CHAPTER-I

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This research work is designed to analyse, primarily, the emerging trends in floricultural products in terms of area, production, consumption, trade both at national and global levels during the last one and a half decades starting from 1991-92 to 2002-03. This also encompasses in its fold other connected issues, such as the economics of floriculture viz. cost-benefit analysis, price-spread, market strategies, challenges and opportunities and also makes an attempt to project floriculture exports from India by employing vigorous statistical tool. This chapter, which is introductory in nature, is divided into two sections. Section I presents a bird eye view of floriculture at national and global levels. Section II deals with the methodology adopted for carrying out this research work.

Section-I

Floriculture includes production and marketing of flowering and foliage potted plants, garden bedding plants, cut flowers fresh cut flowers, loose flowers, dried flowers, flower seeds etc. Flowers have been associated with mankind since time immemorial. India has a long tradition of floriculture. Flowers have been used for religious offerings and other social ceremonies. There is wide reference of flowers in mythology and scriptures signifying their importance. Flowers are
used for a variety of things for social functions, decoration, floral ornaments, bouquets, extracts and several kinds of oil, gulkand, perfumes, medicine etc. Flowers’ oils are extensively used in food flavours, soap and cosmetic ingredients, natural colours, mosquito/household insect repellant products and also for pharmaceutical purposes. It is seen that the earlier appreciation of flowers for their aesthetic value has now slowly turned into realization of its economic potential also. In past, requirement of flowers for social and religious purposes were met from home-grown plants, but with increasing urbanization, accelerated income level and new uses of flowers, demand for floriculture production has increased, and non-traditional growth centers have emerged as important players in floriculture production. This has happened in every part of the globe. In India, floriculture as cultivation of flowers started two decades ago on commercial line. The growth of floriculture in India has taken place because the government of India has declared floriculture as high thrust area and announced several policies in favour of production of high quality flowers. Government of India considers floriculture as the means to reduce unemployment, to make small size of land holdings viable and also to help in the diversification of crops that is the need of the hour. It will also ensure profitable utilization of cultivable wastelands. Newer techniques, making flowers more varied and
lasting, have further accelerated the tempo of floriculture. The significant contribution in floriculture came through open field cultivation of gladiolus, tuberose, rose, carnation and other seasonal flowers. These developments have led to the emergence of floriculture sector as an important segment of the trade. With the passage of time, as mentioned, commercialization of flowers has taken place. Many kinds of flowers and other ornamental plants are now grown for domestic consumption and also for international trade in almost all the countries of the world. Today, floriculture in several countries has emerged one of the most lucrative business professions having much higher potential of returns in comparison to most of the field plantations and horticultural crops.

**World Trade Scenario**

Floriculture is fast emerging as a major venture on the world scene. Globally, more than 145 countries are involved in the cultivation of ornamental crops and the area under these crops is increasing steadily. The production of flower crops has increased significantly and there is a huge demand for floricultural products in the world. The world consumption of cut flowers and plants is increasing and there is steady annual increase of 10 to 15 per cent in all flower importing countries. Due to globalization and its effect on income, there is a growing per capita floriculture consumption in
many countries. Maximum per capita flower and plant consumption is in Norway ($146), followed by Switzerland ($126), Germany ($88), Denmark ($84), Sweden ($79), Italy ($47), the Netherlands ($70), France ($58), Belgium ($56), USA ($50), Japan ($44), Greece ($32), UK ($29) and Spain ($26). The total consumption of cut flowers in the world was about $12.5 billion in 1985 which increased to $31 billion in 1996. The major producers of flowers are the developed countries. The share of major producers are: the Netherlands (33%), Japan (24%), the USA (12%) and Italy (11%). Besides the above traditional centers of production new production centers are developing. Production is increasing very rapidly in Latin America and Africa. The floriculture industry is growing very rapidly in Kenya, Uganda, Ecuador, Zimbabwe, and the Ivory Coast. Countries like India, China, Vietnam, Poland, Sri Lanka and Malaysia appear to be going well with more intensive floriculture. It is expected that the number of countries taking floriculture will increase in third world countries. Although there will be world-wide trade in ornamental crops, consumption and production will remain, at least in near future, a regional affair. The development in floriculture will be supported by the role of information technology in great measure. The Asian countries would gain from the situation and expand further by increasing their production of existing products as well as increasing the product range.
The flower business in the world-domestic as well as global has taken root and blossomed in a number of countries. This activity is also fast emerging as potential money spinners for many a third world countries. The global floriculture trade is estimated at $50 billion. The Netherlands, the world’s leading flower producer and exporter supplies more than 170,000 tonnes of flowers to West Germany, which is the biggest importer of flowers in the world. The share of Netherlands of the world export of cut flowers and foliage plants is 65 per cent and 51 per cent, respectively, in terms of value. Dutch, through its breeding centers and flower auction houses, controls the world export auctioning of flowers. The other countries with a major share in the international market are Colombia, Israel and Italy. Significantly, in Israel, whose desert conditions prevail in three-fourths of the area, almost $5 million worth of cut blooms are produced and exported each month. The major exporters of floriculture products are Holland, Colombia, Israel, Italy, Spain, Thailand, France, the USA, South America, New Zealand etc. The major importing countries are Germany, the USA, France, UK, Holland, Switzerland, Japan, Italy, Australia, Belgium, Hongkong and Gulf countries. There is a good potential for export of flowers to Europe, Japan, Singapore and North America. India, which entered commercial floriculture quite late, has a bright future as it will have a
unique opportunity in the free trade regime under World Trade Organization (WTO).

**India – Current Status**

Despite long tradition of agriculture and floriculture, Indian floriculture industry is relatively of nascent one. But due to fast changing dynamic socio-economic conditions/factors, floriculture in many parts of India has taken roots. Now flowers are grown in nearly 106 thousand hectares of land which has increased from 53 thousand hectares in 1991-92. Though flowers traditionally are grown all over the country, but their commercial cultivation is being practised only in Karnataka, Tamil Nadu, Andhra Pradesh, West Bengal, Maharashtra, Rajasthan, Uttar Pradesh, Delhi and Haryana. The production of flowers in India is estimated to be more than 735 thousand tonnes of loose flowers and over 2060 million cut flowers with stem in 2002-03. Almost all the area is under open field flower cultivation. It is during last few years that several export-oriented enterprises have come up in the country and land under protected cultivation of plastic greenhouses is increasing. This area is likely to increase tremendously in coming years. More than two-thirds of area under flowers is provided to the cultivation of traditional flowers like marigold, jasmine, rose, chrysanthemum, tuberose etc. The area under cut flowers used with stem, has increased recently and so has the product range. While these
crops still cover a large share of the area, orchids, anthuriums, liliums, gerbera and bulbous flowers are increasingly being grown both for exports and domestic markets.

India’s share in the global market undoubtedly is negligible which is just 0.40. It started export since 1990. But due to spurt in floriculture activities, India has shown promise. India has achieved the distinction of being the biggest suppliers of flowers to Japan. Indian exports have shown an increase of 25 per cent in the last five years. Indian flowers especially roses are well received in major countries of the world who prefer rose type of varieties in pastel shades with short stem and larger rose life and fragrance.

In fact, Indian flowers have regained their eminence in international markets – export has reached to Rs.165.9 crore in 2002-03 from mere Rs.14.8 crore in 1991-92 up by 1020 per cent. Indian flowers are now exported to about 85 countries around the globe as against only a handful countries a decade earlier. Some of the major importers of Indian flowers are – the United States of America, the Netherlands, United Arab Emirates, Japan, Poland, Singapore, Switzerland, Sweden, Italy, China, Germany, France, the United Kingdom, Spain, Canada, Belgium and Australia. Almost every country in the world is importing Indian flowers, whatsoever the quantity may be. The United States of America is the largest consumer
of India's flowers, followed by Japan. It is interesting to note that only two years back, it was the Netherlands which was the most preferred destination for Indian exporters. During last several years many small countries have shown interest in buying Indian flowers. For example, Haiti is a new country that started importing Indian flowers in 2002-03 with a volume of 0.032 mts. Likewise African (Uruguay and Swijiland) have also been added to the list of Indian flower importing countries with combined value of Rs.12.49 lakh in the same year.

The prospects for India in floriculture exports are good for various reasons. India is a treasure house of temperate plants, particularly orchids and roses. India is situated centrally in comparison with major flower consumption centers like France, Japan and Middle East countries. Indian flower is cheap as cost of inputs is less. Besides, climatic conditions are ideal during winter months when flower demand is at the peak. Also there is wide choice of cut flower species due to different climatic regions. Despite these positive points, there are also certain constraints in the production and marketing of floriculture. The major difficulty is that the traditional flower growers are not trained for quality production. Marketing and shortage of certain strategic inputs are other major impediments in floriculture. But now the government have taken number of steps to encourage floriculture. The setting up of the Agriculture and Processed Food
Export Development Agency (APEDA) is one major step which takes number of steps to encourage floriculture and its exports. Floriculture has become one of the extreme focus segment for development of export by the government of India since last decade. It is hoped that India will make a dent in floriculture in the international market in future. The future of Indian floriculture industry is very bright. Development of infrastructure, adoption of high technology, diversification in different product mix, new cold store terminals at major airports coupled with timely help by financial institutions will certainly help India to capture fast growing international market of Rs. 72000 crore.

Section-II

Methodology

This section deals with the methodological procedure adopted for this research work. In the present study, the methodology adopted for the research work is empirical, objective and analytical. The methodological procedures adopted for the study are discussed under eight heads as under:

- Scope and need of the study
- Objectives of the study
- Data collection
1. Scope and Need of the Study

Floriculture sector now is one of the promising sectors of the Indian economy. It fulfils almost all requirements for boosting export. The floriculture industry has shown encouraging results in this direction during the last decade and the consequent foreign exchange earning. Besides export, floriculture is expected to solve some of the teething problems of the Indian economy such as the issue of diversification of crops, problem of unemployment and also to a large extent, overcoming the problem of small size holding in India, it being size-neutral, empowerment of women and like. Significantly, in recent period particularly after the Indian economy embarked upon the path of liberalization and globalization since 1991, the challenges for the Indian economy have been too many and too severe. Indian floriculture took it as an opportunity and carved out a place for itself in the world market during this period. Government has also responded positively to the changes by adopting pragmatic policies to encourage floriculture in the country. Since floriculture has been identified as one
such area which can help to solve India's economic problems in several ways, a rigorous study is required to understand floriculture in its entirety. The present study makes an attempt to address all these important issues afresh in a dispassionate and scientific manner. There also remain weak and grey areas in boosting floriculture activities in the country which warrant immediate attention and solution. The study also attempts to identify these weak areas. The study is also going to be of immense value to all those involved in floriculture business as producers, exporters, financial institutions, government and policy makers.

2. Objectives of the Study

The present study is designed, primarily, to study closely the emerging trends in production and exports of floriculture products and the challenges and opportunities associated with these in India in the global context. To be more specific, the objectives of the study are as under:-

(i) To analyse India's overall floricultural development scenario in the global context.

(ii) To evaluate, appropriately, the composition and direction of India's floricultural trade with different countries and to project the floriculture trade in coming years.
(iii) To analyse and evaluate some economic and managerial aspects of floriculture industry.

(iv) To identify basic challenges and opportunities in the field of floriculture in India.

(v) To work out suitable policy measures and to overcome bottlenecks as to enhance India's competitiveness of floriculture in the world market.

3. Data Collection

The study is mainly based on secondary data spanning over a period of 12 years starting from 1991-92 to 2002-03. The data has been collected and compiled from various originating sources such as Government departments, reports and specialized journals. To mention a few, the data was arranged from Director General of Commerce and Intelligence, Ministry of Commerce, various reports of the World Bank, APEDA and National Horticulture Board (NHB). Besides, reports and journals were also consulted, relevant to our research area. Journals like the Floriculture International, Floriculture Today, Indian Journal of Horticulture, World Horticulture, American Journal of Agricultural Economics, Indian Journal of Agriculture Economics, Agricultural Situation in India etc. were also consulted. Data on price spread and input-output relationship to estimate the cost of cultivation...
and profitability were worked out on the basis of various studies that exist in the area from different regions of the country.

4. Analytical Techniques

The empirical data so collected on different aspects of floriculture was further analysed by applying some simple as well as rigorous statistical tools. The data that was presented in tabular forms in terms of absolute and percentage was presented with the help of graphs, charts (Pie charts) etc.

Besides simple statistical analytical tools, more rigorous model like Regression has been applied to work out the trends and growth rates of area, production and extent of export of floriculture products from 1991-92 to 2002-03. Linear and non-linear models of the following forms were fitted:

\[ Y = a + bT \]  \text{Linear Trend (i)}

\[ Y = ab^T \]  \text{Non linear Trend (ii)}

where

\[ Y = \text{Area (hactare), production (mt) and export of flowers (Rs. crore).} \]

\[ a = \text{Constant or intercept, i.e., the value of } y \text{ where } t = 0 \]

\[ b = \text{Regression Coefficient of } Y \text{ in relation to } T. \text{ It indicates how much the value of } Y \text{ changes when value of } T \text{ changes by one unit. It also measures the slope of the} \]
regression line. a and b are two unknown in the regression equation. a and b are also called parameters.

\[ T = \text{It indicates time in years and is an independent variable.} \]

CGR (compound growth rate) was calculated using the following formula.

\[ \text{CGR} = (\text{Antilog of b-1}) \times 100 \]  

**Regression Statistics**

Regression Statistics viz. Standard Error of the Estimate, R, R2, t ratio have been used to interpret the results.

**(i) The Standard Error of the Estimate**

The standard error of estimate (SE) measures the dispersion around the regression line, the line of best fit. It also serves as a measure of the reliability of the estimate. If the observed and estimated values of y are more close, the error in the estimate would be less and the estimate more reliable.

A convenient formula for computing the SE of estimate is:

\[
S_{y.t} = \sqrt{\frac{\Sigma (y - ye)^2}{N}} \\
\text{or } S_{y.t} = \sqrt{\frac{\Sigma y^2 - a\Sigma y - b\Sigma ty}{N}}
\]

\[ N = \text{Number of observations in a series} \]
(ii) $R = \text{Correlation}$

$R$ stands for correlation, and measures the strength of association between $y$ and $t$, i.e., between the dependent and independent variables.

(iii) $R^2 = \text{Coefficient of Determination}$

Coefficient of determination is typically indicated by the symbol of $R^2$. This measures the strength of association between $y$ and $t$. In other words it is a link between correlation and regression. It is simply equal to the ratio of variation in $y$ that is explained by the regression equation to the total variation in $y$. For example an $R^2$ of .774 indicates that 77 per cent of variation in $y$ (dependent) variable has been explained by $t$ that is independent variable. An important aspect of the $R^2$ is that its under-root gives the coefficient of correlation.

(iv) $t$ Ratio

The $t$ ratio is defined as

$$\frac{b}{S_b}$$

where $b$ is regression coefficient and $S_b$ standard error of regression coefficient. The ratio is used to test the null hypothesis with different degrees of freedom. We compare $t$ ratio with critical or table value
with different level of significance with a degree of freedom i.e. N – k. The test is usually performed at 1% or 5% level of significance.

It may be mentioned that we have tabulated the results in our analysis in terms of their regression statistics.

5. Hypotheses

Hypothesis is generally formulated in a research problem where population parameter is not known and hence same is estimated on the basis of sample data. The present study is based on secondary data and no sample data is involved. Yet on the basis of insight into the literature and the close observation of secondary data on floriculture, following statements of supposition or hypotheses have been formulated:

- There has been rapid growth of floriculture in India since liberalization of the Indian economy in 1991.

- India will emerge one important player in floriculture in the global context in years to come and there will be no adverse effects on it under the WTO regime.

- Floriculture is economically a better viable option to the farmers especially to the small and marginal ones.

- Cultivation of Floriculture in India is in tune with it factor endowments. It will solve India’s teething problems of
unemployment, uneconomic holding, diversification of agriculture and women empowerment.

- Floriculture exports will meet the target at least of one percent share in world trade by 2010 as stipulated by the government of India in its policy statement.

- Both challenges and opportunities in floriculture sector are huge and enormous.

6. **Floriculture Defined**

Floriculture is combination of two words viz. 'floris' plus 'culture' which means cultivation of flowers. In broader sense it includes production, marketing, consumption of various products of flowers such as fresh cut flowers, loose flowers, dried cut flowers, bulbs, tubers, tuberous roots, live plants, cut foliage, dry foliages and branches and buds.

*(i) Fresh Cut Flowers*

Fresh cut flowers generally mean all cut plant components and the economic value of which lies in the decorative effects of their blossoms and are suitable for bouquets or for ornamental purposes. Roses, carnations, chrysanthemums, orchids, gladioli etc. come under the category of cut flowers. The most colourful varieties of cut flowers are available in carnation than other cut flowers. It is the second
largest export potential cut flower next to roses, which can be grown in any adverse climatic condition under protected cultivation. The share of cut flowers in the international trade is increasing continuously.

(ii) Loose Flowers

Traditional flowers which are being cultivated since time immemorial and harvested without stem come under this category. In India major floral business is from the sale of the traditional loose flowers only. Loose flowers in India constitute jasmine, marigold, tuberose, red fragrant roses, chrysanthemum, crossaudra, barleria, balsam, china aster, lotus tabernamontana, chanpaka, clitoria, ixora and hiliscus. Because of the steady increase in population in the cities and towns and with better purchasing power and higher standard of living, area and production under these crops are expected to increase in the years to come. There is demand of loose flowers from India to different countries like Singapore, the Middle East and Malaysia where Indians have settled in large number.

(iii) Dry Cut Flowers

Dried flowers and dried plants are put to many beautiful and varied uses. The dry flower is lucrative for the traders because of its long lasting property and its demand in the world market is on the increase. The demand for dry flowers in India in its domestic market is
also on the rise. Dry flowers can be made available throughout the year in the market. They are like mummies without any preservatives. Whereas the fresh flowers are expensive, short lived and available during a particular season. The dry flower can withstand the heat of summer and cold of winter, the dry flowers have been put to various attractive and varied uses such as flower balls cards, covers, pomanders, sweet smelling, pot-powri and many more things. The dry flowers are of large potential as compared to silk and synthetic flowers as they are cheaper, available in a varied range to choose from, eco-friendly and biodegradable.

(iv) Bulbs, Tubers, Tuberous Roots

These are the products that may be planted in boxes, pots or similar containers. The demand for these products is very high in USA, Germany, Netherlands and Japan. The percentage share of these products, however, is declining.

(v) Live Plants

Live plants are used for permanent and semi-permanent decoration in homes and offices. These are whole plants, which are suitable for planting for ornamental purposes. Ornamental plants include flowers, bulbs, corms and tubers in the dormant as well as growth and blossoming stage and other live plants such as young
vegetable plants, mushroom spawn which cannot always be separated from the ornamental plants.

**(vi) Cut Foliage**

It refers to plant parts namely leaves, twigs, grasses, shoots etc. Notably, the economic value of these lie not in the decorative effect of the blossoms but in its colour and shape. Fresh cut foliage is used in combination with cut flowers for bouquets, flower arrangements and decorations when cut flowers and foliage are presented together in pre-arranged bunch. Dry foliage branches/buds have now become less popular in international markets. USA, Germany, UK and Italy are the main importers of these products.

**(vii) Potted Plants**

The pot plant industry is growing enormously in the domestic as well as in the international market. The top ten potted plants in the world market are Ficus, Dracaena, Azalea, Kalanchol, Begonia, Yucca, Sacutpaulia, Chrysanthemum, Poinsettia and Dinffenbachia. Use of these plants is increasing because of the changes in the lifestyle of the people who stay in flats.

**(viii) Flower Seed Production**

Flower seeds are produced in almost all the developed and developing countries. The pioneer seed companies are, however,
located in England, France, the Netherlands, and the USA. There is considerable world-wide interest in the development and method of seed production in view of biotechnological advances. Most of the seed breeders in India prefer to import of flowers seeds from abroad. Flower seeds worth Rs.30 million are exported from India every year.

7. Chapter Organisation

So that research work presents a cohesive look, a systematic chapter scheme becomes necessary. The present study, accordingly, is divided into six well-knit chapters. Chapter one is introductory in nature giving out entire skeleton of our research work. It presents a bird-eye view of the emerging scenario of floriculture in production, export etc. at global and national level. It also spells out the methodology used in carrying out the research work. Chapter two provides a review of literature on broad issues having relevance for the present study. Chapter three focuses on development of floriculture and presents all details on production, consumption, composition, trend and direction of floriculture trade on the basis of time series data spanning over a period from 1991-92 to 2002-03. Chapter four presents some economic and managerial aspects of floriculture like its profitability, price-spread and market strategies. It also draws a forecast of India’s floriculture exports upto 2010. Chapter five is devoted to the discussion of challenges being faced by floriculture
industry and also the opportunities that it offers in the wake of globalisation and WTO agreement and provisions. Chapter six gives a brief resume of the research work, presents summary some broad conclusions of the research work and practical workable suggestions to give impetus to floriculture in the country, leading eventually to the upliftment of the economy in general and better export performance in particular so that India becomes a formidable player in times to come in floriculture in the international market.

8. Limitations

Efforts have been made to keep the study free from any limitation. Yet there are bound to be some deficiencies with respect to collection and availability of data in floricultural products. This is because of the fact that the floricultural activities, as business, are relatively of recent origin, particularly in India, and the method of data collection varies not from country to country but also region to region within the same country making comparison somewhat a difficult task. However, we have pointed out such limitation whereas these exist during the course of our study.