CHAPTER VI

SUMMARY,
CONCLUSIONS
AND SUGGESTIONS
FOR POLICY
IMPLEMENTATION
Introduction

This chapter attempts to recapitulate and summarize the entire analysis as detailed in earlier chapters. The objectives, methods, content and major conclusions based on findings of the study have been given here. While doing so, it also indicates some of the more significant policy implementation for workable solutions for faster development of floriculture industry in India.

Floriculture is fast emerging as a major venture on the world scene and, globally, more than 145 countries are involved in the production and marketing of ornamental crops. The flower business has taken roots and blossomed in a large number of countries. In India, floriculture has been a way of life and it has been growing and using flowers for ages. In India, floriculture is as old as its history, intertwined with religion and mythology. Earlier, however, greater emphasis has been on the aesthetic importance of floriculture products, and its commercial value has been realized only recently. It has higher potential per unit area than most of the field crops even horticulture crops. Demand for flowers across the world has increased on account of their extensive uses for variety of purposes. It has now
been strongly felt that Indian agriculture must be competitive and sustainable. The strategy aims at diversification of agriculture and its cropping pattern. Commercial floriculture is one of the viable economic options in this strategy. Floriculture crops are potential money spinner for country like India. Commercially, floriculture can open up great opportunities to our million poor, small and marginal farmers. India has diverse agro-climatic conditions which offer big scope for growing a large varieties of flowers. As indicated, commercial floriculture, though is a recent development in India, but is progressing well on a fast track compared to host of other flower producing countries. The commercial potential of the floriculture industry in India is evident from its marked growth in production, area and exports of floriculture products. A large number of export oriented flowers producing units have been set up in clusters around Pune, Bangalore, Hyderabad and Delhi. After the initial hicaps and teething problems, the industry has stabilized and started earning valuable foreign exchange for the country. The floriculture trade is the most rapidly expanding and dynamic global enterprise and is worth US $ 60 billion. The world market for floriculture products has been expanding around 12 per cent each year. In India also government has identified floriculture as a major thrust area for export and has gained momentum with the liberalization of the economy in 1991. There is a
huge untapped flower production potential in our country. The quantum of Indian floriculture which has increased manifold since the early nineties, has still huge scope to become a key player in the international flower market. Government of India has taken numerous initiatives and announced several pragmatic policies to encourage floriculture industry on scientific lines so that it becomes more remunerative and competitive.

Summary

This research work is designed to analyse primarily the development of floriculture in terms of area, production and volume of trade in India in global context. Then it proceeds further to probe rigorously the challenges and opportunities associated with floriculture venture in the country. Floriculture includes production, marketing and consumption of products such as fresh cut flowers, loose flowers, dried cut flowers, bulbs, tubers, tuberous roots, live plants, cut foliage, flower seeds etc. Since floriculture has been identified as one area which can help to solve India's economic problem in several ways, an attempt has been made to present an integrated floriculture picture in a dispassionate and scientific manner so that the study serves immensely to all stakeholders in floriculture business as growers, traders, consumers and policy makers.
The study has set up the following objectives, as delineated earlier, in chapter one. These are: (i) To analyse India’s overall floriculture development scenario in the global context, (ii) to evaluate the composition and direction of India’s floriculture trade; (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, and (v) to work out suitable policy measures to overcome bottlenecks to enhance India’s competitiveness in the world market. The study is mainly based on secondary data spanning over a period of 12 years from 1991-92 to 2000-03. The mass of data of flower area, production, consumption, trade, export, price variation etc. have been collected and marshalled meticulously from various national and international sources and relevant literature was also consulted and reviewed thoughtfully. The empirical data so collected was analysed by applying simple and rigorous statistical tool like regression. Both linear and non-linear models of regression were fitted to the data to work out and generate statistical values for our analysis. Further, to test the validity of these models to give a scientific outlook, the values of regression statistics like regression coefficients, standard error, R, R² (co-efficient of determination), t-ratio were also computed with the help of computer based SPSS.
These models were further tested at 1% level of significance. Besides regression model, simple statistical tools like percentages, diagrams, charts (pie-charts) graphs have also been used.

So that research work presents a cohesive look, the entire study has been organised under six well-knit chapters. Chapter one is introductory in nature giving out entire work plan of the research study. It presents a bird-eye view of emerging scenario of floriculture at national and international level. It also spells out the methodology used in carrying out this project. Chapter two presents a critical review of relevant literature. Chapter three which is the main body of the thesis analyses the data on floriculture (area, production, consumption, trade etc.) from different angles by applying statistical/analytical techniques. Chapter four presents economic and managerial aspects of floriculture like cost-benefit analysis, price variation and spread and market strategies. It also generates forecasts of floriculture export for India upto 2010. The forecast figures have been prepared by applying appropriate forecasting technique on the basis of certain assumptions. Chapter five is devoted to highlight some serious challenges being faced by floriculture industry and also the opportunities that it offers in the wake of globalization and WTO agreements and provisions. The present chapter six, as stated in the beginning, gives a brief resumé of the research work, conclusions based on findings and some workable practical remedial measures for policy implementation.
Conclusions

For the sake of convenient presentation, the major conclusions of the research work have been classified into three heads viz., conclusions relating to (A) area, production, consumption and trade (B) economic and managerial issues, and (C) challenges and opportunities.

(A) Growth in Area, Production, Consumption and Trade

(i) Expansion in area, production, consumption and trade in floriculture is evident in all the leading flower growing countries in the world. Rapidly growing demand for flowers, for variety of reasons has led to expanded global market over the time period and has turned floriculture as an industry. The science and art of commercial floriculture has now been recognized globally as an economic activity with enormous potential for generating employment and earning foreign exchange. Floriculture at global level occupies an area of approximately 305,105 hectares. Continentwise, Asia and Pacific combined share nearly 71 per cent of the total area followed by Europe (14.6%) and North America (7.3%). However in terms of value of floriculture, it is the highest (56%) in Europe followed by
Asia and Pacific (20.4%) and North America (17.6). The implication is that the quality of floriculture in Asia and Pacific, by and large, is inferior to that of Europe and North America.

Countrywise analysis will reveal that the Netherlands contributes nearly one-third of the entire production being closely followed by Japan, sharing about one-fourth of the total world production. World production pattern would further reveal that only five countries viz. The Netherlands, Japan, Italy, USA and Thailand taken together contribute almost 90 per cent of the total world floriculture production. India’s share in total world production is merely 0.40 per cent despite having largest area under floriculture.

(ii) Consumption of flowers is rising rapidly both within developed and developing countries. Developed countries with high per capita income, understandably, are the major consuming centers. Consumption of floriculture products is largely concentrated in Western Europe, North America and Japan. Six major consuming countries in the world are Germany (27%), USA (12%), Japan (10%), France (10%), U.K. (8%), and the Netherlands (8%).

(iii) Due to increased consumption, world trade has also expanded enormously. Floricultural products have acquired much attention and
significance in the matter of international trade in more recent years. Netherlands accounts for one-half in the total world export. Columbia, Belgium, Denmark and USA are other prominent exporters. India twelfth in ranking, as noted earlier, contributes merely 0.40 per cent in the total world exports.

As to imports, Germany accounts a little more than one-fifth the total world imports followed by USA, UK, France and Japan. By collating information on world trade, it is revealed that the Netherlands, Italy, USA, Belgium and Germany are several countries who figure prominently both as exporters as well importers. This is on account of the fact that these countries import floricultural products not entirely for domestic consumption but for the purpose of re-export also. The fact remains that the world trade in floricultural products, which is increasing at a steady annual growth of 10 to 15 per cent, is going to be an important business activity the world over. The world trade in floriculture will be quite huge in coming years as more and more countries seem to be moving towards more intensive cultivation of floriculture. India's share in the world market, though is, currently insignificant (0.40), is expected to rise at least upto 1.0 per cent in near future, as floriculture in India has taken root, due to focused attention of the government.
(iv) India's floriculture presents a rosy picture. Flower production is practiced in all parts of the country. There has been phenomenal expansion in area under floriculture. The area under floriculture increased from 31 thousand hectares in 1991-92 to 106 thousand hectares the highest so far in 2001-2002. Now the country has nearly one-fourth of the world area under floriculture. This large base can generate very heavy volumes of different floriculture products, and given a sound technology support, can increase productivity and produce quality products for the world markets. Similarly, the production of loose flowers increased from 150 thousand MT in 1991-92 to 735 MT in 2002-03 and that of cut flowers from 400 million units to 2060 in the same period. Regression analysis confirms that the relation between time and expansion in area is quite strong as $R^2$ value (0.64) is significant. This relationship between time and production of flowers with loose flowers and cut flowers is found even stronger as indicated by significant $R^2$ values. The production during the period increased at a spectacular annual compound growth rate of 12.63 per cent in case of loose flowers and 13.31 per cent for cut flowers.

(v) Statewise analysis reveals that several states have ventured into floriculture during last one and a half decade. Among all the Indian states, Karnataka is the fastest and largest flower growing state in area,
production, marketing and export of flowers in the country. The floriculture in Karnataka is done with in open field conditions as well as in hi-tech farms located in and around Bangalore. Karnataka’s share in area is 27 per cent of total area under floriculture in India. Other important flower growing states are West Bengal, Andhra Pradesh, Uttar Pradesh, Gujarat, Delhi and Haryana.

(vi) India’s export of floricultural products have been analysed in its three dimensions viz. value, composition and direction. A noteworthy feature that emerged through examination of export statistics is its phenomenal increase in exports over a period under study. It witnessed 112 fold increase in export value. The linear trend value of floriculture export hovered around Rs.1326 lakh (annual rate of increase) which is quite promising. A very high positive value of regression coefficient shows that the sector is booming for growth. The regression coefficient for export is significant at 1% level. A very high compound growth rate of about 23.05 percent of floriculture exports testifies that the industry is poised for major boom. Floriculture industry in India is rightly called a ‘Sunrise’ industry. Presently, it constitutes about 5.6 per cent export of all horticulture products, 4.90 per cent of agricultural exports and 0.65 percent of total exports of India. Considering all these factors, it should be possible for
India to substantially increase the current share of floriculture exports in future.

(vii) It is quite pertinent that export potential of floriculture products is much more than that of agricultural and allied products. According to our forecast, generated by applying rigorous forecasting method of non-linear type, the floriculture exports from India will reach a level of Rs.708.45 crore in 2010. However, another estimate made by Western India Floriculture Association, puts the projected figure at nearly of Rs.719 crore and then India’s share of the world trade will be nearly 1.0 percent. This confirms one of our hypotheses set out for the present research work. Indian floriculture industry, in fact, has established itself in the international market after initial struggle, and the sector is ready to face competition in the world market. Notably, world’s largest exporter of floriculture – the Netherlands – is the biggest importer of India’s floriculture. In fact floriculture activities in India are in tune with the factor endowments of the country substantiating our hypothesis and the factor endowment theory of international trade propounded by Heckscher and Ohlin. It is expected that due to sustained strategic policy of the government, APEDA, NHB and NABARD, India is expected to increase its share in export basket and emerge as a major player in the global market.
Regarding composition of exports, a variety of floricultural products like cut flowers, dried flowers, live plants, dried plants, bulbs, tubers, seeds etc. are exported from India. Whereas percentage share of cut flowers and dried flowers has increased in India’s total floricultural exports, the share of live plants, bulbs, tubers has declined continuously during the last one and a half decade period. Dried plants have disappeared from our export basket in 2000-01, which had claimed a little more than 16 per cent share in 1991-92. An important finding of the study is that two items namely cut flowers and dried flowers accounted for 95 per cent of the total India’s floriculture exports. Demand for dried flowers is increasing in the international market due to its long lasting property. They are like mummies without any preservatives.

As to direction of trade, Indian flowers are now well received in all the major auctions and direct market centres of the world. India exports its flowers to about 85 countries around the globe. USA, Germany, UK, Netherlands, Japan are major importers of India’s floriculture. These five countries, taken together, constituted 72 per cent of the total exports from India. USA continued to be the largest importer of Indian floriculture products. In 1991-92, USA’s share was 18.3 per cent which has further increased to 28.5 per cent in 2002-03. Japan is the next important destination for India’s flowers and its share
has rapidly increased from 4.1 percent in 1991-92 to 13.7 percent in 2002-03. Japan has pushed Germany from second to fourth position. Considering Japan as great potential, Indian government and exporters are geared their projects towards Japan. Japan is certainly a promising market because of short distance and cultural bonds with India. Next major importer of flower products from India is the Netherlands – the world leader in floriculture industry. Netherlands’ share in India’s total flower exports has continuously and steadily increased from 8.7 per cent to 11.9 per cent in the corresponding period. It is observed that the share of Italy, France, Switzerland and Spain declined in the same period. India has also found new markets for its flowers in Singapore, Hongkong, New Zealand, Poland, Russia, China, UAE, Australia and Belgium. It can be concluded that Indian floriculture export has not only been diversified but also changed its direction with the passage of time. The heavy concentration of exports in few countries is being reduced by establishing new markets in several countries. The market for floriculture export is quite vast for India, provided opportunities are tapped and exploited to her advantage.

(B) Economic and Managerial Issues

One of the objectives of this research work was to work out the cost and return of flower production and to assess the comparative profitability of raising floriculture crop vis-à-vis other competing
crops like wheat, sugarcane, *arhar*. For this purpose, we have compiled data from several studies from different regions dealing with the aspect of profitability. Such an analysis is useful to the flower growers in taking decisions with regard to the allocation of scarce farm resources more judiciously and optimally in order to maximize return on their farms. Major conclusions relating to economic and managerial issues are reproduced below:-

(i) All the studies considered for our project confirm high return from the cultivation of different kinds of flowers. Net return per acre of land works out to be in the range of Rs.15544-17600 for marigold, Rs.125800 per hectare for rose cut flowers, Rs.358500 for carnation cut flowers, Rs.282975 for lily and Rs.50000 for chrysanthemum per acre of land. The cost, however, for cultivating these flowers is also very high. Various other costs like rental cost, picking charges, transportation, commission agents, storage and packaging are also quite substantial. A study undertaken by Haryana Agricultural University, Hisar brought out that the cultivation of marigold is much more profitable in comparison with the cultivation of alternative competing crops like paddy, and *arhar*. According to this study, return over total cost in respect of marigold is Rs.20295 per hectare, whereas it is Rs.9827 and Rs.3380 for paddy and *arhar* respectively. For hi-tech cultivation of flowers, the initial investment is very large. The
average cost of production of rose under green house per hectare in Bangalore and Pune region is about Rs.55.7 lakh and Rs.58.9 lakh respectively. Understandably, the cost and return differ depending on the type of flowers, types of farms and inputs used. In the overall analysis, it can safely be concluded that though initial investment may be very high in floriculture but profits are also substantial. It will take two to three years only to pay back the entire investment on floriculture projects even in those cases who adopt hi-technology and modern scientific method in flower cultivation. The cost benefit analysis confirms our hypothesis that floriculture is economically a better viable option to the growers and is in tune with India’s factor endowments.

(ii) In terms of distribution channels, flowers in India are sold to wholesalers, retailers through commission agents or contractors on pre-agreed prices. Commission agent normally charges 15 to 20 percent of sale proceeds. This system works well as agent has motivation to try for highest possible price for the producers as he gets higher commission. This system is prevalent in case of dry and loose flowers. The marketing outlets for cut flowers are through auction centers. The international Flower Auction Centre, Bangalore, set up on the lines of the Amsterdam auction centre, is expected to facilitate marketing in foreign markets. The proposed Auction Centre in Dubai will also be a
boon to Indian floriculture, as it will reduce the air freight by 25 per cent. Now several auction centres have come up around metropolis. Direct marketing to the consumers through e-marketing is also in the offing. As efforts are on to develop portals for trading of flowers on the internet through online auctions or by placing orders on the internet e-commerce, laws have been passed by the Indian Parliament and cyber commerce is likely to take a big share in the marketing of flowers as with other commodities in years to come.

(iii) It was also one of the objectives of the study to examine the price spread and thereby assessing the benefits accrued to the growers. In India, generally, there are two seasons – peak and lean of flower sales. The peak season begins in September and peaks up during December-February. The transaction starts declining after May. Between October-February, nearly 80 per cent of flowers is transacted. Because of demand and supply factors, price variation during peak and lean season is quite significant for both the markets in Delhi and Bangalore for which we have compiled statistics. The price variation is almost double in case of some flowers. Price fluctuation is mainly attributed to number of festivals, religious congregations and other celebrations which abound during the peak period. For instance, in case of rose, which is most fascinating and highly demanded flower both in the domestic and overseas market, the price variation remained
between Rs.25 to Rs.40 in various lean months, whereas it was in the range of Rs.30 to 50 during peak season. The price variations in Bangalore were even more severe that was between Rs.60 to Rs.90 in peak period and Rs.30 to Rs.40 in lean period. More or less similar pattern is visible in case of other flowers as well.

(C) Challenges and Opportunities

In response to meet yet another major objective of this research work, namely, challenges and opportunities for India in floriculture, the issues were got discussed at length in the main body of the thesis. Now we summarise these here as born out by the study. Floriculture offers host of opportunities for India, but it being relatively a new emerging sector, there are some serious challenges and constraints in the way of its development. Poor logistics, inadequate data, poor infrastructure, frequent natural calamities, high cost of freight, competition, financial problems and lack of trained entrepreneurs are some formidable challenges. We adumbrate these as under:-

(i) Inadequacy of data on all aspects of floriculture is one serious challenge. This is particularly so in case of traditional flowers grown in the country. Data on market intelligence is quite scanty. The data generated by agricultural universities and horticulture research stations in the country is not easily accessible. The data on usage of flowers for different purposes and different market channels is inadequate.
Though Ministry of Commerce and Intelligence, Government of India, APEDA and NBH collect data on broad aspects of floriculture, but it is not very comprehensive. To improve the access of growers/entrepreneurs to latest market trend, prices and other, the facilities of MIS, presently being operated by APEDA and NHB, need to be extended to all the states and union territories.

(ii) There are very few exclusive markets for flowers, and flowers are marketed in the general market meant for agricultural and horticulture produce. Marketing challenges include: Marketing space is not authorized and sufficient, there are wide price fluctuations; it lacks market intelligence, exploitation and ill-treatment to growers etc. The marketing of flowers, by and large, is an unorganized affair. The farmers have to face the distress selling in such markets and they have to accept the price whatever the agent offers to them. Growers receive hardly one-fourth of price paid by the ultimate consumers.

(iii) Good quality planting material like seeds, bulbs, machinery, pesticides etc. are essential requirements in commercial floriculture. Access to new planting material and procuring new varieties of plant material is a major problem for most of nurserymen and cultivators. The entrepreneurs are forced to import planting material by paying high royalties to the breeders.
(iv) Floriculture is a capital intensive crop which requires huge finance. Cost of establishing high-tech green houses is quite high. As a consequence, small floriculturists follow traditional methods of cultivation as they could not afford green house technology. However, FAO is providing low cost green house technology to small farmers under its technology cooperation programme through three centers located in Bangalore, Srinagar and Pune. Though APEDA, NBH and NABARD are giving financial assistance to different states under new scheme for floriculture sector, yet considering the vast size of the country, the assistance is not very impressive. Experiences show that the credit support from banks is still not adequately flowing into this sector due to lack of familiarity of the projects. Complex project design and its cost and income flow intricacies make bankers hesitant in financing such projects.

(v) Varied types of infrastructural facilities like cooling rooms, storage, glass houses etc. are pre-requisite for the success of floriculture industry in India. The cut flowers like rose require pre-cooling before packing to create time and space utility. At present, there are no facilities available and individual cultivator cannot afford the same. Due to lack of cold storage facilities in villages and in transport vehicles, flowers cannot be transported to far-off places due to perishable nature of flowers. Cut flowers are subjected to storage at
different stages. Refrigerated vans are essential for cold chain linkage from the farm to the cargo handling area at the airport. The refrigerated van facility is very little in India. Also most of the rail wagons are not provided with refrigeration facilities and few trucks are available with this facility. Importing countries insist on those floriculture products raised under green houses technology. At present, in India, glass house cultivation is few and far between. Cost is quite prohibitive. It is estimated to be around Rs.5 million for a glass house of the size of 12000 m².

(vi) At present, R & D within the country in floriculture is not export-oriented. Thus growers have to depend on imported material which sells the most of the exports. The research, by and large, is not oriented to generate technology support for commercial floriculture. Due to various limitations of the research institutions, large scale propagation of material including seeds could not be passed onto large number of individuals for cultivation. Extension support by government is also very weak. The coming years are very crucial for floriculture research because India is obliged to work within WTO dispensation. In fact present level of production of floriculture would require much strengthening of these facilities to be able to compete in global markets.
(vii) India faces competition in floriculture from well established world players. Indian growers know little about quality and standardization. They lack competitiveness in the international market due to lack of marketing expertise and aggressive marketing. African countries producing quality roses and other flowers at much lower cost have started dumping their products in India. African countries are levied no duty by the EU nations whereas it is 10 per cent on the Indian produce. This is against the rule of WTO in giving a minimum market accessibility. Indian flowers are being discriminated by foreigners. India takes 10 days to reach most international markets whereas countries like Israel is able to hit within three days time.

(viii) Environmental and safely health issues have become frontal challenges in the production of floriculture all over the globe. To address these issues appropriately, India requires very careful strategy. Floral workers tend to suffer, on account of excessive pesticide use, such health problems like headaches, nausea, infrared vision, rashes and asthma. Workers are exposed to pesticide concentration of upto 60 times the amount considered safe. Reports have revealed that growers repeatedly fail to adopt the most rudimentary advances in pesticide manufacturing practices which could reduce substantially the pesticides, insecticides and weedicides. India will have to learn and keep itself in tune with growing consciousness for environment
leading to change in production and marketing concepts. Flower Label Program (FLP) adopted by several European marketing chains, have laid down criterion ensuring that flowers are produced in environmentally and socially acceptable conditions. A large number of women and children engaged in floriculture need to be provided adequate safeguards.

(ix) Despite these daunting challenges mentioned above, opportunities in floriculture are bright for India. Firstly, India is well endowed with factors such as suitable climate, cheap labour, skilled manpower, which are essential inputs in the production of floriculture. Due to population pressure leading to an adverse man-land ratio, floriculture is well suited to India, as it fetches more return per unit of land. It is also size-neutral and is suited to small and marginal farmers. India has diverse agro-climatic conditions which permit growing of different varieties of flowers throughout the year. Coupled with these government supportive policies regarding floriculture, have prompted entrepreneurs and MNCs to undertake floriculture projects in the country on appreciable scale.

(x) Floriculture would offer opportunities to Indian farmers for diversification of cropping pattern. This will make Indian agriculture more sustainable. As the farmers find floriculture a new kind of venture giving more return to them, such diversification would be
possible. The investment on floriculture crops was found to be economically feasible as benefit-cost ratio was more than one. The last decade has witnessed this trend in several states in India and farmers have ventured into floriculture and other horticulture products.

(xi) Floriculture activities in India will help to generate more employment avenues as it is a labour-intensive activity. It is estimated that floriculture has a potential to generate direct employment for about 20 workers per hectare; the indirect employment generation in the wide production chain is in a 1:2 ratio. It shows that even a modest floriculture program can generate millions of jobs, predominately for women. This will also open up entrepreneurial opportunities to women and rural population. Besides, India due to its cheap labour advantage is expected to be a big centre for outsourcing flower activities (like call centers, insurance sector or banking) and grab this opportunity. Floriculture industry in developed countries now finds its on cost of production a bit too high. The growing demand for flowers domestically and internationally provides huge opportunities to the growers as the supply is less than half of the demand. India has the opportunity to enhance its share in world trade to at least 1 per cent from the present 0.40 percent. Since the production in the traditionally recognized centers – the Netherlands, USA – has reached the threshold level, the developing country like India has the bright scope to emerge
an important production centre. Expansion and new usages of floriculture based products like essential oils, exquisite perfumes, herbal medicines, oleoresins, rose, *attar*, *gulkand*, rose otto, dyes, flavours, having high commercial value both at home and abroad, would provide a new opportunity to India to partake a greater share in the growing world demand.

**Suggestions for Policy Implementation**

In this section, some workable suggestions are offered for policy purposes to accelerate floriculture activities in the country.

1. Good quality plant material like seeds, bulbs, machinery, pesticides etc. are essential requirements for good quality products. The research institutes like Indian Institute of Horticultural Research (IIHR), Bangalore, Indian Agriculture Research Institute (IARI), New Delhi and State Agricultural Universities, where research on major floriculture crops is being conducted can play a major role in producing and providing good quality planting material. These organisations can support the local nurseries in several ways. Pertinently, there are over one lakh nurseries in India, only 1200 nurseries have come forward and obtained recognition, and the remaining vast majority of them are struggling for their livelihood or have run into financial difficulties. Efforts need to be made to improve the economic standard and make
these nurseries viable. More and more model floriculture centres on the lines, we already have in some parts of the country, need to be created across the country.

2. Cultivation of flowers, being relatively capital intensive, require large investment as compared to other competing crops. Therefore, there is a need for liberal credit facilities for sound floriculture project. The present system of specialising loaning through NHB should be continued in a more vigorous manner. The loan procedures should be expedited to avoid time and cost over run. NABARD and other financial institutions should recognize commercial floriculture as an activity requiring preferential treatment with cheap money lending. The financial institutions lack the required exercise for speedy approval of projects and due to failure of some projects funded initially, they adopt usually a ‘wait and watch’ attitude. Sources for low cost institutional finance like that from the NHB are few and the procedures are cumbersome and time consuming. To sustain serious players and in the best interest of the sector, NHB must take holistic lenient view in settling dues to already rehabilitated units on the same terms and conditions as accepted by the lead bankers without seeking additional security and condoning the past ills during the learning curve period. Banks charge 12 to 14 per cent interest rates for the nurserymen whereas they charge 4 to 5 per
cent for providing a car loan. Floriculturists may also form group in 10-20 and raise finance on lines of Self-Help Groups.

3. Marketing of flowers, is largely, disorganized. The market vagaries and unfair prices for floriculture perishable products are common phenomena. This can be mitigated if there are adequate arrangements for cold storages. To be globally competitive, development of modern storage facility is a pre-requisite. Different types of cut flowers exhibit varying degrees of tolerance for storage conditions. Public and private sectors should create large-sized, professionally managed, certified cold storages and small silos.

4. Shortage of water and electricity are two fundamental challenges that hinder the rapid growth of floriculture in certain regions in the country. Government of India may provide due attention to these problems so that water and uninterrupted electricity are supplied to growers at subsidized and concessional rate. Most of the flower growers with limited means cannot maintain the captive power of their own. Technology missions for the developing of floriculture in rainfed conditions (arid and semi-arid region) should be worked out. Drip or (trickle) immigration in water starved areas be installed by giving subsidies. Drip systems uses 60-70 percent less water than overhead systems and has supervision application uniformity and efficiency. Conflicting forecasts about rainfall issued by the Indian
Metrological Department (MD) should be avoided as it only confuse the farmers down the lines. Methodology of rain forecasts should be made more scientific and exact.

5. For the development of floriculture industry on sound basis, what is required is institutionalizing of the experience gathered by the projects that are already in production. Growers' Association could provide a strong platform for dealing with the needs of this nascent industry and could promote interaction among members for sharing their experiences as entrepreneurs. They could also follow up with the agencies at the state and national levels to sort out various issues. Such associations should also help to create those facilities on community basis or custom hiring basis which are beyond individual capacity and resources.

6. Not many detailed economic feasibility studies are available. Cost-benefit studies prove helpful, particularly to the new entrants in the business. Details of such studies need to be publicized and made available to the prospective entrepreneurs. Economic feasibility of open cultivation as well as glass house condition for exports also should be studied for motivating the cultivators for growing flowers for domestic and export markets.
7. There is a need to develop more and more floriculture parks where growers will have enough choices to select varieties adapt to local conditions as well as having global acceptability. A park of this kind covering around 200 hectare (where 70 entrepreneurs have been allotted land of 1.5 hectares each) has been recently developed at Talegaon, a small habitat near Pune. This is a unique park in the sense that similar facilities were not available in India. In due course of time this park alone can boost production as producing capacity of this peak is around 300 million stems per annum. Foreign buyers have already showing interests in the park due to vast number of varieties and gifts of floriculture crops available at one place. Other states should emulate Maharashtra for setting up similar parks. There is also need to exploit virtually unlimited talent to innovative design which abounds in form of folk artisans in villages. The cultural influence would add to the profit of exporters as it causes different floricultural designs to come up. These original designs are well received abroad.

8. There is an urgent need to compile database on all aspects of floriculture. This is how floriculture in India can grow faster and face the emerging challenges. There is lack of information on varieties of flowers which are in greater demand in international market. Data on market intelligence is quite scanty. The Market Intelligence System (MIS) on floriculture needs to be strengthened through the IT network.
Similarly, data on floriculture imports, product-wise, is not available. Data on success stories of various progressive farmers across country in floriculture is highly inadequate. This needs to be collected and propagated. The data on usages of flowers for different purposes and different market channels is not adequate. Though Ministry of Commerce and Intelligence, government of India, APEDA and NBH are engaged in creating data base on broad aspects of floriculture, but it lack details. Use of information technology that has opened up great vistas be encouraged for adoption in floriculture to build up database and other activities. In this connection, electronic technology is an handy tool. In fact, the future activities in floriculture would further depend on e-commerce. Indisputably, it is a quick, simple, effective and profitable mode of doing business. So far e-shopping accounts for a very small percentage (9%) in total sale of flowers in India. The new technology would provide the growers and retailers an opportunity to break the narrow boundary of sale outlet. By using this medium, local growers and retailers can launch themselves to become national level and global players. While it takes little knowledge of the internet to participate in the on-line business, the benefits on the logistics and administration are tremendous. It creates a transparent form of business, which usually avoids the middleman. The technology brings together large number of buyers and sellers at one platform. Several
leading countries like USA, Netherlands etc. have completely switched over to e-commerce in floriculture, therefore, India which has great stake with these countries, cannot afford to lag behind in the new mode of marketing.

9. Gaps in research and development of floricultural sector require special attention of the growers, agriculture universities and research stations. Some key areas of research include suitable type of materials for polyhouses, development of indigenous pesticides and fungicides, development of varieties for domestic and export markets, varieties for dry land, post harvest technologies under different climatic conditions, development of packaging material and standardization of organic farming practices, green house technology, and other cost effective material. There is an urgent need to develop a system for accrediting the concerned agencies for assuring quality. There is a need for effective linkages among research institutes, development agencies, local artisans and farmers for faster dissemination of knowledge.

10. Since the demand of flowers is not uniform throughout the year, to tide over this problem, processing industries i.e. perfumes making, essential oil, rose water and other products like gulkand, roohafza, etc., need to be set up. Tissue culture raised plants need more attention. The potential for the domestic market is enormous.
Introduction of plants from the wild with potential ornamental value offers a good scope for enriching flowers and ornamental plants through systematic breeding by adopting bio-technology. Easy and rapid propagation ornamentals will go a long way in spreading the cult of floriculture in India. Since there is always a craze for new things, therefore, the facilities for hybridization need to be enhanced. It is also vital to strengthen organization for certifying the seeds and standardize the nursery stock so that customers are not cheated with substandard products. Public institutions need to certify the quality before making seed available to vending agencies.

11. Organic floriculture which means growing of ornamental crops without the use of man-made petroleum fertilizers, pesticides, herbicides, and any other chemically treated products needs to be encouraged. This is one way to prevent any more of these chemicals from getting into the environment i.e. air, earth and water that sustain us. Organic cultivation of flowers has been gaining popularity during the last few years. Integrated Pest Management (IPM) which is sustainable approach to pest management and consequently for organic farming may be adopted on large scale. This will minimize economic, health and environmental risks. Besides, there are some following suggestions specific to export-oriented hi-tech floricultural units.
12. Marketing-oriented efforts need to be geared up. Exporters may target specific foreign markets for those specific days and events when there is surge in the demand of flowers and export may become viable even if they may be unprofitable on normal days. There is long list of such days and events in those developed countries which are major exporters of Indian flowers. Unnecessary procedural delays hampering export business should be removed. The government should act to get the EU imports duty waived and India’s exports should not be discriminated on this count. Issue needs to be resolved by Indian government in consultation with the European counterparts. It is good news that this year union budget for 2005-06, custom duty on imports of cut flowers has been hiked from 30 per cent to 60 per cent. This will discourage cheaper imports of flowers in India from Thailand, Malaysia and Singapore. Marketing procedure of flowers should be channelized under the control of government of India/state governments. There is a need to evaluate and monitor closely various export production schemes like SEZs, EOU etc. As the requirements of domestic and export markets are entirely different, there is a need to identify and encourage a different groups of cultivators who are willing to grow to meet the requirements of export markets in selected production centers for various floricultural products. It is necessary to identify and penetrate the new markets. New foreign markets in
country’s neighbourhood may be explored. For example, Pakistan and Nepal and Sri Lanka import flowers from Europe instead of India. Indian industry being the largest one in this region should explore these markets.

13. The rejection of Indian flowers (30 to 40%) for foreign markets is a serious problem. These rejections/surpluses are sent to local markets where few traders dictate the price by colluding among themselves. In the process, the firms do not get remunerative price even in domestic market since there is no floor/minimum price. In order to minimize the scope of rejection, steps are needed to produce cut flowers with long stem, long vase life and to the requirement and performance of foreign market.

14. In order to realise the true potential of floriculture, the growers needed diversity in products and items within a particular product. We need to pay equal attention to dry flowers, plants and cut foliage. Efforts also should be made for popularizing indigenous flowers like lotus, orchids, tuberose, etc. which are popular in other countries. There is a year round demand of cut foliage in developed countries. Not only this, there is comparative advantage for India in the production of cut foliage, as it requires low investment cost and low
risks of damage during transport from production centre to final
destination as the product can be kept fresh for a larger period.

15. Indian floriculturists should make efforts to evolve brand
names for flower products. Branding is the much needed marketing
punch. Floral marketers have to be highly motivated, aggressive and
pro-active. Sitting and waiting for orders to come will just not do.
Powerful brands of products such as 'Surf', 'Dalda', 'Colgate',
'Amul' have created for themselves a niche in an otherwise highly
competitive world and have become household names. Branding
efforts in floriculture have been limited. There is only one brand name
that of Ferns N. Petals (FNP) in India that shares 10 per cent in the
floral industry.

16. The high air freight charges is one of the major irritants which
is coming in the way of exporting our floriculture products. With the
advancement of floriculture technology, cut flowers are carried over a
very long distances by cargo planes, merchant ships and refrigerated
trucks. Extending the transportation period accelerates the
development senescence of flowers after transport stimulating wilting,
discolouration and fungal infections. If Air India can match the freight
rates with other countries, Indian exporters will be in a better position
to compete with other exporters. We should also introduce direct
international flights from main production centers, otherwise it will
result in double shipment that increased cost of transport. It would help floriculture if government of India subsidises flight charges. APEDA has appointed a consultancy firm to evaluate the combination of transport assistance scheme for floriculturists, and, meanwhile, has provided Rs.2.83 crore transport assistance to floriculturists during 2004.

17. With the adoption of WTO provisions, new and amended patent laws, India is bound to meet its obligations. The nurserymen, farmers, entrepreneurs need to be provided information on patents and follow these laws strictly. In most of our nurseries, we can find some new material either evolved systematically or accidentally and these find ways outside the country. Such material should be patented. While in India, agricultural crops have been fairly well analysed, the floriculture sector has been less well focused upon. There is an urgent need to analyse such issues on tariff, quantitative restriction, new tariff, sanitary phytosanitary measures by the developed countries in relation to floriculture sector and in the context of export efforts. The time frame set to eliminate the agricultural export subsidies being doled out by the developed world to its rich farmers engaged in floriculture be adhered to faithfully. Several of these provisions are preventing Indian floriculture products from having market access in developed countries. In the forthcoming negotiation in the run-up to
the Hong Kong Ministerial of the WTO scheduled to be held in December 2005, the developing countries have to argue before WTO for more just equitable and scientific criteria for all these issues. India's move to diversify its trade with large number of countries including the developing ones need to be pushed further. And this experience, so far, has been quite satisfactory.

The Indian floriculture industry over the years, has shown good results in terms of quantity as well as quality. We need to sustain this growth momentum by maintaining a proper balance among various issues involved in it. Progressive entrepreneurship supported by desired policy interventions by the government agencies concerned, can help us in translating challenges into opportunities and potential into achievements. India, indeed has great potential to become a robust player in the world market in future and floriculture would emerge one important production and trading hub in years to come.