agencies. The state government agencies will contribute Rs.1.43 crores and the remaining Rs.10.78 crores will come from the private sector. More than 1000 farmers are likely to be benefited from this project. There is also likelihood of an indirect employment for 3500 persons. Export of around Rs.28.28 crores is anticipated from this AEZ in the next five years. Exports worth Rs 0.04 lakhs have been executed from the AEZ in 2003-04.

4. AGRI EXPORT ZONE FOR FLORICULTURE (ORCHIDS) IN SIKKIM

The project envisages an investment of Rs. 32.31 crores out of which around Rs.8.09 crores will flow from the central government agencies, Rs. 2.40 crores from state government agencies and the remaining Rs 21.82 crores will come from the private sector. The investments in this zone would lead to a direct employment of around 1500 people apart from the indirect employment of around 3500 persons. There would be job opportunities available for more than 200 educated un-employed youth as well. The state level nodal agency will be providing land, financial support and supply of green house and drip irrigation materials, besides training of farmers. Export of around Rs. 45.08 crores worth of orchids are anticipated from this zone in the next 5 years (starting from June 2006).

5. AGRI EXPORT ZONE FOR FLORICULTURE IN KARNATAKA

Agri Export Zone for floriculture in Karnataka entails an investment of around Rs.29.28 crores, out of which Rs. 11.71 crores will come from the central government agencies, Rs.7.37 crores from state government agencies and the remaining Rs.10.20 crores will come from the private sector. This zone will benefit around 1000 farmers apart from generating a lot of indirect employment. The perishable cargo handling facility has already been set up at Bangalore airport to facilitate exports. A marketing facilitation centre has also been set up at Amsterdam, the Netherlands for the benefit of the growers of the Bangalore and Hosur area. Central government has sanctioned Rs. 3.57 crores for setting up of a floriculture auction centre in the premises of Karnataka Agro-Industries Corporation, at Bangalore. There will be an anticipated incremental export of around Rs.312 crores in the next five years.

6. AGRI EXPORT ZONE FOR FLOWERS IN TAMIL NADU

This zone entails an investment of around Rs. 15.88 crores out of which Rs. 5.23 crores will flow from central government agencies, Rs. 2 crores from state government agencies and around Rs. 8.65 crores from private sector agencies. Investment level of Rs.5.50 crores has already been achieved in this zone. Around 500 farmers are likely to get benefited. It is expected that setting up of this zone will lead to an export of around Rs. 109.88 crores in the next 5 years.

ANNEXURE 2: INTEGRATED DEVELOPMENT OF COMMERCIAL FLORICULTURE

OBJECTIVES

Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India is providing Integrated Development of Commercial Floriculture with the following objectives:

- To improve production and productivity of traditional as well as cut flowers through availability of quality planting material and transfer of technology;
- To improve human resource capabilities for growing flowers scientifically;
- To promote production of off season and quality flowers through protected cultivation;
- To improve on-farm post harvest handling of flowers.

PATTERN OF ASSISTANCE

- Specific attention for development of traditional flowers;
- Strengthening of Model Floriculture Centres (MFC) for additional facilities and extension of MFC in other potential states;
- Improvement in productivity and production through higher use of inputs and area expansion;
- Assistance for off-season production of flowers;
- Emphasis for on-farm post-harvest management of flowers;
- Encouragement for greenhouse cultivation of flowers;
- Farmer participatory demonstration of cultivar technology;
- Dissemination of informastion through training and media support.

COMPONENTS OF ASSISTANCE

A. Model Floriculture Centre (MFC)

1. MFC Public Sector	Rs. 70.0 lakhs
2. Strengthening of MFC	Rs. 5.0 lakhs
3. Nursery Public sector	Rs. 5.0 lakhs
4. Networking of MFC	Rs. 1.0 lakh

B. Area Expansion

1. Rs. 20,000 per unit of 0.2 ha for grafted varieties
2. Rs. 15,000 per unit of 0.2 ha for bulbous varieties
3. Rs. 4,000 per unit of 0.2 ha for seed varieties

C. Transfer of Technology

1. Training of farmers	Rs. 0.1 lakh per trainee
2. Training of project officers	Rs. 1.5 lakhs
3. Demonstration	Rs. 0.60 lakhs per unit of 0.4 ha
4. Publishing	Rs. 1.0 lakh per state
5. Workshops/Flower festivals etc	Rs. 17.00 lakhs
6. Onfarm handling	Rs. 1.00 lakh per unit

E. Protected cultivation

1. Green house	Rs. 1.50 lakhs/500 Sq.mt
2. Shade nets	Rs. 0.50 lakh/unit

F. Monitoring and Evaluation

1. Directorate	Rs. 5.00 lakhs
2. External evaluation	Rs. 9.40 lakhs

ANNEXURE 3: TECHNOLOGY MISSION FOR INTEGRATED DEVELOPMENT OF HORTICULTURE IN NORTH EASTERN STATES INCLUDING SIKKIM

OBJECTIVES

The objectives of the Mission are to:

- Establish convergence and synergy among numerous ongoing governmental programme in the field of horticulture development to achieve horizontal and vertical integration of these programmes.
- Ensure adequate, appropriate, timely and concurrent attention to all the links in the production, post harvest and consumption chain.
- Maximise economic, ecological and social benefits from the existing investment and infrastructure created for horticulture development.
- Promote ecologically sustainable intensification, economically desirable diversification and skilled employment.
- Generate value addition, promote the development and dissemination of eco-technologies based on the blending of the traditional wisdom and technology with frontier knowledge such as bio-technology, information technology and space technology; and to provide the missing links in ongoing horticulture development projects.

PATTERN OF ASSISTANCE

The Technology Mission comprise of four Mini Missions, viz. Mini Mission-I (MM-I) for research, Mini Mission-II (MM–II) for production and productivity, Mini Mission–III (MM-III) for post harvest management, marketing and export and Mini Mission-IV (MM-IV) for processing and marketing of processed products.

Mini Mission–I

In order to provide technology support the mini mission aims at:

1. Supply of nucleus/basic seed and planting material of horticultural crops;
2. Standardization of production and protection technologies; and

3. Technology refinement and training through on-farm trials with activities such as:

- Seed and planting material (supply of nucleus/basic seed and planting material of horticulture crops);
- Technology standardization (standardization of production and protection technologies in fruit, vegetable, spices and plantation crops, development of organic farming practices and eco- friendly integrated pest and disease management);
- Technology refinement (technology refinement and imparting training through on farm trials at farmers' fields and training to extension functionaries.)

Mini Mission-II

This mini mission primarily aims at increasing the production and productivity of the horticulture produce in the region. The pattern of assistance will be as under:

1. Area expansion:

- Floriculture @ 50% of the cost limited to Rs. 13,000/- per unit of 0.2 ha.
- Model Floriculture Centre @ Rs 70.00 lakhs per centre.

2. Creation of water sources:

Community tanks- Rs. 10 lakhs/ tank @ Rs. 1.00 lakh per ha, Tubewells - @ 50% of cost limited to maximum of Rs.12,500/- per tubewell.

3. On farm water management:

- Existing scheme of "Horticulture Development through Plasticulture Intervention"- 50% of the cost limited to Rs 28,500/-.

4. Production of planting material

- Integrated multicrop nursery: 50% of the cost limited to Rs. 8.00 lakhs for big nursery and Rs. 3.00 lakh for small nursery in private and 100% cost limited to R. 18.00 lakh in public sector for big nursery and Rs. 3.00 lakh for small nursery. Progeny and herbal gardens Rs. 3.00 lakh for public sector and Rs. 1.50 lakh for private sector.
- Tissue culture: 50% of the cost limited to Rs.10.00 lakhs for Private/NGO and 100% of the cost limited to Rs. 21.00 lakhs for public sector units.

Transfer of technology

Through training, front line demonstration, publicity and training of trainers:

- Farmers training-Rs. 1500 per farmer for 7 days;
- Training outside the state - Rs.2500 per farmer, training of

trainers: actual cost limited to Rs. 50,000 per trainee;

- Supervisor level training centre – supervisory-Rs.20.00 lakhs;
- Gardener- Rs. 2.0 Lakhs.

6. *Organic farming*

Existing schemes of fertilizer division will be integrated. Earthworm multiplication farm-Rs. 30,000 per unit; incentive for adopting organic farming - Rs.10000 per ha.; assistance for obtaining certification-90% of the cost limited to Rs. 5 lakhs for group of farmers.

7. *Promotion and popularization of agriculture equipments*

- Training to farmers: Rs.1,000 per farmer; assistance for purchase of equipments limited to Rs. 1500 for manually operated, Rs. 5,000 for power operated, Rs. 45,000 for power triller and Rs. 9,000 for diesel engine.
- Integrated pest management: Setting up of bio-control labs. For the eight North-Eastern States @Rs.80.00 lakhs per lab in public sector and 50% of cost in private sector upto a maximum of Rs. 40.00 lakhs.
- Financial assistance of Rs.1000/ ha. for adoption of integrated pest management (use of bio-pesticides, pheromones, etc.) covering an area of 11,600 ha.
- Assistance for forewarning of pests and diseases @ Rs.4.00 lakhs per unit.

8. *Plant health clinic*: Rs. 20.00 lakhs for Govt./ PSU and Rs. 5.00 lakhs for private sector.
9. *Leaf analysis laboratory*: Rs. 20.00 lakhs for Govt./ PSU and Rs. 5.00 lakhs for private sector.
10. *Women development*: 100% Govt. assistance as per the approved scheme of DAC "Women in Agriculture for North- eastern States".
11. *Remote sensing*: Project based, as per requirement.
12. *Strengthening of horticulture infrastructure.*
13. *Emergent requirement*: As per the requirements.
14. *Staff support for monitoring cell* in Department of Agriculture and Cooperation and Directorate of Technology Mission; Strengthening of horticulture departments/ directorates through IT network; external evaluation, seminar and symposium and technical support.

Mini Mission- III

This Mini Mission aims to create infrastructural facilities for post harvest management, marketing and export. For this purpose existing organizations such as National

Horticulture Board (NHB), National Cooperative Development Corporation (NCDC), Agricultural and Processed Food Products Export Development Authority (APEDA), and National Agriculture Cooperative Marketing Federation (NAFED), with the existing outlays or with enhanced outlays will be involved. Considering the gap, new components have been proposed in marketing.

- Post harvest-management

The existing approved schemes of NHB with additional outlays as indicated will be implemented to give focus in the mission mode.

- ❑ Development and commercial horticulture through production and post harvest management – Back ended capital subsidy @ 20% of the total project cost, maximum of Rs. 30.00 lakhs.
- ❑ Capital investment subsidy for cold storage – Back ended subsidy @ 33.3%, maximum of Rs. 60.00 lakhs
- ❑ Technology development – 100%
- ❑ Strengthening of nutritional status Rs. 250/minikit/family, Rs. 2,500 for zero energy cool chambers and Rs. 5,000 per school for demonstration

- Marketing:

For efficient marketing it is proposed to strengthen marketing infrastructure including improvement of services in wholesale markets, development of rural primary markets, development of Apni Mandis, promotion of AGMARK in domestic trade by strengthening the state grading laboratories and agricultural marketing information network. Pattern of assistance will be as given below:

- ❑ Wholesale market: @ 50% of the project cost, maximum of Rs. 50.00 lakhs;
- ❑ Rural primary market: @50% of project cost, maximum of 7.50 lakhs;
- ❑ Apni mandis: @ 50% of cost, maximum of 7.5 lakhs;
- ❑ Quality control through strengthening of laboratories: 100% of project cost, maximum 2.5 lakhs.

In order to have forward and backward linkages in marketing, which will enhance productivity and quality of produce and improve farmers income, a pilot project (Alternate Marketing System) is proposed, under which marketing infrastructure will be developed in cooperative/private /joint sector with the participation of wholesalers, retailers and farmers. It is proposed to provide assistance @ 25% of cost limited to Rs. 60.00 lakhs, for creating such infrastructure by way of credit linked back-ended support.

Mini Mission-IV

This mini mission aims at addressing all the issues of processing and marketing of processed products. The schemes of the Department of Food Processing Industries, Ministry of Agriculture, are to be integrated in this mini mission. The mini mission envisages:

- Promotion of New Units
- Upgradation and Modernization of the Existing Units
- Market Promotion, Research and Development

ANNEXURE 4: INTEGRATED DEVELOPMENT OF HORTICULTURE IN TRIBAL/ HILLY AREAS

The Integrated Development Programme for Horticulture in Tribal/Hilly Areas, being implemented by the Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, adopts an integrated compact area development approach that will address crop production with forward and backward linkages, such as, availability of genetically improved planting material and seeds of high yielding varieties; supply of inputs; post-harvest infrastructure facilities, like, collection centres, storage, transport and marketing.

OBJECTIVES

Production of quality planting material of improved cultivars.

- New planting with seed /planting material of improved high yielding varieties.
- Improving productivity through adoption of improved cultivation technology, plant protection chemicals, nutrient and water management:
- Transfer of technology through farmers participatory demonstrations,
  - training visits of farmers,
  - publicity through media support, extension of literatures.
- Creation of on-farm and post harvest infrastructure such as, collection centre, packaging, transport, storage and marketing.

Component	Pattern of Assistance
Crop Production: 1) Establishment of nurseries	Maximum of Rs.10.00 lakhs for large nursery of 4 ha;
2) Area expansion	Rs.1.50 lakh for small nursery of one ha. as grant towards 50% of the total cost
i) Seasonal/annual (vegetables, roots & tuber crops etc)	Maximum of Rs.10,000/- per ha. towards cost of all inputs.
ii) Fruits and other perennials	50% of the cost of inputs and labour cost etc. with a maximum of Rs.20,000/- per ha. to be paid, in three annual instalments of Rs.10,000/-, Rs.5,000/- and Rs.5,000/- for planting and maintenance in subsequent two years.
iii) Floriculture / Mushroom	Rs.20,000 per unit of 0.2 ha. for bulbous plants like gladiolus
	Rs.15,000 per unit of 0.2 ha. for plants raised from cuttings and grafts like roses
iv) Medicinal & Aromatic Plants	Rs.4,000 per unit of 0.2 ha. for seed flowers like marigold 50% of the cost or maximum of Rs.1.50 lakh/500 Sq.m. for green house. Rs.0.50 lakh/unit for shade nets Rs.12.35 lakh for a spawn unit Rs.22.00 lakh for a pasteurized unit Rs.12,500/- per ha. (25% of estimated cost of Rs.50,000/- per ha.)
3. Transfer of Technology	
i) Demonstration plots:	Rs.3750/- per plot of 0.25 ha,.
Seasonal/annual crops (vegetables tubers etc.)	Rs.15,000/- per plot of 0.5 ha.

(Contd)...

(Contd)...

Component		Pattern of Assistance
	Fruits, and other Perennials Floriculture	Rs.30,000 per plot of 0.2 ha.
	i) Demonstration cum seed multiplication plot of medicinal plants	Rs.1500 per plot of 0.5 ha
	ii) Training/visits of farmers	Rs.1,000/- per farmer.
	iii) Printing of extension literature	Rs.15,000/- for each district.
4.	Irrigation (tentative)	
	i) Irrigation sources like wells, tanks, water pickups, tubewells, etc.	50% of the actual cost with a maximum of Rs.30,000/- per unit.
	ii) Pumpsets	50% of the cost of pump set with a maximum of Rs.8,000/- per unit.
	iii) Drip irrigation/ sprinkler system	50% of the cost of drip/ sprinkler irrigation system or maximum of Rs.28,500/- per ha.
5.	Horticulture machinery & equipment	50% of the cost of power driven implements or maximum of Rs.20,000/- to farmers cooperatives, associations NGOs etc. Subsidy @ 50% of the cost of small hand/animal driven implements for individual farmers
6.	Evaluatiopn, technology hiring, seminar,publicity, etc.	Maximum of Rs.30.00 lakh
7.	On-farm handling facilities	80% grant to meet the cost with a maximum of Rs.18.00 lakh for each district
8.	Implementing Cost	Not exceeding 10% of the project cost to SDA
9	Alternative marketing system	25% of the cost of the project with a maximum of Rs.60.00 lakh per districts as one time grant

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HEADQUARTERS

21st Floor, Centre One Building, World Trade Centre Complex,
Cuffe Parade, Mumbai 400 005.
Phone : (91 22) 22185272
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Indian Offices

AHMEDABAD
1st Floor, Sakar II,
Next to Ellisbridge Shopping Centre
Ellisbridge P.O. Ahmedabad 380 006.
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BANGALORE
4th Floor, Ramanashree Arcade,
18 M. G. Road, Bangalore 560 001
Phone: (91 80) 25585755/25589101-4; Fax: 25589107
Email : eximbro@blr.vsnl.net.in

CHENNAI
1st Floor, UTI House,
29, Rajaji Salai, Chennai 600 001.
Phone : (91 44) 25224714, 25224749;
Fax : (91 44) 2522 4082
Email : chenexim@vsnl.com

GUWAHATI
4th Floor, Sanmati Plaza,
Near Sentinel Building,
G. S. Road, Guwahati 781 005
Phone : (91 361) 2599135; Fax : 2462925

HYDERABAD
2nd Floor, Golden Edifice,
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Email : eximhyd@vsnl.net

KOLKATA
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Phone : (91 33) 22833419 - 22833420 Fax : 22891727
● Email : eximca@vsnl.com

MUMBAI
8th Floor, Maker Chambers IV,
222 Nariman Point, Mumbai 400 021.
Phone : (91 22) 22830761/22823320; Fax : 22022132
Email : eximwrro@vsnl.com

NEW DELHI
Ground Floor, Statesman House,
148, Barakhamba Road, New Delhi 110 001
Phone : (91 11) 2332 6254/2332 6625
Fax : (91 11) 2332 2758 2332 1719;
Email : eximnd@vsnl.com

PUNE
44, Shankarseth Road, Pune 411037
Phone : (91 20) 26458599; Fax : 26458846
Email : eximpune@vsnl.com

Overseas Offices

HUNGARY
3rd Floor, Unit 308
ECE City Centre,
Bagcsy-Zsilinszky UT.12
1051 Budapesh, Hungary
Phone : (36 1)3382833, 3176699
Fax: (36 1) 3178354
Email : eximindia@t-online.hu

UNITED KINGDOM
88/90, Temple Chambers,
Ground Floor, 3-7 Temple Avenue,
London EC4Y OHP
United Kingdom
Phone : (44) 2073538830
Fax : (2711) 2073538831
Email : eximlondon@eximbankindia.in

SINGAPORE
20, Collyer Quay, # 10-02 Tung Centre,
Singapore 049319
Phone : (65) 6532 6464
Fax : (65) 6535 2131
Email : eximbank@singnet.com.sg

SOUTH AFRICA
158, Ground Floor, Jan Smuts
9, Walters Avenue, Rosebank
Johannesburg, South Africa
P.O. Box 2018, Saxonwold 2132
Johannesburg, South Africa
Phone : (27 11) 4428010, 4422053
Fax : (27 11) 4428022
Email : eximindia@icon.co.za

UNITED STATES OF AMERICA
Suite 1202, 12th Floor
1750, Pennsylvania Avenue N.W.
Washington D.C. 20006
United States of America
Phone : (1 202) 2233238
Fax : (1202) 7858487
E-mail : indexim@worldnet.att.net