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Economic characterization with reference to CAGR in major flower crops of Chhattisgarh of India

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Abstract

Agriculture is indispensable for the nutrition and development of the Indian economy. On an average, about 70 percent of households and 10 percent of the urban population depend on agriculture as their source of livelihood. India ranks second after China in the cultivation of fruits and vegetables, with horticultural crops contributing about 28 percent of India's gross domestic product (GDP). Agriculture is also exported in substantial quantities and provides important inputs to food industries. The main flowers of India are marigold, rose, tuberose, chrysanthemum, gladiolus etc. This study was conducted with the aim of analyzing the overall growth rate of the region., Production and productivity of major crops of India. The study found that the decline in the area of flower cultivation is due to various reasons such as farmers are not giving importance to flowers like other crops, cost of cultivation is increasing and net returns are decreasing etc. and CGR of production and yield. It is positive so production will increase in future. The Chhattisgarh growth rate are increased in flower cultivation that indicate positively. The growth rates of production and productivity of major flowers Marigold, Rose, Tuberose and Gladiolus were found to be 0.12, and 0.06, 0.31, and 0.29, 0.07, and 0.09, 0.25 and 0.25 percent, respectively, in Chhattisgarh. And at the same time India's CAGR is also increasing.

Keywords: CAGR (annual compound growth rate), flower cultivation, positive, hectare, tone, GDP, Indian economy

Introduction

Cultivation bargains with the development of cultivate crops, natural products and vegetables, whereas floriculture centers on the development of blooms and decorative plants. India, being a arrive favored with favorable climate for horticulture, is appropriate for development of blooms, natural products, vegetables and crops all through the year. Hence, farming is the essential source of vocation for ~58% of India's populace, contributing ~17% to net esteem included (GVA) as of 2019.

Blossom cultivating is an age-old commerce in India; Be that as it may, after financial liberalization the Government of India recognized floriculture as an rising industry, giving it 100% export-oriented status. Blooms like roses, carnations, chrysanthemums, gerberas, gladiolus, orchids, anthuriums, tulips and lilies frame a major portion of the sends out.

Blossoms are broadly utilized for devout purposes, beautification, gifting, medications and aromas and oil extricate. Whereas trades and devout celebrations are the major development drivers for floriculture, the request for blooms from metro cities is additionally expanding due to expanding westernization patterns. Separated from enhancing and gifting purposes, blossoms are moreover

utilized in mechanical applications for enhance, scent, common colour, fabricating of drugs and ayurveda.

Concurring to information discharged by the Service of Measurements and Program Execution (MOSPI), the Indian cultivation advertise, counting natural products and vegetables, delivered Rs. 3,569 billion (US\$48.47 billion) in 2019-20 and developed at a CAGR of 3.55% between 2011-12 to 2019-20, whereas the floriculture showcase was esteemed at Rs. 273.5 billion (US\$3.71 billion) in 2019-20 and developed at a CAGR of 5.84% amid the same period.

Concurring to information discharged by the Agrarian and Handled Nourishment Items Send out Improvement Specialist (APEDA), India traded natural products and vegetables worth Rs. 11,339.17 crore (US\$1.54 billion) in 2020-21, compared to Rs. Sends out were worth Rs 10,529.23 crore (US\$1.54 billion) in 2019-20, a development of 8%. Additionally, floriculture division too recorded a development of 3% from 2019-2020 to 2020-21. The major progressing nations were the US, Netherlands, UK, Germany and UAE.

The Service of Farming discharged the moment progress assess of horculture generation in India, which is anticipated to have the highest-ever horculture generation of 329.86

million tons in 2020-21, up by 2.93% over the past year. The breakdown of segmental development of horticulture create is 4 appeared within the taking after charts. Vegetables, flavors and ranch crops posted a relentless development. The floriculture segment generation declined by 7.17% owing to the COVID-19 widespread but is anticipated to develop on the back of facilitated confinements and the up and coming happy season.

Methods and Materials

This ponder was based on auxiliary information. Auxiliary information was collected from the site of Service of Horticulture and Ranchers Welfare, Government of India and Agrarian Measurements at a Look, Directorate of Financial matters and Insights, and Nourishment and Agribusiness Organization (FAO). Auxiliary information on region, generation and efficiency from 1998-99 to 2017-18 were utilized for the investigation. Auxiliary time arrangement information on zone, generation and efficiency of major crops of India was utilized for the investigation. The collected information were arranged keeping in intellect the cited goals and related utilizing fitting factual measures. The taking after measurable measures were utilized for the show think about. Compound Growth Rate (CGR) Taking time as the independent variable and area, production and productivity of major crops of India as the dependent variables, the compound growth rate was estimated using the formula: The compound annual growth rate (CAGR) formula is as follows.

$$\text{CAGR (\%)} = \left(\frac{\text{Ending Value}}{\text{Beginning Value}} \right)^{\frac{1}{\text{Number of Periods}}} - 1$$

Where:

1. Ending Value (or Future Value) → The value at the end of the period (EoP).
2. Beginning Value (or Present Value) → The value at the beginning of the period (BoP).
3. Number of Periods (t) → The total number of compounding periods.

Or, the CAGR formula can also be expressed more formally using other financial terms.

$$\text{CAGR (\%)} = \left(\frac{\text{Future Value}}{\text{Present Value}} \right)^{\frac{1}{\text{Number of Periods}}} - 1$$

This research paper is used for future production of major crops because Indian population will increase significantly in future, so population will need more food, so researchers want to know how to increase the rate of production of major crops. So that food can be supplied for the future population of India.

Results and Discussion

The compound growth rates of area, production & productivity of major flower crops (Marigold, Tuberose, Rose, and Pulses,) of India and Chhattisgarh during last 10 years (2012-13 to 2021-22) are presented in table 1. The details are as below.

Marigold: For marigold crop, the area has increased from 3.13 to 5.08 million hectares i.e. 1.95 million hectares, while the production and productivity in Chhattisgarh during the

last 10 years (2012-22) have increased from 19.93 to 60.57 million tonnes and 6.37 to 11.92 metric tonnes/hectare respectively. Hectares have increased. The compound growth rate of area under marigold crop observed in Chhattisgarh for the period 2012-13 to 2021-22 was 0.05 percent, while the compound growth rate for production and productivity in case of Chhattisgarh was 0.12 percent and 0.06 percent respectively. The compound growth rate of area is positive, it means the area of marigold crop was increased and the compound growth rate is also found to be positive and non-significant, and also the production and productivity increased and the compound growth rate is positive and non-significant.

Tuberose: Amid the final 10 a long time (2012-22), zone beneath tuberose trim diminished from 1.79 to 1.50 million hectares i.e. 0.29 million hectares, whereas generation and efficiency expanded from 5.91 to 11.58 million tones and 3.30 to 7.72 metric tones/hectare individually. Hui., The compound development rate in range beneath tuberose edit in Chhattisgarh for the period 2012-13 to 2021-22 was watched to be -0.02 percent, whereas the compound development rate in terms of generation and efficiency was found to be 0.07 percent and 0.09 percent individually. Chhattisgarh. The CGR of the region was negative and non-significant coming about in diminished region beneath tuberose trim. Whereas generation and efficiency expanded and compound development rate is positive and non-significant.

Rose: Rose crop observed area increased from 1 to 1.18 million hectares i.e. 0.18 million hectares during last 10 years along with increase in production and productivity from 2.40 to 35.55 million tonnes and 2.40 to 30.13 MT/hectare respectively. (2012-13 to 2021-22). The compound growth rate of area for rose crop in Chhattisgarh for the period 2012-13 to 2021-22 was observed to be 0.02 percent, while the compound growth rate of production and productivity was observed to be 0.31 percent and 0.29 percent respectively in case of Chhattisgarh., The CGR of the region was positive and significant that the area under rose crop increased, also the production and productivity increased and the compound growth rate of production was positive and significant, the compound growth rate of rose productivity was positive and highly significant for Chhattisgarh.

Gladiolus: For gladiolus trim, the region was diminishes from 1.98 to 1.81 million hectares i.e. 0.17 million hectares whereas the yearly increment in generation and efficiency were 5.18 to 43.12 million tone and 2.62 to 23.82 MT/ha separately for amid the final 10 a long time (2012-22). For gladiolus edit compound development rates of region -0.04 percent was watched in Chhattisgarh for 2012-13 to 2021-22 period, whereas the Compound development rates were found to be 0.25 and 0.25 for generation and efficiency individually in case of Chhattisgarh. Compound development rate of region was negative and non-significant that zone of gladiolus trim was diminished, whereas generation was found to be positive and critical and efficiency was found to be expanded positive and noteworthy.

India and Chhattisgarh: During the last 10 years (2012-13 to 2021-22) in Chhattisgarh, the area has increased from 09.79 to 12.23 million hectares i.e. 2.44 million hectares. In which the area of flower cultivation in India has increased from 232.74 to 282.38 million hectares i.e. 49.64 million hectares. And in Chhattisgarh, flower production and productivity have increased from 37.75 to 172.57 million tonnes and from 3.86 to 14.14 metric tonnes per hectare respectively. Similarly, the production and productivity of flowers in India (2013-14 to 2021-22) has increased from 2297.02 to 2813.47 million tonnes and 9.01 to 9.96 metric tonnes per hectare respectively, whereas there was a huge

difference in the production and productivity of flowers in 2012. Which appeared normal after 2013-14. The compound growth rate of area of flower crops in India for the period 2012-13 to 2021-22 was observed to be 0.02 percent, while the compound growth rate for production and productivity in case of India was found to be 0.28 percent and 0.30 percent respectively. The CGR of the sector was positive and significant that the area under flower crop increased, as well as production and productivity increased from 2014 and the compound growth rate of production was positive and significant, and the compound growth rate of productivity was positive and highly significant for India.

Table 1: Area, Production and Productivity of major Flower in Chhattisgarh during (2012-22)

Crops Year	Marigold			Rose			Tuberose			Gladiolus		
	A	P	PT	A	P	PT	A	P	PT	A	P	PT
2012-13	3.13	19.93	6.37	1	2.4	2.40	1.79	5.91	3.30	1.98	5.18	2.62
2013-14	3.66	26.16	7.15	0.96	2.57	2.68	1.41	5.54	3.93	1.67	5.77	3.46
2014-15	4.01	29.27	7.30	1.05	2.9	2.76	1.5	5.9	3.93	1.79	5.99	3.35
2015-16	4.42	30.5	6.90	0.92	37.9	41.20	1.5	5.41	3.61	1.88	25.08	13.34
2016-17	4.5	33.25	7.39	1.23	45.34	36.86	0.04	0.3	7.50	1.82	29.43	16.17
2017-18	4.67	48.71	10.43	1.18	1.4	1.19	1.65	7.24	4.39	2.34	3.13	1.34
2018-19	5.4	54.38	10.07	1.31	34.67	26.47	1.7	12.2	7.18	2.21	4.25	1.92
2019-20	5.8	45.35	7.82	1.24	0.31	0.25	1.53	6.46	4.22	2.45	1.96	0.80
2020-21	5.1	53.88	10.56	1.2	36.73	30.61	1.49	11.52	7.73	2.4	117.38	48.91
2021-22	5.08	60.57	11.92	1.18	35.55	30.13	1.5	11.58	7.72	1.81	43.12	23.82
CAGR 1%	0.05	0.12	0.06	0.02	0.31	0.29	-0.02	0.07	0.09	-0.01	0.24	0.25
CAGR 5%	-3.95	-3.88	-3.94	-3.98	-3.69	-3.71	-4.02	-3.93	-3.91	-4.01	-3.76	-3.75
t-Test	4.577	40.2	8.591122	1.127	19.977	17.4534	1.411	7.206	5.350887	2.035	24.129	11.57206

Source: (agricoop.nic.in)

Table 2: Area, Production and Productivity of Flower in Chhattisgarh and India during (2012-22)

Crops Year	Total in Chhattisgarh			Total in India		
	A	P	PT	A	P	PT
2012-13	9.79	37.75	3.86	232.74	78461.1	337.12
2013-14	10.13	45.73	4.51	255.02	2297.02	9.01
2014-15	10.96	50.03	4.56	246.13	1744.37	7.09
2015-16	11.18	106.18	9.50	277.57	2183.91	7.87
2016-17	11.92	141.92	11.91	306.95	2392.87	7.80
2017-18	13.18	73.62	5.59	324	2635.91	8.14
2018-19	13.75	119.12	8.66	303.21	2909.73	9.60
2019-20	14.06	63.43	4.51	323.33	2999.71	9.28
2020-21	13.1	233.68	17.84	322.02	2980.05	9.25
2021-22	12.23	172.57	14.11	282.38	2813.47	9.96
CAGR 1%	0.02	0.16	0.14	0.02	-0.28	-0.30
CAGR 5%	-3.98	-3.84	-3.86	-3.98	-4.28	-4.30
t-Test	12.03	104.403	8.504737	287.335	10141.81	41.51041

Source: (agricoop.nic.in)

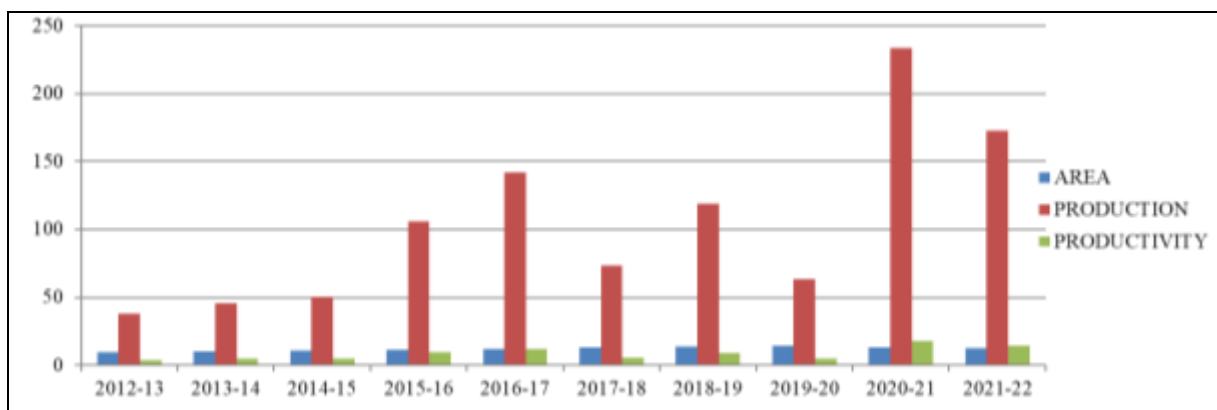


Fig 1: Area, Production and Productivity of Flower in Chhattisgarh during (2012-22)

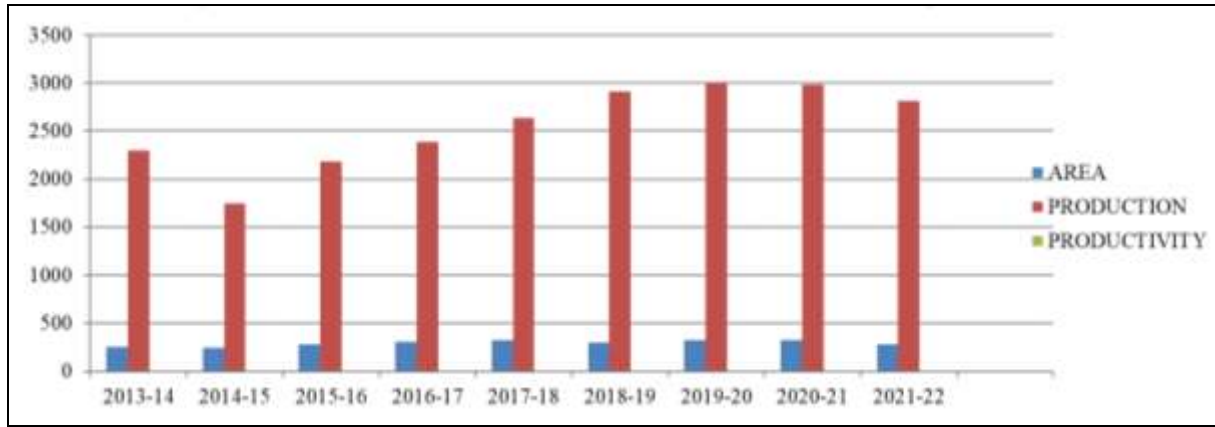


Fig 2: Area, Production and Productivity of Flower in India during (2013-2022)

Conclusion

- The major flower crops in marigold, rose, tuberose gladiolus chrysanthemum etc.
- In Chhattisgarh, production and productivity of marigold has increased from 19.93 to 60.59 million tones and 6.37 to 11.92 metric tons/ ha. And rose production and productivity from 2.4 to 35.55 million tones and 2.40 to 30.13 metric tons/ ha., respectively, and tuberose production and productivity have increased from 5.91 to 1.58 million tones. 3.30 to 7.72 metric tons/ ha. respectively,
- Chhattisgarh growth rate in flower cultivation are indicate positively. With the Indian economic growth. The growth rates of production and productivity of major flowers Marigold, Rose, Tuberose and Gladiolus were found to be 0.12, and 0.06, 0.31, and 0.29, 0.07, and 0.09, 0.25 and 0.25 percent, respectively, in Chhattisgarh.

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