



# A STUDY ON AREA, PRODUCTION AND PRODUCTIVITY OF GUAVA CULTIVATION IN TAMIL NADU

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## Abstract

The guava (*Psidium Guajava* L.) tree is extensively grown in the tropical and sub-tropical regions of the world. It is quite resilient, highly productive, has high economic returns and requires minimal care. Several countries, including India, Mexico, Brazil, Thailand, and Indonesia, emerge prominently in this domain. However, India stands out as the leading producer of guava, mangoes, and mangosteen fruits, making a substantial contribution to global production. The guava trade contributes significantly to the economies of multiple nations worldwide. Not only does it provide employment opportunities in both cultivation and processing, but the export of guava products also generates foreign exchange earnings, boosting the global economic standing of each nation on this list. Guava is a commercial crop that is grown in many parts of India, including Uttar Pradesh, Bihar, Maharashtra, Karnataka, Orissa, West Bengal, Andhra Pradesh, and Tamil Nadu. According to Tamil Nadu Horticulture Department, Tamil Nadu contributes significantly to the guava production with 1,14,557 hectares of area cultivated during the period 2010 to 2022 and production of 9,51,411 metric tonne. Guava cultivation has provided livelihood to the farmers, for many families, it is considered highly labor intensive, providing year-round employment in the fields of production and marketing. The main focus of the study is to analyze the trend and growth of area, production and productivity of guava cultivation in Tamil Nadu. The study is based on secondary data for the period of 12 years from 2010 to 2022, analyzed with annual growth rate, compound growth rate and trend analysis. The study found that, the area of guavas cultivation, production and productivity have positive growth rate in the period of study.

**Index terms:** Guava, Production, Livelihood, AGR, CAGR, Trend Analysis.

## Introduction

Guava (*Psidium guajava* L.), commonly known as the "apple of the tropics," is one of the most important fruit crops grown in India (**Subramanian & Suryanarayana, 2020**). India is the world's largest producer of guava, followed by Pakistan, Mexico, Brazil, Egypt, Thailand, Columbia and Indonesia (**Pommer and Murkami, 2009**). India produces approximately 2.6 to 3 million metric tons of guava annually, accounting for more than 50% of the global guava production. The major guava-producing states in India include Uttar Pradesh, Bihar, Andhra Pradesh, Tamil Nadu, and Karnataka, with Uttar Pradesh being the largest contributor, followed by Andhra Pradesh and Bihar (**www.fao.org/faostat 2020**). It is an excellent source of vitamin-C, pectin and minerals. In general, fruits with red peel and pulp are an excellent source of antioxidants. It is also a very hardy fruit crop which can be grown on a wide range of edaphic and climatic conditions (**Vangapandu, Mishra, Roy & Viswanath, 2023**). Tamil Nadu stands out as one of the leading states in its cultivation. The state's

favorable climatic conditions, along with its diverse agro-ecological zones, make it an ideal location for the successful cultivation of guava. The fruit is not only popular for its rich nutritional value but also plays a significant role in the agricultural economy of Tamil Nadu (**Ramasamy & Rajasekaran, 2019**).

## Guava Cultivation in Tamil Nadu

Tamil Nadu is one of the leading guava cultivating state. The crop has a great commercial value and in recent years it has gained a considerable importance due to its profitable trade and export earnings. In Tamil Nadu accounts around 1, 14,557 Hectares, more than 9, 51,411 Metric tonnes and productivity is 90.54 in Tamil Nadu in the year of 2010-2022. The major guava producing districts in Tamil Nadu include Villupuram, Salem, Tiruvannamalai, Krishnagiri, Dindigul, and Namakkal. Though the area, production and productivity is high in Dindigul district. These regions benefit from favorable climatic conditions, along with the adoption of high yielding varieties and modern farming practices (**Department of Horticulture, Tamil Nadu, 2022**).

## Review of Literature

A study by **Choudhury & Mitra (2014)** showed that guava cultivation provides farmers with a steady income, especially in regions where other fruit crops are not viable. The demand for guava and its processed products, such as juices, jams, and pickles, has also increased in the domestic and international markets, making it a profitable crop for commercial cultivation. **Kaur & Singh (2016)** also pointed out the increasing role of guava-based value-added products in improving the economic returns from guava farming. The area under guava cultivation in India was reported to be around 2.3 million hectares in 2019 (**Singh et al., 2021**), with a notable concentration in the northern, central, and southern regions. In Tamil Nadu, guava cultivation spans an area of approximately 45,000 hectares (**Horticulture Department of Tamil Nadu, 2021**), with key production areas in Coimbatore, Dindigul, and Vellore districts. The state's favorable climate and soil conditions contribute to the growth of high-quality guava varieties, making it one of the significant producers of the fruit in southern India (**Ravi et al., 2015**). In Tamil Nadu, the production of guava is substantial, with estimates placing the annual output at approximately 500,000 tons (**Horticulture Department of Tamil Nadu, 2021**). The state's favorable weather conditions, including moderate rainfall and abundant sunlight, contribute to a steady and high-quality guava harvest. Additionally, the use of improved varieties, irrigation practices, and better agronomic techniques have led to increased production in the region (**Nair & Bansal, 2017**). According to (**Singh et al. 2021**), the productivity of guava in India is estimated at 15-20 tons per hectare, though this can be higher in areas where modern irrigation systems and high-yielding varieties are used.

## Need of the Study

As India contributes a great deal to the production of guava in the world, Tamil Nadu also contributes significantly to the production of guava in India. According to Tamil Nadu Horticulture Department, Tamil Nadu contributes significantly to the national level of guava production 1,14,557 hectares during the period 2010 to 2022 and 9,51,41 metric tonnes of guava are cultivated in Tamil Nadu and guava cultivation has provided livelihood to the farmers. This study is conducted to analyze the trend and growth of area, production and productivity of guava in Tamil Nadu in the last 12 years. This study may help to understand the importance of guava in terms of area, production and productivity in Tamil Nadu.

## Objective of the Study

1. To study the growth and trends in area, production and productivity of guava in Tamil Nadu.
2. To suggest the measures for the promotion of guava cultivation in Tamil Nadu.

## Material and Methods

The study is based on secondary data for a period of 12 years from 2010-11 to 2021-22. The secondary data were collected from the records of Horticulture Department of Tamil Nadu. The collected data were analyzed with the help of statistical tools like Annual Growth Rate, Compound Annual Growth Rate and Trend analysis.

## Results and Discussion

The estimated compound annual growth rate was positive, (5.61 %) for area under cultivation. For production, (14.94 %) and productivity, (8.83 %) which shows that there was a positive in the production and

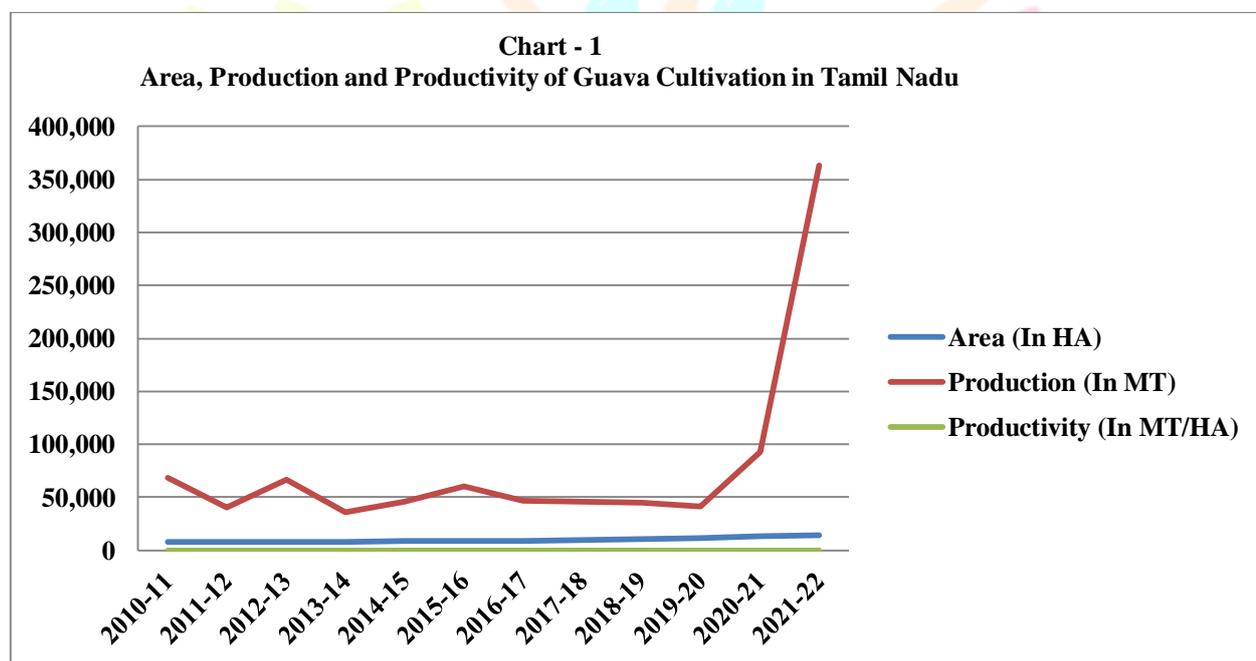
productivity of guava. Further, noticed that the annual growth rate also registered negative growth (-4.73%) in terms of area cultivated. Production and productivity in almost all the years except few years touched the highest of 292 per cent and 252 per cent respectively.

**Table 1: Area, Production and Productivity of Guava in Tamil Nadu**

S. No.	Year	Area	AGR	Production (In MT)	AGR	Productiv ity (In MT/HA)	AGR
		(In HA)	(%)		(%)	(In MT/HA)	(%)
1	2010-11	7,498	0	68,298	0	9.11	0
2	2011-12	7,717	2.92	40,473	-41	5.24	-42
3	2012-13	8,114	5.14	66,230	64	8.16	56
4	2013-14	7,730	-4.73	35,870	-46	4.64	-43
5	2014-15	8,216	6.29	46,099	29	5.61	21
6	2015-16	8,390	2.12	60,621	32	7.23	29
7	2016-17	8,820	5.13	46,271	-24	5.25	-27
8	2017-18	9,309	5.54	45,698	-1	4.91	-6
9	2018-19	10,272	10.34	44,667	-2	4.35	-11
10	2019-20	11,097	8.03	41,504	-7	3.74	-14
11	2020-21	12,958	16.77	92,608	123	7.15	91
12	2021-22	14,436	11.41	363072	292	25.15	252
<b>Total</b>		<b>1,14,557</b>		<b>9,51,411</b>		<b>90.54</b>	
<b>CAGR (%)</b>		<b>5.61</b>		<b>14.94</b>		<b>8.83</b>	

Source: Horticulture Department of Tamil Nadu

Note: 1. HA – Refers Hectare,  
2. MT – Refers Metric Ton



The above chart illustrates the area, production and productivity of guava cultivation in Tamil Nadu. From 2010-11 to 2021-22 that is for the last 12 years the area under guava cultivation in Tamil Nadu has seen a constant growth since its inception. Production showed an upward trend in 2020-21. The upward trend in the current period. Productivity registered constant growth over the periods.

**Table 2: Trend of Area, Production and Productivity of Guava Cultivation in Tamil Nadu**

Year	Area of Trend Values	Production of Trend Values	Productivity of Trend Values
2010-11	6781.2	49812.0	7.2
2011-12	7245.3	50546.7	6.9
2012-13	7709.5	51281.4	6.7
2013-14	8173.6	52016.0	6.4
2014-15	8637.8	52750.7	6.2
2015-16	9101.9	53485.4	5.9
2016-17	9566.1	54220.0	5.7
2017-18	10030.2	54954.7	5.5

2018-19	10494.3	55689.4	5.2
2019-20	10958.5	56424.0	5.0
2020-21	11422.6	57158.7	4.7
2021-22	11886.8	57893.3	4.5
2022-23	12350.9	58628.0	4.2
2023-24	12815.1	59362.7	4.0
2024-25	13279.2	60097.3	3.7
2025-26	13743.4	60832.0	3.5
2026-27	14207.5	61566.7	3.2
2027-28	14671.7	62301.3	3.0
2028-29	15135.8	63036.0	2.7
2029-30	15599.9	63770.7	2.5
2030-31	16064.1	64505.3	2.3

$$y = a + bx$$

$$Y = 464.1455 + 9101.909 X$$

The Forecast of Area of guava Cultivation in Tamil Nadu by 2031 has been done using Ordinary Least Square method. It is inferred from the analysis that the area under guava cultivation would further increase to 16064.1 hectares by 2031.

$$y = a + bx$$

$$Y = 734.6636 + 53485.36 X$$

It is inferred from the analysis that the production of guava would further increase estimated as 64505.3 Metric Tonnes by 2031.

$$y = a + bx$$

$$Y = -0.24591 + 5.944545 X$$

It is inferred from the analysis that the productivity of guava would further decline estimated as 2.3 by 2031.

### Conclusion

In Tamil Nadu, guava is grown as an important cash crop. The study found that there was a positive growth rate of guava cultivation area and production. Productivity is negative growth rate in Tamil Nadu over the study period. Trend analysis also indicated increase in area and production. Productivity is falling over the study periods. Hence, Central and State Governments should jointly take necessary agricultural activities for guava farmers to sustain cultivation area and production. The study suggests that steps should be taken to create a research and development board and develop export-oriented activities with global standards. Reduction of middlemen in marketing and improved knowledge of technology will help farmers to get more profit.

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