

# Growth and Instability Analysis of Export direction of Indian Floriculture Sector

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## Abstract

Floriculture is farming or cultivation of flowers and ornamental plants. It provides tremendous scope and opportunities in Indian agriculture exports. The study examines the recent export trend and direction of Indian floriculture. It is expected that world trade in floriculture is growing about 8 to 10 percent annually. India stands 2<sup>nd</sup> position in production and 14<sup>th</sup> position in export of floriculture products in whole world. After Covid19 Pandemic share of top five countries from India's export of flowers is declined from 65 to 45 percent in case of quantity. India's export of floriculture is considered to 170 countries of the world of which top five countries constitute around 60 percent of total export. But the share of these countries has declined with slight volatility. The value export of floriculture has increased 5 percent but the volume has decreased -2 percent during the study period. Declining volume and increasing value of exports cannot be considered the real development in floriculture sector as enhance the value may be either due to increase global price of flowers or due to shortage of supply. To enhance the Indian floriculture export Government of India should be to increase storage facilities and packing qualities. To technical collaborations with foreign companies Indian economy can generate more foreign income from trade.

**Key words:** Floriculture, Export, Trend, Compound growth rate

In India Floriculture is a sunshine industry in agriculture because steadily increase the demand for flowers in all over the world. Commercial floriculture is accorded 100 per cent export-oriented status. Floriculture is becoming a lucrative business as new trade policies and seed policies covered the way of growth of export focused on production of flowers and possible to import planting material of international varieties [1]. The most promising area in floriculture is dried flower and plant. India exports 500 varieties of dried flowers and plants is about Rs 100 crore per year to 20 countries and more focus on USA and UK markets. Flowers Indian flower cultivation has been diversifying from old flowers to cut flowers accordingly demand of world wide. APEDA (Agriculture and Processed Food Products Export Development Authority) is held responsible for development and export promotion of Indian flower. The liberalized economy has been emerged the Indian entrepreneur as a high-tech activity taking place under controlled climate conditions for establishing the export-oriented production of floriculture [2]. There are several varieties of flowers like as cut flowers, cut foliage, pot plants, rooted cutting, bulbs, dried flowers and seed bulbs or leaves. The main cut flowers' trade at international level are mainly Rose, Gladiolus Orchids, Gerbera, Chrysanthemum, Tulip and Lilies. Major floriculture centres in India have emerged as Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Madhya Pradesh, Haryana, Rajasthan and West Bengal. The area under the cultivation of flowers was about 283 thousand hectares in 2021-22 [3]. The production was estimated to be 833 thousand tonnes and 2295 thousand of cut and loose flowers

respectively (Ministry of Agriculture and Farmers Welfare). The floriculture products have exported 21024.41 MTs to the world for the worth 7070.81 million from India in 2022-23 (APEDA). The major importing countries of Indian floriculture were USA, U.K., Netherland, United Arab EMTs and Canada during same period (Source: [www. http://apeda.gov.in/](http://apeda.gov.in/)).

The use of flowers on all occasions, places of worships, home decoration and use for adornment of hair by women, use as raw material in cosmetic and perfume industries and pharmaceutical sector become an integral part of human living and definite commercial status during 2-3 decades particularly. Floriculture offers tremendous scope and opportunities as a commercial business venture with high market value. Present study deals with the quantity and value of export performance of floricultural products from India to five major importer countries. National Horticulture and Ministry of Agriculture has various scheme to support this sector including a subsidy scheme for boosting of the growth of new floriculture units. State governments have also commenced their own programmes providing financial and technical assistance to the small and large farmers. Several companies like Reliance, Tata Tea, ITC, Thapar Group and Bharti Group/Field Fresh are planning in investment in floriculture sector.

## MATERIALS AND METHODS

The study is relied on secondary data, annually of various years i.e., 2012-13 to 2022-23. The export quantity of Indian floriculture products shows in Million Tonnes and value

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in Million. The data were collected from Agricultural and Food processed Export Development Authority (APEDA) which is held accountable for development and export promotion of Indian flower.

#### Tools of analysis

The study used following tool of examination as to shows the results in a logical method and to present meaningful results.

#### Compound growth rate

The compound growth rate was calculated using CGR [4] the export quantity and share of the top five countries in Indian Export of floriculture. The compound growth rate is calculated with the following formula:

$$G = ((X_t / X_0^{1/n-1}) - 1)$$

Where:

G = compound annual growth rate

X<sub>0</sub> = initial value of variable X

X<sub>1</sub> = Final value of variable X

N = years

#### Instability analysis

Instability index was used to examine the variability and risk involved in the parameter such as export and direction of flowers. In order to study variability co-efficient of variation can be overestimated in any time series data. Thus the variation around the trend to be significant rather than variation around the mean in any time series data. Cuddy Della Valle index detrend the CV by using the coefficient of determination is a better measure to examine the time series data. The formula was suggested by Cuddy and Della [5] to calculate the trend coefficient to capture the degree of variation in agricultural production. The low value of this index shows the low variability in farm production and vice-versa.

$$CV (\%) = (\text{Standard Deviation} / \text{Mean}) * 100$$

$$\text{Instability Index} = CV * \sqrt{(1 - R^2)} \quad [5]$$

Where; CV = co-efficient of variation

R<sup>2</sup> = Co-efficient of multiple determination obtained from the time series

The ranges of instability are as follow:

Low instability = Between 0 to 15

Medium instability = Greater than 15 to lower than 30

High instability = Greater than 30

## RESULTS AND DISCUSSION

#### Export growth and instability in Indian floriculture sector

Floriculture is multi-layered enterprise in India which includes the production of foliage plants, potted flowering plants, traditional flowers (loose flowers) and cut flowers in open cultivation as well as protected cultivation. In India 98.5 per cent flowers production is cultivated in Open field and hardly 1.5 per cent flowers production is cultivated in protected environment. India's worldwide floriculture export was only .40 in the year 2018 and growth of demand of Indian flowers was steadily increasing [6]. The export of flowers quantity exposed a significant negative growth rate and value of export flowers exposed a significant positive growth which is fruitful for Indian economic growth. In India Floriculture has become lucrative business and has great potentiality in foreign currency [7]. Due to unhygienic and harsh competition in global market has become more risky of Indian flowers Industry. The higher growth rate in export of floriculture products from India to all zone during Pre-NHM (National Horticulture Mission) than post-NHM [8]. In terms of quantity the growth of flowers export was decreased by 5.91percent and in terms of value of export of flowers was increased by 5.60 per cent during the last nine years [9]. The study on the production of flowers (loose as well as cut) and India's trade with the world [10]. They found that during the last decade export of flowers have increased at a Compound Annual Growth Rate (CAGR) of 4.33 per cent yet India's portion in world-wide floral product trade was about only 6 per cent. The study on Kenya and Tanzania performance in floriculture sector and found in terms of quantity and in term of value of cut flowers export Kenya was better performance in the earning of foreign exchange comparative to Tanzania [11]. He evaluated major hurdles of Tanzania floriculture industry like as absence of national horticulture policy, lack of air efficient transportation, unorganized sector without clusters and foreign domination of the sector. The compound growth rate of export floricultural product was 14 per cent during the year 1996-2005 in India [12]. The highest instability was observed in Unspecified Zone and the slightest was observed in European zone during the overall study period 1994-95 to 2004-05 [8].

Total export of floricultural products from India exhibited with 11.03 per cent during the period from 1994-95 to 2018-19 [8]. Total export of floricultural products was found Rs 575.98 crore 77.86 USD Million in 2020-21 and USA shared highest of 27per cent in 2020-21 [13].

Table 1 India's export growth and instability in floriculture sector 2012-13 to 2022-23 (Quantity in MT and value in million)

Particulars	Mean	STDEV	R Square	CV	CDVI	CAGR
Quantity	21359.37	3145.73	0.35	14.73	11.89	-2
Value	552.34	102.19	0.78	18.50	8.67	5

Note: CAGR indicates the compound growth rate and CDVI indicates the Cuddy Della Valle Index

Sources: APEDA and Computed data

Data in (Table 1) shows the detailed growth tendency and instability in quantity and value of export of Indian flowers. Annual compound growth rate was found negative in the export quantity and positive value in floricultural products to the world from India during 2012-13 to 2022-23 (Table 1). Total floricultural export mean was estimated 21359.37 to be valued at 552.34 million in 2022-23. Except 2014-15 and 2021-22, there was decreasing trend in the quantity of the floricultural products during 2012-13 to 2022-23. The coefficient of variation for export the quantity 14.73 and value 18.50 of

floricultural products shows the slight variation overall the study period.

#### Major destinations of flowers from India to top five importer countries

During last two decades, many floriculture units have been established for the production and export in the country. Floriculture business may be become remunerative as flowers demand at global level was increased 8 to 10 per cent per annum amounting about \$ 60 billion [14]. The total quantity export of

Indian floricultural products was 12915.08 Metric Tonne and valued to be 42967.48 lakh rupees which shows significant role in global market. Major importer countries of Indian floricultural products were USA, UAE, UK, Netherlands and Germany in 2018-19 [15]. The export of flowers from India to Netherlands 5.06 per cent and Germany 6.67 per cent were decreased whereas USA 10.50, UK 30.02 and UAE 12.09 per cent were increased in the recent years [9]. On the trade direction of Indian floriculture products and concluded that Netherlands was stable and UAE was the most unstable destination of export market for Indian floriculture. It was concluded that USA was the most stable export market among main importer of flowers from India [13]. During the period

1996-2005 the major importer of Indian floricultural products were USA, Japan, and UK (Directorate of Floricultural Research). After three destinations- Netherlands, Italy, Germany, France and UAE have been major importer of Indian floricultural products [12]. USA, Japan and European countries per capita consumption of flowers have been increasing stage due to rise the income and development of the countries [16]. The two major market of Indian floriculture products were European countries and Japan that believed to consume over 75 per cent of Indian's flowers [17]. United Arab Emirates shared positive and significant growth rate 8.96 and Netherlands found to be negative growth rate from import of Indian flowers during 2000-01 to 2020-21 [4].

Table 2 Export quantity of various flowers from India to major importer countries

Countries	Mean	STDEV	R square	CV	CDVI	CAGR
USA	4215.40	1182.04	0.83	28.4	11.60	-8.14
Netherlands	1904.74	447.42	0.37	23.49	18.59	-6.09
Germany	1841.71	889.17	0.86	48.28	17.8	-13.97
UK	1844.44	809.17	0.95	43.88	10.12	-13.65
UAE	1810.58	865.71	0.61	47.81	29.94	13.07
Others countries	9747.34	1396.64	0.73	14.33	13.13	1.83
Total	21360.24	2999.29	0.35	14.04	11.34	-2.29
% share of top five countries	53.91	6.41	0.35	11.9	9.6	-3.25

Note: CAGR in % and indicates compound growth rate and CDVI indicates the Cuddy Della Valle Index

Sources: DGCIS, APEDA and computed data

The data in (Table 2) shows trend of share of export quantity of various flowers from India to major importer countries. The share of total export of flowers to major five countries i.e. United States of America, United Arab Emirates, United Kingdom, Netherlands and Germany has decreased 65.00% to 45% during the study period. According to the findings of (Table 2), there were negative compound growth

rate for the country United Kingdom (-13.65), USA (-8.14) Netherlands (-6.09) and Germany (-13.97) and positive growth rate were found for the country United Arab Emirates (13.07) and other countries (1.83), which shows the direction is changing in recent years [18]. The countries UAE, Netherlands and Germany have high instability in comparison to UK and USA in case of quantity (Table 2).

Table 3 Share of export value of various flowers from India to major importer countries

Countries	Mean	STDEV	R square	CV	CDVI	CAGR
USA	1281.5	428.379	0.82	33.43	14.12	7.29
Netherlands	812.25	308.061	0.72	37.93	20.08	7.29
Germany	468.79	110.842	0.56	23.64	15.66	-5.5
UK	478.71	104.849	0.46	21.9	16.17	-2.27
UAE	296.72	86.166	0.89	29.04	9.76	10.29
Others countries	3356.77	669.424	0.54	19.94	13.51	4.43
Total	2124.94	381.119	0.8	17.94	8.12	5.33
% share of top five countries	5483.34	1072.69	0.8	19.56	8.72	4.78

Note: CAGR in percent and CDVI Indicates the Cuddy Della Valle Index

Sources: DGCIS, APEDA and computed data

APEDA (Agricultural and Processed Food Products Export Development Authority)

DGCIS (Directorate General of Commercial Intelligence and Statistics)

Data depicted in (Table 3) shows trend of share of export value of various flowers from India to major importer countries. The share of total export of flowers to major five countries i.e. USA, UAE, UK, Netherlands and Germany has decreased 61.94 to 59.75 per cent during the study period. According to the findings of (Table 3), there were negative compound growth rate for the country UK-5.38, Germany -2.38, and positive growth rate were found for the country UAE (10.26), USA -7.24 Netherlands 7.21 other countries 5.31 which shows the direction is changing in recent years [19]. The instability analysis showed the high instability in Netherlands (19.95) followed by UK (16.11) and Germany (15.47).

#### Major findings

- India's growth of quantity of flower export was decreased by -2 per cent but value of export was increased by 5 per cent in last eleven years.
- The share of export value of floricultural product from India to Netherlands, United States of America, Germany and UAE was increased by 7.29 per cent, 7.29 per cent and 10.29 per cent, but to UK and Germany has decreased by 2.7 and 5.5 per cent respectively.
- The share of export quantity of floricultural product from India to USA, Netherlands, Germany and UK was decreased by 8.14 per cent, 6.09 per cent and 13.97 per cent, 13.07 per

cent but to UAE and other has increased by 13.07 and 1.83 per cent respectively.

- The variability was low in the value and quantity of total flower exports Indicated CDVI i.e. by 11.89 and 8.67 during the study period.
- In UAE the quantity of flower exports was growing at a rate of 13.07 per cent whereas value of exports was growing at a rate of 10.29 per cent.

## CONCLUSION

It can be concluded that export of India's Floriculture sector is in declining stage during last ten years. But after Covid-19 Pandemic, the growth of export of floricultural products is significantly increased. There was decreasing trend

in export of Indian flowers from long time. There is changing tendency in the direction of Indian flowers. Major exporter countries of India- Germany, USA, UK, and Netherlands contribution is decreasing continuously while UAE and other countries are coming up as new markets. India's has wide variety of tropical and climate conditions in comparison of several other floriculture countries. But India's performance is still very low. The key reasons behind this low performance are lack of technical knowledge, inadequate quality control mechanism, lack of promotion activities and lack of adequate infrastructure. To increase the production of floriculture and earning valuable foreign exchange more attention on fast technology development, steadily supply, change in trends of market, post-harvest management system and infrastructure should be provided by the government.

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