CHAPTER-V

CHALLENGES
AND
OPPORTUNITIES
FOR INDIA
One of the major objectives of this study, as delineated at the outset, was to evaluate the challenges and opportunities in the floriculture business in India. This chapter meets this important objective. To be more exact, we shall attempt here a comprehensive and detailed evaluation of the challenges and opportunities of floriculture in India in terms of what is popularly known as SWOT analysis namely the strengths, weaknesses, opportunities and threats or challenges.

Floriculture industry, which is now termed as ‘Sunrise’ industry, in India, after initial difficulties, has gained strength. It has tremendous potential for expansion because of certain advantageous positions India enjoys as compared to other flower growing centers. For instance, it has cheap labour, suitable agro-zones for the cultivation of flowers and determined government supportive support to the growers, traders and others. But it being relatively a new sector, floriculture faces several constraints and problems in its development. Poor logistics, high cost of freight, inadequate infrastructure, natural calamities, financial problems, inadequate data base, are some formidable problems being faced by the sector. Floriculture offers host of opportunities as well. It has become profitable business proposition.
It has great potential to earn foreign exchange. It has huge absorption capacity for employment and may give a big push to the rural economy. While floriculture industry is expanding rapidly in India, there are some serious threats to it in terms of stiff and unhealthy competition in the global flower markets. We now proceed to discuss each of these issues: strengths, weaknesses, opportunities and threats challenges in greater detail.

(A) Strengths

India has several advantages and strengths in floriculture production like favourable climatic conditions, availability of skilled manpower, cheap labour, available tissue culture production facility which can propagate plant material at low cost, etc. Following have been identified as strengths of floriculture industry in India.

1. Suitable climate for long production season:

India has diverse topography and climatic conditions which offer scope for growing several kinds of traditional and commercial flowers. A large varieties of flowers, ferns, leaves, grasses are grown in the country. India is rich in its plant resources, and is endowed with unique biodiversity. It is out of the 12-mega-bio-diversity centres of the world and harbours in excess of recorded 47000 flowering and non-flowering plant species (12% of recorded world in flora) and
81,000 animal species. With only 2.4 per cent of the world’s land area, it holds 7.8 per cent of the global biodiversity on an overall basis. A large area of India has great potential for floriculture because of:

- Sufficient winter and summer sunshines and flowers can be grown for all 365 days in a year.
- High temperature
- Good soil quality
- Good water quality
- Different climatic zones for different kinds of flowers.

Given the intrinsically natural comparative advantages cited above, India can be at the forefront of cut flowers and nursery industry in the world provided farmers/growers are facilitated access to advanced technologies, well developed infrastructure and innovative techniques.

2. Economic Feasibility

It is confirmed by now on the basis of various field studies that growing and marketing of floriculture products is much more remunerative vis-à-vis other crops. This has been brought out well in the preceding chapter. The availability of wide range of inputs, coupled with abundant cheap labour, offers India a natural advantage in growing flowers. Not only that, it is well suited to the factors and other economic and social conditions prevailing in the country. In land
starved economy like India, due to population pressure, floriculture is well suited, as it fetches more return per unit of land. It can also be grown on waste land. The untapped land which is around 100 million hectares in our country can be tapped for cultivation for ornamental crops. Floriculture is also size-neutral and is suited to small and marginal farmers possessing 80 per cent of operational holdings. It has turned out to be an alternative viable business proposition to the farmers. Floriculture can emerge as an important instrument for diversification of Indian agriculture which is the need of the hour. Floriculture activities are of great employment generation potential. It is a labour intensive activity and wage payment bill forms roughly one-third of the production costs. India is also suited centrally to major flower consumption centres like Europe, Japan and Middle East countries.

3. Huge Market: Domestic and Foreign

Considering the size and the population of India, there is huge market demand for floricultural products with growing urbanization, rising income and adoption of western styles by the middle class households and even small cities. Similarly, India is poised for expansion in global market and total exports of floricultural products is now increasing significantly. The demand for flowers is more or less throughout the year which peaks up during major festivals like
Ganesh Chathurthi, Navaratri, Deepawali, Sankranti, Shivarathri, Ugadhi etc. Besides these Hindu festivals, the demand also rises during Christian and Islamic festivals. It also peaks up on Valentine’s day, Mother’s day and New year’s day. Because of these, the consumption of flowers has grown rapidly all over the world in recent years. Not only that, the consumption of flowers has become more regular than in the past, as it has been associated with income level and mainly based on special occasions and institutional requirements. In India too, as mentioned, it has increased manifold with globalization. Now it is visible even in small towns and cities and also rural areas. On the present showing, the demand for flowers would continue to rise across the globe.

4. Skilled Manpower and Information Technology

Availability of large number of skilled manpower in the shape of agriculture graduates and postgraduates, gives India a major comparative advantage in the production and marketing of floriculture.

Similarly, India’s progress in the field of Information Technology will facilitate floriculture industry in various ways. It will make available all the information on the computer screen with a press of button and encourage exports of flowers particularly to developed countries like USA, Germany, the Netherlands, France and Japan who
are India's major importers and largely do business activities through internet.

5. Government Incentives and Support

After having realized the importance of floriculture, the central and state governments have taken up many steps to encourage floriculture industry in the country. The potential of the floriculture industry has been examined by various committees. The Ministry of Agriculture, government of India, constituted a committee of experts of floriculture which submitted its report in 1989 and suggested an Action Plan. The Ministry of Commerce, government of India, also constituted another committee in 1992 which reviewed the potential and constraints of floriculture. Different programs were initiated for the first time in the VIII Five-Year Plan for the development of floriculture both for cut flowers and traditional flowers. For the development of major cut flower crops as well as traditional flowers, the government of India, for the first time, earmarked a sum of Rs.10 crores in this plan. The scheme was operated in many states and union territories. The liberalised economic policies of the Government of India in 1991 and the developmental activities subsequently have further encouraged entrepreneurs to set up export-oriented units in floriculture. The government of India has identified the floriculture...
sector as 'Extreme Focus Thrust Area' for export, making it eligible for government support. The government of India and various government organisations are providing support to develop floriculture in the country. Several model floriculture centers and small tissue culture units have been established by the Ministry of Agriculture. The National Horticulture Board (NHB) is providing soft loans with the interest rate of four per cent to a maximum of Rs. one crore for setting up infrastructural facilities like pre-cooling units, cold storage, packaging and grading sheds, refrigerated transport and green houses. The regulations on the import of greenhouse equipment machinery have been liberalised with reduced customs duty from April 1993. Subsidy is given to flower growers by the government for drip irrigation up to Rs. 15,000 per hectare, or 50 per cent of the cost of drip irrigation. The Ministry of Agriculture, provides subsidy up to 50 per cent of the cost of low cost polyhouses, 40 per cent of the cost of medium cost units and 10 per cent of Rs. one lakh for high cost units. A steering committee has been formed for the production of export of floriculture products under the Ministry of Commerce. Model markets have been established in Delhi, Mumbai, Chennai, Calcutta, Hyderabad, Pune and Bangalore by the Agricultural and Processed Food Products Export Development Authority (APEDA), in
collaboration with central and state government agencies. Recently, a sum of Rs. 10 crores has been spent on establishing a flower market in Delhi by APEDA and the Haryana government. Concerted efforts are being made to modernize the handling facility at Delhi airport. APEDA has also sent delegations of growers and officials to The Netherlands and other European countries to study the foreign markets for floriculture products and plant quarantine regulations there. The Government of India has authorised the Plant Protection Adviser, Ministry of Agriculture, New Delhi, Officer Incharge, Plant Quarantine and Fumigation Stations and Directorates of Agriculture and Horticulture of different state governments to issue certificates of origin in respect of horticultural exports including floricultural products. Assistance is given for the purchase of refrigerated vans to the tune of 25 per cent of the cost of the vehicle submitted to a maximum of Rs. 1.5 lakh per unit by APEDA. Reimbursement by APEDA of the airfreight or the cost of samples to be dispatched to foreign buyers is allowed up to a ceiling of Rs. 50,000 per exporter. Forty per cent of the cost of preparing product literature and publicity material can be reimbursed by APEDA. APEDA has set up a Market Facilitation Centre (MFC) in Aalsmeer, the Netherlands recently. The centre is operational since 2001. Flower auction centers at Bangalore,
Delhi, Chennai and Pune have been set up recently. The government of India as well as Karnataka government propose to create modern facilities at the Bangalore centre for the benefit of the flower farmers. Ianflora floriculture business park has been set up near Hosur in Tamil Nadu. Similarly, under the EXIM policy, the benefits of duty free imports under the export-oriented units and export processing zone schemes are now available to flower producers. The import of flower seeds and tissue culture material is now allowed without an import permit. The central government has set up model floriculture centre in the public sector in each at Mohali (Punjab), Calcutta, Lucknow, Bangalore, Pune, Sri Nagar, Trivandrum, Gangtok and Chennai. The NABARD which came into existence in 1982 is also playing a very important and positive role in promoting hi-tech floriculture in the country by providing financial, developmental and promotional support. The activities like cold chain, green house etc. are also being refinanced by the bank. In fact, the prevailing favourable government policy would tend to inspire Indian entrepreneurs to commence floriculture business in a big way. The Indian Institute of Horticultural Research located in Hesaraghatta, about 25 km from Bangalore has been doing commendable work. The institute is vigorously engaged in both applied and basic research. This has identified crop specific
research needs before embarking on research projects to evolve comprehensive user friendly technologies factor made for different requirements. Also Indian Council of Agricultural Research (ICAR) and various agricultural universities in the country are fully involved in the issues related to floriculture.

All these strong points delineated above tend to make floriculture a competitive business activity not within the country but also at global level. The following chart indicates that India which entered commercial floriculture quite late, has a bright future.

**Table 5.1**

**Factors Contributing to Competitiveness in Different Countries**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Netherlands</th>
<th>Latin America</th>
<th>Africa</th>
<th>India</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geography</td>
<td>Very good</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Good</td>
</tr>
<tr>
<td>Climate</td>
<td>Good</td>
<td>Very good</td>
<td>Very good</td>
<td>Very good</td>
</tr>
<tr>
<td>Land labour/ raw materials</td>
<td>Poor</td>
<td>Very good</td>
<td>Very good</td>
<td>Very good</td>
</tr>
<tr>
<td>Capital</td>
<td>Very good</td>
<td>Good</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Very good</td>
<td>Very good</td>
<td>Moderate</td>
<td>Poor</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Very good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>Domestic market</td>
<td>Good</td>
<td>Poor</td>
<td>Poor</td>
<td>Good</td>
</tr>
<tr>
<td>Network</td>
<td>Very good</td>
<td>Good</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>Government</td>
<td>Very good</td>
<td>Moderate</td>
<td>Poor</td>
<td>Good</td>
</tr>
</tbody>
</table>

*Source: Commercial Floriculture, FAO/DAC, MOA.*
A close analysis of the table given above, brings out closely that in terms of contributory factors for the growth of floriculture, these not only exist in India, but in most of these, country is well placed. With the exception of capital, all other factors are either good or very good for India.

6. Sound Information Technology Base

With the help of I.T., floriculture in India is getting stronger. Internet has evolved as a very powerful information and communication highway in the new millennium. The super-connectivity and reach has offered marketers a new and vastly improved market space instead of a hackneyed one, to retail their products. It has become quite easy for the retailers to sell their products to a much larger customers. And, the shop is open for 24 hours a day and 365 days in a year. An estimate reveals that sales through internet retailing in India as a whole has almost tripled in the last three years. Although the sales through e-retailing still accounts for a very small percentage in the total retail sales, however, there will the rapid proliferation of the internet and is expected to grow exponentially. In United States, electronic retailing is reported to be growing annually at the rate of 100 per cent. Not only the wholesale business but floral retailers have also not been untouched by this new phenomenon. Internet provides retailers an opportunity to break the
narrow boundary of their retail outlet and usher themselves into a much wider customer base, at the click of a mouse. The conventional 'brick and mortar' ones are being transformed to a new breed of 'brick and click' retailers. By using this medium, local and regional level retailers can launch themselves to become national level and even global players.

Floriculture industry undoubtedly stands to gain in a big way from this retailing revolution. A study of some of the major flowers retailing websites gives us an idea that e-retailing of flowers has become fiercely competitive. Almost all of these are providing services like 'Same Day Flower Delivery', online ordering and payment facilities. Product profiles with beautiful photographs of flowers and other floral gift items make it quite attractive. Some of the popular e-retailing websites on floriculture attempt to show marketing strategies and different types of customer services. Some popular websites on floriculture are listed below:-

* www.fernsnpetals.com : Ferns and petals, a popular branded chain of florist across India, has a strong presence in non-store retailing over net. It is estimated that it does a business of Rs.7-8 lakhs per month alone from e-retailing. It offers service of same day flower delivery to almost any corner of the country and has powerful product range. It also has hyperlinks on major websites, which are just one click away from the homepage.
* www.l-800-flowers.com: This company was founded by Jins McCann, who is also its CEO. It all started as a retail outlet in the year 1976 and over the years 1-800 flowers developed a reliable brand and strong customer base. In the year 1992, it further expanded and started on-line retailing of flowers. Today, it is one of the most recognised brand in e-retailing of flower and other gift items.

* www.doveflor.com: A major flower retailing portal, it retails flowers in 185 countries in the world (including India) through a strong network of about 70,000 affiliated florists. In the process of delivery flowers-on-line, it handles time zones, currencies and language barriers.

* www.florist.com: The punch line of the website is "The Fresh Alternative". Florist.com offers customers a wide variety of fresh cut flowers, mixed bouquets arrangements, potted plants and gift baskets for various occasions. The major focus of this company is high quality customer service.

* www.flowerswhisper.com: Flowerwhispers.com is like other flower retailing website and offers same day delivery of flowers and has different categories of flowers.

* www.buy flower share.com: Besides offering the usual flower categories and other hyperlinks, it also provides its customer valuable
information on flowers. This is aimed at making the customer understand the significance of the flowers that they are buying. Information on flowers is provided on different topics like – Rose colors and their meanings.

* www.justflowers.com : This flower retailing website was launched in the year 1996 and has a good deal of experiences in the business. It has a unique product mix. There are several others as mentioned below:

* www.globalflower delivery
* www.onlineservice.ws/buy_flowers_online.html
* www.flowersvoila.com
* www.funeralflowers.com
* www.bloomingbull.com
* www.fun_flowers.com
* www.hallmark.com
* www.flowershope.com
* www.ftd.com
* www.proflowers.com
* www.butterfieldbloomer.com
* www.realbuyer.com
* www.800florals.com
* www.delhigiftsflowers.com
* www.sendvalentinegift.com
* www.punegiftsflowers.com
Advantages of Shopping Flowers Overnet:

(i) *Wider Choice*: Customers can now select the best flowers from all over the world and can be assured of good quality.

(ii) *Wider Reach*: Retailing of flowers over the net has made it possible for people to send flowers to their near and dear ones to different parts of the world without their physical proximity. Sending flowers to someone from Delhi to Bangalore or from New York to Mumbai without the sender actually moving even an inch was unimaginable without the e-retailing revolution.

(iii) *Wide Product Range*: Flowers have been assorted with other things like chocolates, toys, gifts etc. to develop new products. This, in turn, has increased the commerciality of flowers as it has increased global customer base.

(iv) *Cost-effective*: Retailing on a large scale and magnitude would otherwise require an enormous expenditure on infrastructure, employees and advertisements. There is substantial reduction in operational cost.

(B) Weaknesses / Constraints

Despite the favourable conditions, India’s performance in the global floriculture market is miserably low. India’s share in the world market remained at around 0.40 per cent. This is on account of several
constraints like inadequate data on floriculture, high cost of marketing, financial problems, lack of trained entrepreneurs etc. In fact those who entered the floricultural industry in early years were largely traditional flower growers who were not trained for quality products and had nothing to do with scientific cultivation of flowers. They were attracted towards this business simply to avail support provided by the government through its promotional programs. These people had no emotional attachment with cultivation of flowers and worked mechanically employing expensive foreign technology brought through the exorbitantly expensive consultants. Though sincere efforts have been made by the government at all levels to promote floriculture in the country, but some serious weaknesses remain affecting the growth and export of this emerging ‘Sunrise’ industry. We now mention these weaknesses as under:-

1. Inadequate Data Base

For planning of production and subsequent disposal, the data base is very important. Complete information on various aspects of floriculture is not available. The data is inadequate and incomplete. This is particularly so in case of traditional flowers grown in the country. To estimate the domestic market size for floriculture, no quantitative data is adequate. There is lack of information on varieties of flowers which are in great demand in the international market. Such
information is necessary for planning to increase production for global market. Data on market intelligence in this field is quite scanty. The wealth of data generated by large number of agricultural universities and horticulture research stations in the country is not easily accessible. Similarly, many progressive farmers across the country are using greenhouse technology for the last several years for growing different flower crops. They have acquired useful experience, knowledge and expertise in this field which should be propagated for others to learn and follow. The data on usages of flowers for different purposes and different market channels is inadequate. It will be quite helpful if data on success stories and entrepreneurial abilities are publicised. Though Ministry of Commerce and Intelligence government of India, APEDA and NHB are collecting data on broad aspects of floriculture, but it is not very comprehensive. Application of information technology needs to be pushed further for collection, compilation and dissemination of data. To improve the access of growers/entrepreneurs to latest market trends and prices, the facilities of MIS, presently being operated by APEDA and NHB, need to be extended to all states and union territories.

2. **Planting Material**

Good quality plant material like seeds, bulbs, machinery, pesticides etc. are essential requirement. Access to new planting
material and procuring new varieties of plant material is a major problem for most of the nurserymen and cultivators. Good quality seeds are not available to the growers and the cost of import of seeds is prohibitive. India does not have tested varieties to suit new technology like growing under cover. The entrepreneurs are forced to import planting material by paying high royalties to the breeders. The locally available genetic material is far inferior and does not have any marketability in the developed market of the Europe and USA. Further, no appreciable incentives are given to Indian florists to use modern technology like green house facilities, use of sophisticated research facilities such as tissue culture, somatic hybridization, and improved farming technology. Although a handful pioneering companies have specialized in producing hybrid seeds of ornamental plants for both domestic and international markets, but these are not sufficient. Not only that, farmers who want to avail facilities under Horticulture Mission (HM) scheme like setting up water tanks, power tillers and green houses, have to go through a long list of formalities to get the subsidies. In fact the HM, a Central government’s project to promote horticulture including floriculture has turned out to be a classic case of looking into farmers’ problems through remote control in New Delhi. Contrary to the official hype, the Rs.80 crore HM is sapping farmers’ time, energy and money.
3. Marketing Problems

Floriculture business in India is faced with some formidable marketing problems both at home and abroad. Flowers being perishable commodity, it requires quick and efficient marketing. Cultivators have to face risk with regard to price fluctuations and the risk created by the middlemen. Marketing of floriculture has always been a tricky venture. Farmers who can market their produce at the right time and place for the right price emerge successful while the rest languish. It is often seen that low prices due to glut in the market have driven farmers to despair. Marketing is a knowledge and skill intensive activity. Most cultivators lack these skills because of an inadequate information system and poor infrastructure.

Marketing of traditional flowers is even a more serious problem. There are very few exclusive markets for flowers. Marketing of flowers remains highly unorganised. Usually, flowers are marketed through agents in market who charge very high commission. We have seen earlier that the products of flowers receive hardly one fourth of the price paid by the ultimate consumer. Not only that, there is also irregular payment for the flowers supplied to market. Again on demand side, the demand for the flowers is not uniform throughout the year. For example, during festival and marriage seasons, prices range between Rs.60 to 220 per one kilogram of flowers, while it is hardly
Rs.10 to 15 for the same quality during off season in the month of June-July. Due to the lack of cold storage facilities in villages, flowers can not be transported to far-off places due to perishable nature of flowers. Heavy transport cost is also an important problem being faced by exporters. Further, there are no regular flights between India and Europe by government airlines, private chartered planes. Indian florists also do not care much for quality and standardization. There is also problem of high import duty and discrimination by foreigners. When there is no import duty on flowers imported to Holland from Columbia, Kenya, New Zealand, Greece and Turkey, a 15 per cent duty is imposed on Indian flowers by European union. This is against the rule of WTO in giving a minimum market accessibility to a member country. Another pertinent problem faced by farmers in India is the rejection of flowers (35 to 45%) in the export market resulting into a serious loss to the producers. In order to mitigate the problem, an Auction Centre has been set up in Bangalore which may attract flower buyers from Japan, Australia, England and Middle East countries who are currently depending on Holland market.

4. **Constraints of Export Oriented Units**

One of the major objectives in promoting floriculture business has been to earn foreign exchange through exports. Though government is making all out efforts to assist export oriented units
dealing in floriculture, yet these units continue to face certain constraints as adduced hereunder. Non-availability of specific scientific/technical know-how is not adequate. Undoubtedly, graduates/postgraduates in plant pathology, entomology, plant breeding etc. are available but not who are specialists in floriculture technology. Non-availability of quality seeds and planting material in the country is an important constraint for these units. High transportation cost which is approximately 40 per cent of variable cost is another formidable hindrance in the growth of these units. About two years ago, the cost in freight rates were Rs.2.50 per stem per kg and now it has increased to Rs.4.75 for the same quantity. Earlier, the cargo rates were Rs.80 per kg (containing about 400 stems) and it has shot up about Rs.125. Not only transportation cost, packaging cost is too expensive. Improper post harvest technology results huge losses that accounts about 30 per cent and even more of total produce. Scientific knowledge of the post-harvest handling of flowers and plants is quite essential for entering into the international market. These units also lack aggressive marketing techniques. Inadequate and interrupted electricity supply causes lot of inconvenience and loss to the growers. These also face severe competition from countries like China particularly in dry flower exports which is around Rs.150 crore whereas the potential is of Rs.400-500 crore.
5. Financial problems

Floriculture is capital intensive crop which require huge finances. Cost of establishing high-tech green house is quite high. Realising the importance of floriculture, a scheme of Rs.14.29 crore was launched by the central government, for the first time in 8th Plan which continued during the 9th and 10th plan but the outlay allocated was marginally raised. The NHB gave assistance of Rs.6.44 crore to different states under the scheme. ‘Introduction of New Technology and Concepts in Floriculture’ during the period 1993-94 to 1999-2000. NHB under various schemes also spent Rs.189 crore during 1997-98 to 2000-01 in the overall horticulture sector including floriculture. But considering the vast size of the country, the amount is not very impressive. Similarly APEDA, NABARD and other institutions are providing financial support to the floriculture sector in India, but again the financial requirements are much more. Experiences show that the credit support from banks is still not adequately flowing into this sector. This is due to the bankers feeling that the project outlay in floriculture generally is too high. Lack of familiarity with the project design and its cost and income flows among bankers make them hesitant in financing such projects. Bankers also have their own reservation in financing technocrats becoming first time entrepreneurs who don’t have a track record. The financial institution hardly have
the knowledge of upcoming entrepreneurs and the projects particularly of export-oriented units suitable for different locations. A study, concluded by NABARD, reported that it took almost a year to get the loans sanctioned from the initial date of submission of the project reports. For instance, the finance to the nursery growers should be given liberally on easy terms and instalments. Growers in India are mostly small and marginal farmers whose financial position is not sound. They require finance at every level i.e. production, transportation, marketing etc.

6. Poor Infrastructure

Varied types of infrastructural facilities are pre-requisite for the success of floriculture industry. The facilities of course have to be viewed from two angles, viz., from the view point of domestic market, and from the export point of view. Infrastructure facilities include cooling rooms, cold stores, glass houses, transport and packing and grading facility.

(i) Cooling rooms : 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 can not afford the same.

(ii) Storage : Storage of cut flowers in their natural state is accomplished by means of environmental control. In the marketing
channel, cut flowers are subjected to storage at different stages. From the time of harvesting, the environment in which different flowers are to be held have been standardized and specified for each cut flower. As a general rule, cut flowers originating from temperate regions are best stored at a temperature, a little above the freezing point of plant tissue. The recommended minimum size of cold stores for flowers, from one-hectare cultivation is 108 cubic metres (6 m x 6 m x 3 m). The cold chain linkage from the farm to the airport is completed by refrigerated vans. Refrigerated vans transport floriculture products from the storage houses of the floriculture farms to the cargo handling area (for perishable) 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. In case of flowers meant for export, it is highly essential that they are transported in refrigerated condition to prevent spoilage and essence. Since these facilities are beyond the reach of individual cultivator, these should be created on community basis and should be made available on customer hiring basis. For this purpose, certain production centers have to be identified and these facilities should be created at a place convenient to most of the cultivators. The construction of cold stores should be taken up after carefully assessing the demand, and it should take into account the products to be stored.
There is also need to create awareness among the cultivators regarding the benefits of storing the produce in cold stores. The development of cold stores should be taken up by co-operative and farmers' organisations, as, at present, most of the cold stores are in the private sector. This will substantially reduce the cost of cultivation while the need for adding more cold stores can hardly be emphasised. There is also a need to evolve and expand traditional system of storing followed by the cultivators and quantify its benefits.

(iii) *Glass Houses* : It has been stressed time and again that in order to maintain quality and to fetch good price, the flowers for exports should be cultivated under glass house conditions. In fact, the importing countries insist on it. Green houses today exist in more than fifty countries in the world with 3 lakh ha. area. China, Japan, Holland, South Korea, Italy, Spain, Turkey and Columbia are the major green house users. There are several advantages of growing plants under green houses :-

- Healthier crops can be grown throughout the year.
- Such crop mature earlier, yield more and produce is with highly finished quality.
- Flowers like roses, carnations, chrysanthemums, gerbera etc., grown in green houses are excellent in quality.
Large-scale propagation of ornamental foliage plants can be carried out throughout the year. A wide variety of plants are being cultivated for indoor decoration.

At present, in India glass house cultivation is few and far between. This is mainly due to: (i) the cost of building and maintaining a glass house is very high. It is estimated to be around Rs. 5 million for a glass house of the size of 12000 m² (ii) indigenous technical know-how of glass house cultivation is not available. (iii) the domestic market does not need such type and quality of flowers in a large scale and (iv) for most of the flowers, needed for domestic market, can be grown in the open field because of the agro-climatic conditions prevailing in India.

(iv) Varietal requirements: The varieties of flowers like roses, chrysanthemum, etc. which are in demand in domestic market and export markets are entirely different. This means that two types of varieties have to be cultivated by the cultivators. Most of the varieties in demand in foreign countries have to be imported and tested for their adaptability. Secondly, the taste and preferences are changing in export markets and, accordingly, we have to change the growing of varieties. It requires a lot of planning and adjustments and in the present status of our floricultural industry, this will become very difficult, though not impossible.
(v) **Other requirements**: For exporting the foliage plants, flowering plants, etc., they have to be put in sterilized peat/pertile, etc. as soil is not allowed. This means that the availability of this material should be ensured and methods for preparing them indigenously should be developed.

7. **Research and Development**

Floriculture is still considered a new concept in agricultural development in our country. Some research efforts have been made to improve floriculture and to make it an remunerative and commercial venture in the country. The research by and large is not oriented to generate technology support for commercial floriculture ventures for export oriented projects during last one decade. Efforts have been made by the ICAR, NBRI Lucknow, CSIR Complex, Palampur and State Agriculture Universities and private sectors like Indo-American Hybrid Seeds, Bangalore. Presently, research is being carried out in rose, gladiolus, carnation, chrysanthemum, orchids, anthonium, gerbera, tuberose etc. Some hybrids have also been developed. The wealth of new material has been developed and released to the growers for cultivation. But due to various limitations of the research institutes, large scale propagation of material including seeds could not be passed on to large number of individuals for cultivation. It
would have been better that right agencies or recognized nurserymen are involved from where certified planting material could have been made possible for distribution. At present, R & D within the country in floriculture is not export-oriented. A large number of varieties developed have not been evaluated for their export potential. Thus, growers have to depend on imported material which sells the most in the export. Domestic market for high quality plants from the laboratories could be enormous from the point of view of cost of production and marketing of the produce. We do not have an area specific package of practices to guide our flower growers in reaping the achievable profits. The situation is further compounded by very weak extension support system. It is heartening that after having realized the importance of floriculture, the Indian industry is willing to collaborate with the leading research organisations to overcome some crucial production impediments. The research priority in floriculture need to be designed keeping in view the national vision and priority in combination with international demands. The major areas of research that need to be catered to, to overcome the constraints that contribute to the low productivity and inferior quality of the produce. The coming years are very crucial for floriculture research because India is obliged to work within WTO dispensation and severe competition from several other countries.
(C) Opportunities

Floriculture provides vast opportunities to the Indian economy in several ways as adumbrated hereunder:-

1. **Opportunities for Exports** : The global floriculture trade is estimated at $ 50 billion. Presently more than 185 countries are engaged in floriculture. Developed countries account for more than 90 per cent world trade in floriculture products. India’s share in global floriculture trade is works out only 0.39 per cent. The annual demand for flowers domestically is growing at a rate of over 25 per cent annually and around 15-20 per cent internationally. The world supply, however, is less than half of the demand, providing huge opportunities for those in floriculture trade. Since the production in the traditionally recognised centers – the Netherlands, the USA – has reached the threshold level, the developing countries like India, Columbia, South Africa and Kenya are emerging important production centers. Indian exporters have diversified into new markets. Its penetration in the Japanese market, in recent years, has been quite satisfactory.

2. **Suited Factor Endowments** : Factor endowments such as suitable climate, cheap labour, skilled manpower, are abundant in India which are essential inputs in the production and marketing of floriculture. From Kanya Kumari to Kashmir, we have congenial
climatic conditions to grow flowers. This is not possible in many other parts of the world. As noted earlier, India has diverse agro-climatic conditions which permit growing of different varieties of flowers throughout the year and thus to meet seasonal market opportunities in the European markets when due to extreme cold, flower production in these countries is negligible. Similarly, cost of flower cultivation is low due to cheap labour in India. Government of India has declared floriculture as a priority area and giving all possible help to the farmers and growers engaged in floriculture. Due to this pronounced policy, a large number of new floriculture projects by MNCs are coming up. Technical and marketing support from various Dutch companies has spurred investment in floriculture trade. Besides, India has some skills that are unbeatable. It has skill of trading, skill of developing beautiful software, skill in technology and skill in international English language.

3. **Helps in Diversification**: The cultivation of floriculture offers an opportunity to Indian farmers for quick diversification of agriculture in India. Aim of diversification is to make Indian agriculture more sustainable. The concept of diversification in agriculture is not a new one. The diversification of crop would result in cost-effectiveness, mixed farming and integrating cultivation with different crops, depending on suitability of weather and availability of
water. As the farmers find floriculture a new kind of venture giving more return to them, such diversification (i.e. turning away the farmers from cereal cultivation to floriculture) would be possible. The last decade has witnessed this trend in several states in India and farmers have ventured into floriculture and other horticulture products.

4. **Expansion in Demand**: The importance of flower in the socio-cultural and religious lives of the Indian people can hardly be exaggerated. The offering and exchange of flowers on all occasions of joy, sorrow and their use in place of worship, for adornment of hair by women are an integral part of Indian society. With the increase in the standard of living, major changes in life style due to expansion of industrial and service sectors, the domestic demand for flowers is increasing at a rapid rate. Besides individual buyers, institutional buyers have also grown rapidly. There is a rapidly growing demand for the different varieties of flowers in big cities and towns for their institutions buyers like star hotels, big organisations and corporate hours, churches, temples, gurudwara, mosques, travel agencies, hospitals, marriage houses, embassies and trade missions. As a results of globalization, there has emerged a huge market for flowers. Encouraged by the enormous rate of growth in domestic demand, large number of exports oriented floriculture projects are looking forward to domestic demand to sell their produce during lean export seasons.
Not only demand for fresh flowers, there lies an opportunity for the expansion of floriculture related trade area. Bedding plants, an upcoming business item in floriculture trade, are much in demand for supply of seedlings and rooted cuttings of flowers. Similarly, production of essential flowers’ oils for cosmetic, food and other uses are increasing. Rose water, rose attar, gulkand, rose hair oil and rose otto all have high commercial value. Floral extracts like essential oils, alkaloids, sapogenius, pigments, dyes etc. have tremendous demand in both domestic and international markets. Marigold is commercially utilized for the production of oleoresins. In metro and some other cities, entrepreneurs also supply house plants, including flower plants on rental basis. Also seeds of a large number of annuals are produced and marketed in the country. Dried flowers also contribute a major share to the floriculture trade and much in demand due to its non-perishability. So to say, with time, new innovations and scientific development, new ways of living, demand for flowers everywhere is bound to increase. It is for India as how to seize this opportunity and partake greater share in the global growing demand.

5. Generation of Employment: Floricultural activities in India will help to generate more employment avenues in rural as well as urban areas. Floriculture is a labour-intensive activity, wage payment
forming roughly one-third of the costs of production. It is estimated that floriculture has a potential to generate direct employment for about 20 workers/ha. The indirect employment generation in the wide production chain covering plastic, paper, carton, lumber, agrochemicals, transport, and other services is in a 1:2 ratio. It shows that even a modest floriculture program can generate millions of jobs, predominately for young women, quite apart from significantly contributing to national income. Notably, employment pattern in floriculture industry favours inclusion of more women in jobs because of their manual skills, abilities in terms of innate fine and aesthetic sense and delicacy. The share of women workers in India is about 70 percent in the total workforce in floriculture. By and large women are engaged in cultivation, harvesting and post harvesting activities including packaging, while men perform activities linked to precultivation, maintenance of nurseries, irrigation and fumigation since these involve hard work and health and safety considerations. A preference for women labour in production work is based on argument that floriculture is similar to child care where women ensure the responsibility for the entire process of growth. This will also open up entrepreneurial opportunities for women. Already we have several women entrepreneurs who have excelled themselves in floriculture. This will give filip to the issue of economic empowerment to women
in the country. Besides growing and selling flowers, women can set up small enterprise where value addition in the form of bouquets and flower arrangements on contractual basis can be taken up. Trade in dried flowers is also on the rise. The women can easily tap this opportunity. Considering the potential of floriculture in generating higher levels of income, employment opportunities, greater involvement of women farmers and increase in exports, it has been identified as extreme focus area by the government of India. And several development schemes have been designed and introduced for the benefit of women.

6. Outsourcing

According to estimates, the global trade in cut flowers alone is worth US $ 7 billion (Rs.30,000 crore) Europe, Japan and USA dominate the trade. But floriculture industry in these developed countries now finds its own cost of production a bit too high vis-à-vis rest of the world. This has set a new trend to outsource flowers from wherever the cost of production is low. India is in a position to grab the opportunity given its favourable agro climate, cheap labour, arable land and skilled manpower. The potential of outsourcing in floriculture sector like call centers, insurance sector or banking is huge. Efforts need to be made to cash in of the new opportunities. The industry has set up floriculture units near Bangalore, Pune and Delhi.
Backing up those efforts, government has approved the opening of wholesale market-cum-flower auction centers in Bangalore, Mumbai and Noida to boost international trade. Cold storage and cargo handling facilities have come up at various exit points. States like Karnataka, Tamil Nadu, Sikkim, Uttarakanchal and Maharashtra are operating Agricultural Export Zones and attracting entrepreneurs and foreign firms to set their business there. All these facilities created by the Indian government will boost up outsourcing in floriculture and prove a real boon to the nation.

(D) Threats and Challenges

Indian floriculture is facing certain threats and challenges adumbrated hereunder.

1. Competition: India faces competition in floriculture from well established world players. The competition is also from African countries, which are nearer to the European market. Several countries in Africa and Latin America are producing quality roses and other flowers at much lower cost. African countries like Zimbabwe and Kenya, which do not have significant domestic market, have started dumping their products in India. These roses are available in the Indian market on less than the price of Indian blooms. Apparently, they are willing to sell on cost basis to establish themselves in the
market and are able to do so by circumventing the Indian tariff barriers, manned by pliable officials. Further, African countries are levied no duty by the EU nations as 10 per cent on the Indian produce. In the US, Equador and Columbia producers are able to provide roses at 70 cents a kg. which is below the Indian rate of $ 3 a kg. Country like Israel is able to reach most international markets in 72 hours due to efficient delivery system, whereas India takes 10 days between cutting and delivery. Therefore growing roses is not only logistics and capital-intensive but also more challenging today. Unhealthy competition in local market is also posing a big problem. As the export window is closed through summer, the blooms are sold by some entrepreneurs at local market at throw away prices of 50 paisa to Rs.3/- depending upon the quality of the bloom. Present level of production of floriculture would require much strengthening of export infrastructure to be able to compete in global markets.

2. **Small Size of Industry** : The per unit size of the industry is also very small in India, compared to world standards. Thus, the Indian entrepreneurs are unable to utilize economies of scale to compete with those in other countries. Small competitors from countries like Israel have started marketing their produce directly through corporations. While many small growers in India are being driven out of business,
other are trying to survive by exploring new markets. In addition, flowers in India are largely grown in the open fields along with other foodgrain crops. These do not meet the requirements of export quality. These pose a challenge to the traditional flower growers, as it requires different set of skills and resources for which the farmers need to be informed and trained. There is need to develop the individual farmers capabilities so that they get specialised and produce huge quality flowers. According to industry experts the main reason why Holland is so good at growing perfect quality is that growers specialize in one flower variety only. They have activated their green houses and developed a system whereby growers take their products to the auction centre everyday.

3. **Environment, Safety and Health Issues**: Flowers are emerging as a stable and marketable international crop. To meet the high aesthetic standards of the market and to kill insects possibly harboured in the plants, growers use any means at their disposal including banned and unregistered pesticides, heavy loads of synthetic growth hormones and fertilizers. There are important environmental, safety and health issues, which need to be carefully considered in planning for India’s floriculture industry. Floral workers suffer the brunt of the trade’s pesticide use. A study in USA confirms that two-thirds of
Colombian flower workers suffer from headaches, nausea, impaired vision, rashes and asthma. A study published by the Netherlands' Ministry of Social Affairs and Employment, reports that Dutch floral workers are exposed to pesticide concentrations of up to 60 times the amount considered safe. Terril Nell, Professor of Floriculture at the University of Florida, argues that pesticide misuse is not as prevalent as some researchers suggest. "Growers have an incentive not to over apply pesticides" simply because they are so expensive. He does agree that the industry could make more use of integrated pest management through natural insecticides, organic methods and biological controls to reduce pesticide use. Nell thinks that the problem is more basic than that. "Rose growers have repeatedly failed to adopt even the most rudimentary advances in pesticide management practices," he says. In the Indian context since the industry is at nascent stage, appropriate steps need to be taken to adopt IPM to protect workers, women and children in the industry.

Growing consciousness for environment has led to change in production and marketing concepts world over in the recent times. The Flower Label Programs (FLP) adopted by several European marketing chains, have laid down criteria ensuring that flowers are produced in environmentally and socially acceptable conditions. The German
Flower Importing Association, the Dutch Milieu Project Sierteelt (MPS) (set up by the Dutch Flower Auctions), the code of practice adopted by Kenya Flower Council or adherence to MPS scheme by Export Flower Grower Association of Zimbabwe, are all examples of a certain code of ethics. The GEA (derived from ancient Greek for mother earth) brand from VBA flower auction in Aalsmeer, Holland, for flowers and plants, ensures that they are biologically cultivated and targeted for sale to selected customers in upscale Dutch markets, who are highly environmentally aware and fetches higher profit margins.

The western world is very concerned about the ecology and problems associated with its abuse. Growers, not willing to follow the guidelines formulated by increasing number of buyers following the above mentioned programs, may find themselves unable to sell their flowers easily in these countries. In India, several of our growers are now adapting themselves to requirements of such standards and have realized that improving workers’ conditions, reducing costs on chemical use etc. is essential. Indian need to learn from them and change with time.

4. **Work Risks and Illnesses**: A study conducted by the occupational health, safety and industrial hygiene shows epidemiological conditions affecting workers of the various
production process areas. Research was conducted directly with the workers of the companies. Most illnesses occur during cultivation.

Table 5.2
Main Epidemiologies of Flower Workers (%age)

<table>
<thead>
<tr>
<th>Operation</th>
<th>Headaches</th>
<th>Tremors</th>
<th>Colic</th>
<th>Blurred vision</th>
<th>Fascicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultivation</td>
<td>65.9</td>
<td>18.1</td>
<td>32.9</td>
<td>29.5</td>
<td>45.4</td>
</tr>
<tr>
<td>After harvesting</td>
<td>67.7</td>
<td>22.5</td>
<td>35.4</td>
<td>58.0</td>
<td>56.6</td>
</tr>
<tr>
<td>Fumigation</td>
<td>22.2</td>
<td>11.1</td>
<td>11.1</td>
<td>11.1</td>
<td>22.2</td>
</tr>
<tr>
<td>Irrigation</td>
<td>--</td>
<td>20.0</td>
<td>40.0</td>
<td>29.5</td>
<td>40.0</td>
</tr>
<tr>
<td>Maintenance</td>
<td>50.0</td>
<td>25.0</td>
<td>58.0</td>
<td>8.3</td>
<td>33.3</td>
</tr>
</tbody>
</table>

It is evident from the table that these risks pose a serious threat to the growers and others.

5. **WTO Provisions**: It has been noticed that WTO provisions work to the advantage of least developed countries who are India’s rival producers in the field of floriculture. Implications of WTO Agreement on Agriculture (AoA) on India’s agricultural crops have been fairly well analysed from the point of view of the country’s obligations arising from the Aggregate Measures of Support (AMS) (with linkages to the agreement on subsidies and countervailing measures) and the post-quantitative restriction (QR) and tariffication scenario. By comparison, the floriculture and plantation sectors have been less well focused upon.
In the plantation sector, apart from AMS and tariffication of QRs, plantation commodities face non-tariff walls imposed by the WTO Agreement on Sanitary and Phyto-Sanitary Measures (SPS). Depending upon their market features, different plantation and floricultural products have distinct set of problems in relation to the AoA. The principal problems of the flori-plantation industry arise from the following situations:

While the WTO agreement binds 100 per cent of agricultural product tariff lines and requires developing and developed countries to bring down both bound and applied tariffs, the pattern of tariff cuts has not been specified. This has significant implications for the floriculture industry in India. Similarly, cut flower exports from India face a higher import duty in Europe (13 per cent) during non-peak market months (May-October). During November to April, when Europe requires imported flowers, the tariff is lowered by five to six per cent. The real rate could work out to nearly 17 per cent in non-peak months if one reckons that tariffs are worked out on FOB plus freight basis. This has prevented Indian floricultural products from having market access during crucial months in Europe. Given the fact that the prices of cut roses in the Dutch auctions have been falling since 1994, and more so in the May-October period, a higher import
It is well known that India’s floriculturists have to resort to distress sale of flowers in the domestic market during non-winter seasons due to the higher tariff wall in Europe. A simple, average, across-the-board reduction would mask the peak tariffs. In the forthcoming negotiation, we may have to argue for more scientific criteria for reduction of import tariffs. India has treaded a slippery ground when it comes to plantation and floricultural commodities. A consented G-77 position on AoA may be different when it comes to our interests in the flori-plantation sector. It would be worthwhile strategy for the exporters of floriculture products to target specific markets for specific important days and events in developed countries when demand for flowers surge and exports may became viable, even if they may be unprofitable on normal days. There is a long list of such days and events (Appendix-C) in those developed countries which are major importers of Indian flowers.

It is amply clear from the foregoing analysis that despite several challenges and threats, the opportunities in floriculture are bright for India, provided more concerted efforts are directed to certain key issues. In this chain, it is essential that the quality of floricultural
products must be upgraded so that it conforms with international specifications and standards. In order to cut losses in the value of flowers, effective distribution system and good storage conditions, better infrastructural facilities must be provided by the government. This would enable to compete Indian floriculturists well in domestic and global market. Research in floriculture needs to be more focused. Data base research should be improved for sound policies and programs. Institutions like NHB, APEDA and NABARD should receive all possible support from the government so that these serve well the cause of flower growers. Finally, in order to obviate the problem of small size of holdings in the country and to reap the economies of scale in floriculture, small and marginal farmers should be encouraged to form Growers’ Associations or Cooperative Societies or just Small Self-Help Groups. The efforts then should be to network them to improve their access to the new technologies in the field of floriculture and all government support facilities. Naturally, it would be easier to extend support and assistance to larger groups.