Indian Floriculture in Global Perspective

ABSTRACT

The flower is the most satisfying creation on Earth and makes billions of people happy and smile. The presence of flowers is required at all stages of the human life cycle, from conception to death. Flowers represent feelings like love, beauty, purity, and passion. Growing in importance as a farming method for economic reasons is floriculture. The floriculture business has a growth potential of 25–30% and generate 20–25 times more foreign exchange than grains or other agricultural crops. The flower sector has recently developed into one of the most active and quickly expanding industries, with a notable pace of growth over the past several years and global reach. Despite having lots of natural resources for effective flower growing, India still accounts for a tiny (0.6%) portion of the global flower trade. In terms of area and output of conventional loose flowers, India comes in second place to China. India takes approximately 15% of the global market for traditional loose flowers. The demand for flowers is growing both domestically and internationally, which puts countries in intense competition. With the right strategy and technological use, this industry will improve, and India may end up becoming a major producer and exporter of floricultural goods globally.

Keywords: Cut flower, floriculture, flower trade, market.

1. INTRODUCTION

The flower is the most delightful living thing on Earth and makes billions of people happy and smile. The presence of flowers is required at all stages of the human life cycle, from conception to death. Flowers represent feelings like love, beauty, purity, and passion. Like a rose imparts love, lily devotion and tranquilly, lotus purity, narcissus egotism, and a pansy thinking. India has a long-standing custom of flower cultivation since the beginning of time, flowers and decorative plants have been incorporated into Indian culture, history, and customs for use in celebrations, worship, religious events, and women's hair ornamentation and house and environment decorating. Flowers have been linked to human existence from the time of the *Rig Veda* and the *Ramayana*. However, the social and economic elements of flower production are just recently becoming understood. Since the last two to three decades, floriculture has been regarded as having a clear commercial and economic function. Both local and international markets are experiencing a sharp increase in demand for floricultural products. In India, there has been a noticeable development in the production of cut and loose flowers, which have great potential for export. The floriculture business has a growth potential of 25–30% and can generate 20–25 times more foreign exchange than grains or other agricultural crops [1]. With the increased use of covered cultivation through the application of shade nets, green houses, polyhouses, etc., commercial floriculture is growing day by

day. Due to better farmer returns, commercial floriculture presents a fantastic potential for rural development also. The flower sector has recently developed into one of the most active and quickly expanding industries, with a notable pace of growth over the past several years and global reach. Despite having ample natural resources for effective flower growing, India only accounts for a meager (0.6%) proportion of global flower trade [2].

2. Importance of Floriculture

The traditional floriculture industry in India, which is mostly carried out by small or marginal farmers, consists of cultivating loose flowers primarily for worship, making garlands, and decorating. The usage of cut flowers in floral arrangements, home décor, wreaths, veni, and garlands on many occasions has become an essential component of human culture. Natural dye extraction for textiles, food colouring, essential oils for perfume production, and smells are all growing in popularity. Employers in the floral industry include flower producers, suppliers, consultants, nurserymen, gardeners, business owners, nursery managers, interior and outdoor landscaper and others. India is able to make more than 25–30 times as much money overseas from floriculture goods as it does from grains or other agroproducts. India might make roughly 100 crore rupees a year from floricultural goods. Among the commercial agricultural crops, flowers are now the most significant cash crop. Because of their natural beauty, colour, and aroma, flowers and ornamental plants improve the aesthetic appeal of the environment. Landscape design, urban greening, and the enhancement of public areas, parks, gardens, private homes, events, and celebrations all benefit greatly from the use of floriculture. Botanical gardens, flower festivals, and floral displays all draw visitors and support the tourism sector. Visitors may learn about many types of flowers, plants, and horticulture techniques at these sites, which often provide fun activities. Additionally, they bring in money and support regional economies.

3. Scope

The scope of floriculture in India has significantly expanded in recent years, as evidenced by government initiatives, financial assistance, and increases in production area, flower output, consumer demand, and export of floricultural goods. Unprecedented growth has been achieved as a consequence of business owners' enthusiasm, the government's emphasis, and increased demand on the domestic and international markets. The domestic market has grown dramatically for both cut flowers and loose flowers as a result of expanding urbanization, shifting social attitudes, and rising income levels. Indian roses, carnations, orchid gerberas, anthuriums, and chrysanthemums are significant cut flowers in addition to potted plants. Recently, lilies and other bulbous plants have gained popularity in the cut flower industry [3]. Other sectors in the floriculture sector, such as those producing potted plants, seeds and planting supplies, turf grasses, and value-added goods, also contribute to the industry's total growth. The Asia Pacific region accounted for 35% of the market in 2021 and is predicted to increase at a CAGR of 7.8% during the forecast period. The region's expansion is attributable to growing consumer demand for flowers as well as increased flower output in developing nations such as India and China [4].

4. Status of Floriculture in World trade

Global floriculture market has reached around USD 57.5 billion in the year 2021 and involves more than 145 nations [5] and expected to reach US$ 106.1 Billion at CAGR of 6.3% from 2023-33. According to the AIPH (2010), flowers were grown on 702,383 ha in various nations, with Asia having the largest area at 523829 ha, followed by South America at 97152 ha, Europe at 48,705 ha, North America at 21,067 ha, Africa at 7,604 ha, and India at 183,000 ha, or 26% of the world's total area, for floriculture in that time [6]. But according to [7] flowers were grown on 734000 ha in worldwide where Asia leads with 580000ha followed by Europe (56000 ha), South America (46000 ha) and having a total production value of 34000 million EUR consists of 300000 numbers of enterprises globally. Europe leads in area under production of flower bulb with 23000 ha. The cultivation and trading of cut and loose flowers, potted plants, bedding plants, leaves, dried flowers, and value-added floricultural goods under open or protected environmental conditions make up the worldwide floriculture sector. The global cut flower market is estimated to be valued at USD 36.4 billion and expected to reach USD 45.5 billion by 2027 [8]. The Cut Flowers segment held the largest market share accounting for 83% in 2021[4]. In accordance with international trade classification, this category includes (a) bulbs, tuberous roots, and tubers (b) other live plants (c) cut flowers and flower buds, dyed, bleached, fresh dried, impregnated, or otherwise prepared, and (d) foliage, branches, and other parts (other than flowers and buds) of bushes, mosses, trees, shrubs, and other plants, lichens, and grasses, being goods of a kind suitable for bouquets or ornament [9, 10]. Globalization has had a significant impact on the floriculture business, which is changing quickly and seeing an increase in competitiveness on a daily basis. The primary traditional flower-growing nations are the Netherlands, Columbia, the United States, Japan, and Italy. The output of floriculture is developing in Asian nations including India, Thailand, China, Vietnam, and Bangladesh, as well as in Africa and Latin America, where it is expanding quickly. The Netherlands, Germany, the United Kingdom, the United States, Switzerland, and France consume over 80% of the world's flower production [11]. The Netherlands, which have a 52% worldwide market share, are the main flower-producing nation, followed by Colombia (15%), Ecuador (9%), Kenya (7%), Belgium (3%), Ethiopia (2%), Malaysia (1%), Italy (1%), Germany (1%), and Israel (1% of the market) in the year 2018 [12]. In terms of area and output value for bulbous crops, the Netherlands is in the lead with 20577 hectares and 570 million Euros, respectively [10]. Europe, which accounts for 77% of the worldwide market, is home to the world's commercial hub for floriculture. Aalsmeer in the Netherlands is home to the biggest global flower market. The other major domestic markets for cut flowers are mostly in Europe, specifically in Germany, the United Kingdom, France, Italy, Spain, the United States, and Japan. In recent years, Russia has developed into one of the major flower marketplaces. The Netherlands accounts for 47.7% of all exports of floricultural goods internationally, with Ecuador, Colombia, Kenya, Ethiopia, and Belgium being the other major exporters. The total value of all exports of floricultural goods worldwide is USD 9,784,525,000. India is ranked 14th in the world for exporting floricultural goods [10]. The top two countries for producing rose oil are Bulgaria and Turkey [13]. USA is the leading cut flower importing country followed by Netherlands, incase of pot plants Germany is the leading importing country whereas Netherlands is the leading exporting country of

cut flowers followed by Colombia. Ecuador is the largest producer of roses, Netherland produces 80% of world's Tulip production, Thailand is the biggest producer of orchids [14].

5. Top ornamentals in Global Trend

In pot plants important pot plants are Ivy, Kalanchoe, Ficus, African Violet, Chrysanthemum, Spathiphyllum, Hyacinth, Dracaena, Pot rose and Primerose. Major cut flowers are Rose, Tulip, Chrysanthemum, Gerbera, Lily, Alstroemeria, Freesia, Carnation, Iris and Gypsophila [15]. Top cut foliage ornamentals are Asparagus, Fern, Banksias, Eucalyptus, Podocarpus, Cypress and Thuja [10].

Table 1. Major Flower Producing Countries

Western Europe	The Netherlands, Italy, Germany, UK, Spain, France
Africa	Kenya, Zimbabwe, Ivory Coast, Morocco, South Africa
Latin America	Colombia, Ecuador
Asia	Japan, Israel, India, Vietnam, Thailand, Malaysia, Korea, China, Philipines

Table 2. Major Flower Auction Centers and Major Flower Producing Countries in World

Major Flowers Auction Centers Around The World		**Top Ten Countries in Flower production**	
Rank	Country	Rank	Country
First	Flora Holland, Netherlands	First	Netherland
Second	Ota Floriculture Auction Co. Ltd., Japan	Second	Colombia
Third	Landgrad, Germany	Third	Ecuador
Fourth	Veilling Holambra, Brazil	Fourth	Kenya
Fifth	International Flower Auction Bangalore, (IFAB)Ltd., Bangalore	Fifth	Ethiopia
Six	MB Flores,Belgium	Six	Italy
Seven	Taipei Flowers Auction Co. Ltd. Taiwan	Seven	India
Eight	Ontario Flower Growers Co-operative, Canada	Eight	Thailand
Nine	FloraMax Flower Auctions, New Zealand	Nine	China
Ten	FloraBella, Italy	Ten	Germany
Eleven	Dubai Flower Centre, UAE		

[16]

6. Status of Floriculture in India

The Indian government began concentrating on the horticulture and floriculture industries in the middle of the 1980s. The Department of Agriculture Cooperation and Farmers Welfare, which is a component of the Ministry of Agriculture & Farmers Welfare, is the focal agency for growing the horticulture industry in India [17]. The National Horticulture Board (2016) [18] reported that during the years 1993 and 2015–16, the area in India dedicated to floriculture expanded from 53000 ha to 278000 ha. About 2 lakh acres of the region are added every 15–16 years. In India area under

floriculture is now increased to 322 thousand hectares in the year 2020-21 and India leads this course in the world followed by China (184586 ha), South America (46000 ha), UK (28155 ha) according to AIPH (2021) [7]. Production of loose flowers grew from 880000MT in 2006-2007 to 1729000MT in 2012-2013 [6] and 2151.56 thousand ha in 2020-21 [19]. The output of cut flowers also saw a significant growth, rising from 3717.6 million in 2006-2007 to 7673.2 million in 2012-2013 [20] and 828.09 thousand tones in 2020-21[19]. Indian floriculture's home business is expanding at a yearly rate of 7–10%. Indian floriculture has a total annual growth rate of 8.9. Traditional flowers like marigolds, jasmine, and roses are produced on more than two thirds of the land used for floriculture. 2.01 million tonnes of flowers were produced in 2014–15 on a 0.24 million ha area under floriculture. The floriculture sector has a considerable positive impact on the Indian economy. India exported more than Rs. 1,003 crore (about USD 134 million) worth of floriculture products during the financial year 2020–2021, according to the National Horticulture Board (NHB, 2020-21) [21] and has exported 23,597.17MT of floriculture products to the world for the worth of Rs. 771.41Crores/ 103.47 USD Millions in 2021-22 [19].

Table 3. Area, Production and Productivity of Floriculture in India from 2001-2022

Year	Area (in 1000 HA)	Production (in 1000 MT)	Productivity
2001-02	106	535	**5.0**
2002-03	70	735	**11.0**
2003-04	101	580	**5.7**
2004-05	118	659	**5.6**
2005-06	129	654	**5.1**
2006-07	144	880	**6.1**
2007-08	166	868	**5.2**
2008-09	167	987	**5.9**
2009-10	183	1021	**5.6**
2010-11	191	1031	**5.4**
2011-12	254	1652	**6.5**
2012-13	233	1729	**7.4**
2013-14	255	2297	**9.0**
2014-15	249	2143	**8.6**
2015-16	278	2184	**7.9**
2016-17	309	2246	**7.3**
2019-20	307	2994	**9.7**
2020-21	322	2980	**9.3**
2021-22	276	2936	**11**

Rose, gladiolus, carnation, chrysanthemum, orchid, tuberose, lily, gerbera and anthurium are the top cut flowers sold in domestic markets [22]. In the domestic flower market, several annuals such china asters, gypsophilla, statice, galiardia, and annual carnations are also used as cut flowers. Jasmine, rose, chrysanthemum, crossandra, marigold, tuberose, and china aster are the primary loose flowers, while barleria, calendula, dahlia, gomphrena, zinnia, etc. are the lesser ones. India takes approximately 15% of

the global market for traditional loose flowers. This region is covered by marigold, jasmine, rose, chrysanthemum, and tuberose in excess of two thirds. Floriculture is now commercially grown in several statesin which Kerala (16.5%) leads in area followed by Tamil Nadu (13.3%) [19]. India's historic loose flower production and geographic dominance are both held by Tamilnadu. A quarter of the production of loose flower comes from Tamilnadu. Karnataka, Andhra Pradesh, Punjab, Maharastra, Haryana, Gujarat, and West Bengal are some states that are producing loose flowers. In India, a 2.44 laks ha area generated 1840000 MT of loose flowers in the 2014–15 growing season, according to ICAR–DFR.

Table 4. Production Trend of loose flowers in different states of India in the year 2020

State or Union Territory	Area (,000 ha)
Kerala	53
Tamilnadu	36
Madhya Pradesh	33
West Bengal	29
Andhra Pradesh	26
Karnataka	32
Uttar Pradesh	22
Gujarat	20
Chattisharh	15
Maharastra	12
Odisha	5
Others	24
Total	307

[19, 23]

India's output of cut flowers is led by West Bengal, followed by Maharastra, Karnataka, and Gujrat. Uttar Pradesh, Delhi, and other states that produce a lot of cut flowers are also included. The production of cut flowers has practically tripled or quadrupled.

Table 5. Major production areas of flowers in India

Flowers	Growing areas
Rose	Karnataka, Tamilnadu, Maharastra, Bihar, West Bengal, Uttar Pradesh, Gujrat etc. but the best quality roses are grown in Delhi, Chandigarh, Patiala, Jaipur, Dehradun, Meerut, Lucknow, Deoghar.
Jasmine	Mainly Tamilnadu and Karnataka and the other growing states are West Bengal, Gujrat, Assam, Maharastra.
Marigold	Uttar Pradesh, Bihar, Delhi, Haryana, Punjab, West Bengal
Gladiolus	West Bengal, Maharastra, Uttar Pradesh, Punjab, Haryana and Andhra Pradesh.
Tuberose	West Bengal, Karnataka, Tamilnadu and Maharastra.
Chrysanthemum	Maharastra, rajasthan, Madhya Pradesh, Tamilnadu, Karnataka and Bihar.
Potted plants	Bangalore, Kolkata, Trivandrum, Hyderabad, Ahmedabad, Delhi, Kalingpong, Gangtok.

Table 6. Some Native Ornamental Plants of India

Category	Plant Name

Seasonal Flower	*Gomphrena globosa, Clematis Montana, Impatiens balsamina, Meconopsis sp., Pimpinella monoica*
Climbers	*Clitoria ternatea, Hiptage benghalensis, H. madhablota, Ficus repens, Porana paniculata*
Shrubs	*Rosa moschata, Nyctanthes arbotristris, Barleria cristata, Daedalacanthus nervosus, Holmskioldia sanguine, Jasminum sambac, Jasminum pubescens, Bauhinia acuminate, Mussaenda frondosa, Ixora spp., Hamiltonia sauveolens, Crossandra infendibuliformis, Clerodebdron inerme*
Trees	*Butea monosperma, Cassia fistula, Cassia nodosa, Butea frondosa, Bauhinia variegate, Erythrina blakei, E. indica var. parcellii, E. variegate var. orientalis, Ficus religiosa, F. benghalensis, Lagerstroemia speciosa, Michelia champaka, Rhododendron sp., Saraca indica*
Orchids	*Aerides crispum, A. multiflorum, A. odoratum, Anaectochilus roxburghii, Arachnis clarkei Bulbophyllum leopardinum, Calanthe masuca, Dendrobim moschatum, D. nobile, D. phylum Paphiopedilum faireanum, P. venstum, Rhynchostylis retusa, Vanda cristata, V. coerulea*
Bulbous plants	*Gloriosa superb, Eremerus himalicus*
Aquatic plants	*Nelumbo nucifera, Nymphaea spp.*

Table 7. Average Market Price for Major Flower Crops

Flowers	Unit	Price (US$1 = Rs.40)Rs./kg or doz or each stem
Marigold	kg.	3-60
Jasmine	kg.	15-150
Crossandra	kg.	20-120
Chrysanthemum	kg.	5-25
Tuberose	kg.	5-30
Rose	kg.	6-60
Gladiolus	doz.	20-75
Carnation	doz.	30-75
Gerbera	doz.	36-75
Orchids	each stem	10-45
Liliums	each stem	10-45
Anthuriums	each stem	15-45

Kerala lacks any flower production yet nonetheless has a significant floral industry. East India and the peninsular contain the largest marketplaces. Coimbatore, Madras, and Madurai in Tamil Nadu; Trivandrum and Cochin in Kerala; Bombay and Pune in Maharashtra; Mysore, Bangalore, and Dharwad in Karnataka; and Hyderabad and Vijayawada in Andhra Pradesh are the largest marketplaces in peninsular India. Kolkata is located in the east and has three sizable marketplaces. The largest flower marketplaces in the North are in Lucknow and Delhi. The first and only digital flower auction hub in the nation is located in Bengaluru and is operated by the Karnataka Agro Industrial Corporation in Hebbal. The first and only online flower auction facility, www.rosebazar.com, was launched in Bangaluru in March 2000 by Karuturi Floritech.Ltd. [24]. Between 1991 and 1996, more than 170 export-focused floriculture units with a 1545 million stem capacity were established across the nation, costing more than 1500 crores to cultivate 40 different rose types on a 500ha plot of land. Fresh cut flowers, loose flowers, cut greenery, dry flowers, and potted plants are among India's floral exports. Dried flowers and plant parts account for

45% of exports, followed by blooming plants (22%), fresh foliage (13%), fresh cut foliage (9%), live plants (7%), and bulbs and tubers (3%). The floricultural industry contributed 304.69 crores of the Rs 1124342 crores in overall agricultural exports during the 2005–2006 year. The USA, Japan, the Netherlands, the United Kingdom, Italy, and France are major markets for Indian floricultural goods. Major international markets for India include Japan, The Netherlands, France, United Kingdom, and Singapore.

Table 8. Exports of Flowers from India (2022-23)

Sl No.	Country	Qty in MT.	Value in Rs. Lakhs
1	U S A	2,631.82	18,078.94
2	Netherland	1,552.80	12,844.60
3	U Arab Emts	3,973.82	4,733.00
4	U K	635.34	3,519.69
5	Germany	710.17	3,089.33
6	Malaysia	1,223.63	3,049.30
7	Canada	696.50	2,859.30
8	Italy	207.57	1,930.31
9	Singapore	2,009.12	1,894.29
10	France	246.82	1,727.53
	Total	**13,887.59**	**53,726.29**

[25]

Table 9. Import of Flowers to India

Country	2020-21		2021-22	
	Qty in MT	Value in Rs. Lakh	Qty in MT	Value in Rs. Lakh
China	1,057.01	2,604.09	2,477.44	6,673.40
Italy	899.26	4,017.82	1,094.07	5,418.86
Netherland	1,118.96	3,552.92	1,156.74	4,939.44
Thailand	213.40	1,189.61	762.52	2,568.82
USA	37.63	1,352.04	103.04	1,650.16
UK	10.21	733.11	11.76	1,207.13
Spain	153.70	412.64	343.14	675.26
New Zealand	52.97	67.19	29.56	84.69
Kenya	8.26	164.24	14.30	107.28
Total	**3,959.22**	**16,037.53**	**6,235.89**	**25,853.12**

Several Agricultural Export Zones may be found in several Indian states. There are flower exporting zones in five states: Karnataka, Tamil Nadu, Maharashtra and Sikkim. (Table 11).

Table 10. Agri- Export Zone of India (Flower exporting zone)

Sl No	State	Districts / Area
1	Karnataka	Bangalore (Urban), Bangalore (Rural), Kolar, Tumkur, Kodagu and Belgaum
2	Uttarkand	Dehradun, Pantnagar, Udhamsingh Nagar, Nainital and Uttarkashi
3	Maharashtra	Nasik, Sangli, Sholapur, Satara, Ahmednagar
4	Tamil Nadu	Dharmapuri
5	Sikkim	East Sikkim

Table 11. Import of Floricultural Products to India (in 1000 EUR)

Items	2020	2019	2018	2017	2016
Live plants (including their roots)	12911	20033	13026	9714	8693
Cut fowers and fower buds	1093	3565	3125	3617	4336
Bulbs, tubers, corms, etc,	1896	3855	3819	4302	4521
Foliage, branches and other parts of plants	689	724	550	551	817
Total	16589	28177	20520	18184	18367

[7]

Table 12. Export of Floricultural Products from India (in 1000 EUR)

Items	2020	2019	2018	2017	2016
Live plants (including their roots)	12003	17285	18254	22631	25561
Cut fowers and fower buds	30685	35286	33234	33799	34220
Bulbs, tubers, corms, etc,	20755	17234	15950	12050	10299
Foliage, branches and other parts of plants	718	1072	1053	1095	926
Total	64161	70877	68491	69575	71006

[7]

Table 13. Corporate Houses of Floriculture in India:

Name	Location	Name	Location
Sanvi International	Raigad,Maharastra	Kumar Florist (Joint venture)	Pune
Oikos Green Gold Pvt.Ltd.	Dombivli, Maharastra	Florance Flora	Bengaluru
MGB Exim Enterprises	Chennai	Shrivardhan Bio-Tech	Maharastra
Advanta India Limited	Hyderabad	Rise n' Shine	Maharastra
Samartha Green Tech	Pune	Sheel Biotech Limited	New Delhi
Floret Aroma	Bhopal	Ishved Biotech	Maharastra
Green World Nursery	Rajahmundry	Calcutta Tissue Culture Products Pvt Ltd.	Kolkata
Sanjay Nursery	Pune	North Bengal Floritech	Siliguri, West Bengal
AG Biotech	Hyderabad	Biswasundari Florist	Bengaluru
Fairview Nursery	Kalingpong	Green Valey Landscape	Bengaluru
Soma Enterprise	West Bengal	Karuturi Global Ltd.	Bengaluru

7. MAJOR FLOWER MARKETS IN INDIA

The major flower markets in India are Chalai Market in Trivandrum (Kerala), Crawford Market, Mumbai, Dadar Market in Mumbai, Deccan Flower Market (Bangalore), Flower Market in Delhi, Flower Market in Lucknow (UP), Flower Market in Madurai (TN), Ghazipur Flower market (Delhi), Gultekri Market in Pune, Himayat Nagar Flower Market (Hyderabad), Indore Flower Market (Indore), Jamalpur Flower Market (Ahmedabad), Jambagh Flower Market (Hyderabad), Jorhat Flower Market (Assam), K. R. Market (Bangalore), Koyambedu Flower Market (Chennai), Lalbagh Flower Market (Bangalore), Madurai Flower Market (Tamil Nadu), Malikghat bazaar (Kolkata), New Market Flower Market (Kolkata), Ooty Flower

Market (Tamil Nadu) and Pushpa Mandi (Bengaluru) etc.

8. ONLINE FLOWER SELLING PORTALS IN INDIA

www.Flowersura.com, www.Indiamart.com, Ferns N Petals (www.fnp.com), FlowerAura (www.floweraura.com), MyFlowerTree (www.myflowertree.com), BookMyFlowers (www.bookmyflowers.com), Flowerzncakez (www.flowerzncakez.com), BloomsVilla (www.bloomsvilla.com), Arena Flowers (www.arenaflowers.co.in), Flaberry (www.flaberry.com), Indian Gifts Portal (www.igp.com), OyeGifts (www.oyegifts.com), Floraindia (www.floraindia.com), Pickupflowers (www.pickupflowers.com), IndiaFlowerMall (www.indiaflowermall.com) etc.

Farmers have been forming groups to profit without middlemen's meddling in order to address various issues with the selling of floricultural goods. Some of the major associations are *viz*. Horticulture and Floriculture Association (Belgaum), Surat Region Flower Grower Association, South India Floriculture Association (SIFA), Maharashtra Flower Grower Association, Gujarat Floriculture Association. Around 5000 acres of land are used for protected flower farming, according to Chawla *et al* (2016) [3]. The main flowers grown in polyhouses are roses, gerbera daisies, carnations, orchids, and lilies. Gujarat, Maharashtra, Uttrakhand, and Karnataka are important states. In net houses, anthurium and orchids are also grown in Sikkim, Arunachal Pradesh, Goa, and Kerala. High-value flower crops, such as protea, Asiatic ginger lily, heliconia, bird of paradise, orchids, etc., are currently grown in a relatively narrower region, mostly in the southern states of our nation. In Haldighati (Rajasthan), some areas of Kanaouj (UP), and Himalchal Pradesh, Rosa damscena is only grown for the production of essential oils, rose water, attar, gulkand, etc. 10% of the whole worldwide dried flower market is accounted for by India. The United States, Israel, Hong Kong, Japan, and Singapore import the dried flowers. The centres for dried flower production are Kolkata and Tutikorin in Tamil Nadu. Some of the top exporters include Ramesh Flowers Pvt. Ltd. in Tutikorin and Natural Products Export Corporation Ltd. Lotus pods, camellia, dahlia, bell, cups, marigolds, jute flowers, wood roses, wild lilies, paper flowers, and other dried ornamentals are among the most popular exports from India.

9. GOVERNMENT SCHEMES FOR DEVELOPMENT OF FLORICULTURE INDUSTRY IN INDIA

Govt. of India runs a numbers of schemes for nourishment of floriculture sector in India. Different agencies also give funding for this purpose. Some of the important schemes are National Horticulture Mission (NHM), Technology Mission for Integrated Development of Horticulture (MIDH), Rashtriya Krishi Vikas Yojana (RKVY), Pradhan Mantri Krishi Sinchai Yojana (PMKSY), National Agricultural Market (e-NAM), Export Promotion Schemes, National Mission on Medicinal Plants (NMMP), Technology Mission for Integrated Development of Horticulture in North-Eastern States (TMNE), Subsidies for Polyhouse Cultivation where the government provides subsidies for the construction of polyhouses, Pradhan Mantri Fasal Bima Yojana (PMFBY), Agricultural and Processed Food Products Export Development Authority (APEDA under the Ministry of Commerce and Industry) etc. According to NHB (2021-22) 81 projects of

flowers and vegetables under protected conditions by providing subsidy of Rs. 2454.198 lakh involving area of 122.47 acres [26]. The Agricultural and Processed Food Products Export Development Authority (APEDA), the nodal organization for promoting agri-exports including flowers, has established a number of programmes to boost the country's floriculture exports. These include infrastructural development, packaging, market growth, airfreight subsidies for the export of cut flowers and tissue-cultured plants, database upgrades, and so on. The 100% Export Oriented Units also receive perks such as duty-free capital goods imports. Import tariffs on cut flowers, flower seeds, tissue-cultured plants, and other items have also been decreased. Walk-in cold storage has been permitted at international airports for the storing of export commodities. In cold storage units, direct subsidies of up to 50% are also available. APEDA also provides subsidies for better packaging materials to encourage their usage. To encourage entrepreneurship in the floriculture sector, NABARD is offering low-interest loans to hi-tech businesses. The government has launched several schemes to promote and develop the floriculture sector, including "Integrated Development of Commercial Floriculture," which aims to improve production and productivity of traditional as well as cut flowers through the availability of quality planting material, production of off season and quality flowers through protected cultivation, improvement in post harvest handling of flowers, and training persons for a scientific career.

10. FUTURE POTENTIAL OF FLORICULTURE IN INDIA

The main advantages of floriculture in India are a wide range of agro-climatic conditions, affordable labour, and an abundance of agricultural land. Despite having a very small percentage of the global flower market, India offers more opportunities due to its enormous diversity. The demand for flowers is growing both domestically and internationally, which puts countries in intense competition. India presently leads the world in terms of output area for floriculture thanks to decades of steadily increasing production and commerce. India's position in the global floriculture industry is quite little because of the extremely poor yield of floricultural goods. If the right steps are made to promote the floriculture industry, India might make a significant amount of foreign profit, which would lead to the creation of numerous jobs. The Indian government has launched a number of projects, including the National Horticulture Mission, the National Horticulture Board, and the Horticulture Mission for North East & Himalayan States, to grow the horticulture and floriculture industries. With the right strategy and technological use, this industry will improve, and India may end up becoming a major producer and exporter of floricultural goods globally.

11. CONCLUSION

The floriculture industry in India has the ability to greatly contribute to the country's agricultural economy and generate job opportunities while addressing domestic and worldwide demand for flowers. Domestic and worldwide demand for flowers is expanding day by day. This increased demand is fueled by factors such as changing lifestyles, urbanization, rising disposable incomes, and the cultural significance of flowers in India. Furthermore, the Indian government has seen the floriculture industry's potential and created supporting regulations, programmes, schemes and subsidies. India has a competitive edge in the global floriculture industry due to favourable climatic conditions and a varied selection of flowers that may

be farmed. By using contemporary agricultural practices, upgrading post-harvest infrastructure, and focusing on quality and productivity, the country has the potential to enhance its flower exports. Technological advances in protected farming, irrigation systems, crop management, and post-harvest processing are boosting industry output, quality, and shelf life. Furthermore, value addition and diversification in the floriculture sector offer prospects for better profits and a broader market reach.

COMPETING INTERESTS

I have declared that I have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

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