

## RESEARCH ARTICLE

# STATISTICAL ANALYSIS ON INDIAN SCENARIO OF COCONUT CROP: TRENDS AND PROSPECTS

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## ABSTRACT

The Indian agriculture sector occupies an important place in Indian economy. The agriculture and allied sector contribution of production, employment and exports growth rate is increasing constantly. Indians are cultivating different crops season centuries together. But since independence the cropping pattern is shifting from traditional crops to commercial crops. Some of the farmers are cultivating Coconut crop. Coconut (**Cocos nucifera**) plays a significant role in the agrarian economy of India. Coconut is a crop of small and marginal farmers since 98% of about five million Coconut holdings in the country are less than two hectares. India ranks 3rd for Coconut production in the world. India accounted for about 31.45% of the world's total production during 2021-22. The present study based on secondary data for 60 years to examine the growth rate of coconut crop and to understand the economic importance of Coconut cultivation. The Coconut cultivation in India and major States in India for the period 1959-60 to 2020-21 has been analyzed to understand the trend in area, production and productivity of Coconut.

**Keywords:** Horticulture Crop, Coconut, Growth Rate, Production, Yield

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## INTRODUCTION

Agriculture sector plays a vital part in economic growth, with about two-third of the rural people relying on it for their living. However, due to several hazards confronting the sector, the Indian agriculture sector has shown a sluggish development rate over the years. As a result, the Indian government has highlighted horticulture as a potential solution to the country's suffering agriculture industry. India, with its different climatic conditions and soil, offers enormous potential for the horticulture sector to expand. Plantation crops are highly valued commercial crops in the horticulture industry because of their importance to the Indian economy. Coconut is a significant plantation crop that employs about 15 million people who rely on coconut cultivation, processing, and related industries, making it a vital part of the Indian economy. Coconut is a source of food, beverage, medicine, natural fiber, fuel, wood and raw materials for units producing a variety of goods. Coconut is also interlinked with socio-economic life of a large number of small and marginal farmers in peninsular India. It is estimated that about 12 million people in India are dependent on the Coconut sector in areas of cultivation, processing and trading activities. Coconut production plays an important role in the national economy of India. India ranks 3rd for Coconut

production in the world. During 2020-21, India contributed 34% to the world's Coconut production. India's Coconut production is majorly situated in Kerala, Karnataka and Tami Nadu and Andhra Pradesh, accounting for 89% of the coconut area and 90% of the Coconut production in the country. Other Coconut-producing states in the country are West Bengal, Orissa and Gujarat.

## Methodology

### Scope and Coverage of the Study

The present study based on secondary data for 60 years to examine the growth rate of Coconut crop and to understand the economic importance of Coconut cultivation. The Coconut cultivation in India and major States in India for the period 1959-60 to 2020-21 has been analyzed to understand the trend in area, production and productivity of Coconut. The following formulae were used:

### Projection

Least Square Technique has been applied for the following linear model:

$$Y = a + b X$$

Where Y is Coconut production

a is constant

b is regression of Y on X,

X is year (X=1 for 1995-96

=2 for 2000-01 & so on)

### Growth Rate

The moving averages have been used to estimate growth rates.

$$R_t = \frac{Y_1 - Y_0}{Y_0} * 100$$

Where  $R_t$  is the simple growth rate during two periods

### Three Year Moving Average

$$Y_{t+1} = \frac{Y_t + Y_{t+1} + Y_{t+2}}{3}$$

Where  $Y_t$  is variable ( area sown, production or productivity ) and

t is period, say, t = 0,1,2.....

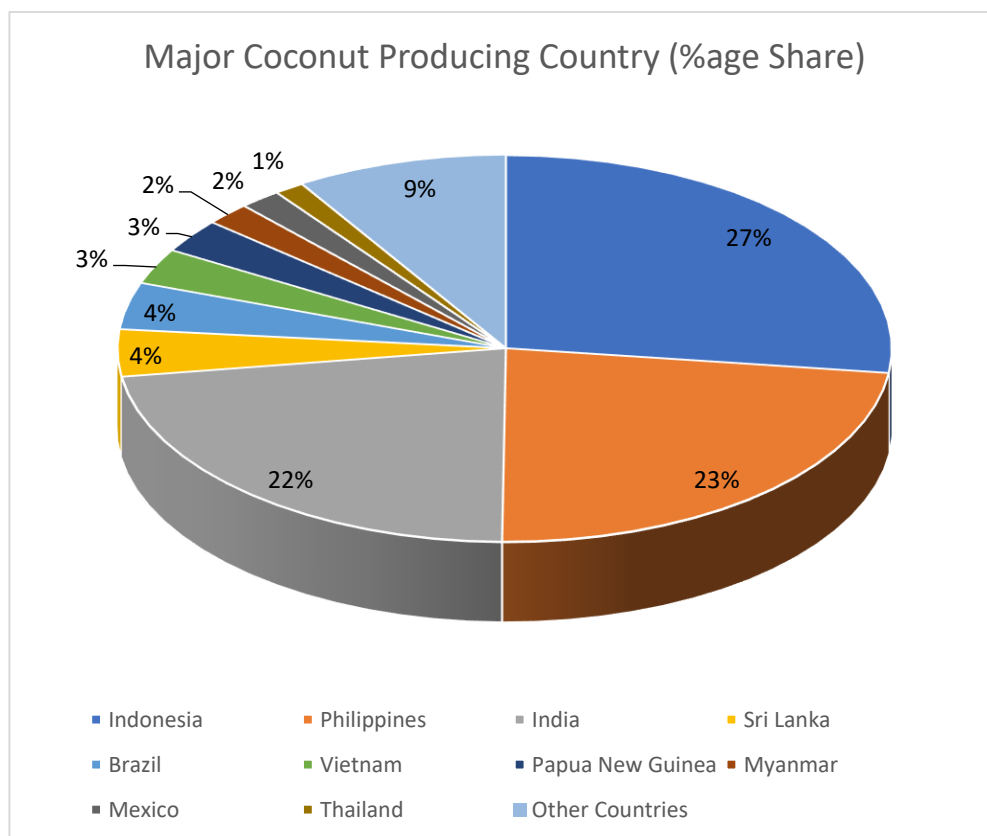
### Findings and Discussions

Coconut production plays an important role in the national economy of India. Coconut is one of the major plantation crops in India with a total cultivated area of 2173 thousand ha with a production of 20309 million nuts which makes India stand 3rd in the world. Table -1 presents the major Coconut producing countries in the world. It is seen, that Indonesia is the world's largest Coconut producing

country with 27% share. The Philippines is the 2<sup>nd</sup> largest country as a world Coconut producing country with 23 % share. India is the 3<sup>rd</sup> largest Coconut producing country with 22% share. Indonesia, Philippines, India, Sri Lanka and Brazil together produce more than 80 % of world's total Coconut Globally. The highest yield rate has been observed of the order of 10547 Nuts per ha in Vietnam followed by India (9346 Nuts per ha) , Papua New Guinea ( 6710 Nuts per ha) and Sri Lanka ( 6288 Nuts per ha) and lowest 3969 (Nuts per ha) in Philippines .

**Table 1: Major Coconut Producing countries in the World**

	<b>Production M Tones</b>	<b>Production %age</b>	<b>Cumulative Production %age</b>	<b>Yield Nuts per ha</b>
Indonesia	17.2	27.04	27.04	4120
Philippines	14.7	23.11	50.16	3969
India	14.3	22.48	72.64	9346
Sri Lanka	2.5	3.93	76.57	6288
Brazil	2.5	3.93	80.50	6287
Vietnam	1.9	2.99	83.49	10547
Papua New Guinea	1.8	2.83	86.32	6710
Myanmar	1.2	1.89	88.21	4411
Mexico	1.1	1.73	89.94	4728
Thailand	0.8	1.26	91.19	4728
Other Countries	5.6	8.81	100	
<b>Global</b>	<b>63.6</b>	<b>100</b>		<b>5357</b>



**Table -2 Three years moving average of area, production and Productivity of the Coconut**

Year.	Area Sown 000 ha	Growth rate per annum	Production 000 Tones	Growth rate per annum	Productivity Kg per ha	Growth rate per annum
1959-60	705		4685		6644	
1969-70	1022	4.50	5827	2.44	5698	-1.42
1979-80	1071	0.48	5778	-0.08	5393	-0.54
1989-90	1471	3.73	8533	4.77	6252	1.59
1999-2000	1841	2.52	12448	4.59	6985	1.17
2009-10	1895	0.29	16530	3.28	8722	2.49
2019-20	2174	1.47	20778	2.57	9557	0.96

Table-2 presents the three yearly moving averages of area sown and production for Coconut. It is seen that there is a positive trend in area sown and production during different periods. The area sown has increased from 705 thousand ha in 1959-60 to 2174 thousands ha during 2019-20. The production has also increased from 4685 thousand tones in 1959-60 to 20778 thousands of tones in 2019-20. The yield rate has also positive trend. It has constantly increased to 9557 kg per ha in 2019-20 from 6644 kg per ha in 1959-60. This table also shows annual growth rates during different periods. The highest growth rate was observed in area sown (3.73%) and in production (4.77%) during 1979-80 to 1989-90.

**Table –3 Area, Production and Productivity of Coconut for Major States (2020-21)**

	Area Sown 000 ha	%age of Total Area	Production 000 Tones	%age of Total Production	Yield Kg per ha.
Kerala	761	34.83	5114	35.09	6723
Tamil Nadu	438	20.05	3711	25.47	8480
Karnataka	643	29.43	3392	23.28	5280
Andhra Pradesh	114	5.22	880	6.04	7701
Maharashtra	30	1.37	361	2.48	12059
West Bengal	32	1.46	272	1.87	8553
Odisha	52	2.38	275	1.89	5246
Gujarat	49	2.24	204	1.40	4136
Assam	25	1.14	147	1.01	5880
Bihar	21	0.96	127	0.87	6116
Others	20	0.92	89	0.61	4358
All India	2185	100	14572	100	6670

The state-wise break up of area sown, production and productivity of Coconut is presented in table – 3. It is seen that Kerala is the highest Coconut producing state (35%) of the total Coconut in the country. Tamil Nadu is the 2<sup>nd</sup> highest Coconut producing state with 25% share. Kerala along with Tamil Nadu and Karnataka (23%) produce about 84% production in the country. The highest productivity has been observed of the order of 12059 kg per ha in Maharashtra followed by West Bengal (8553 kg per ha) and Tamil Nadu (8480 Kg per ha) and lowest 4136 Kg per ha in Gujarat.

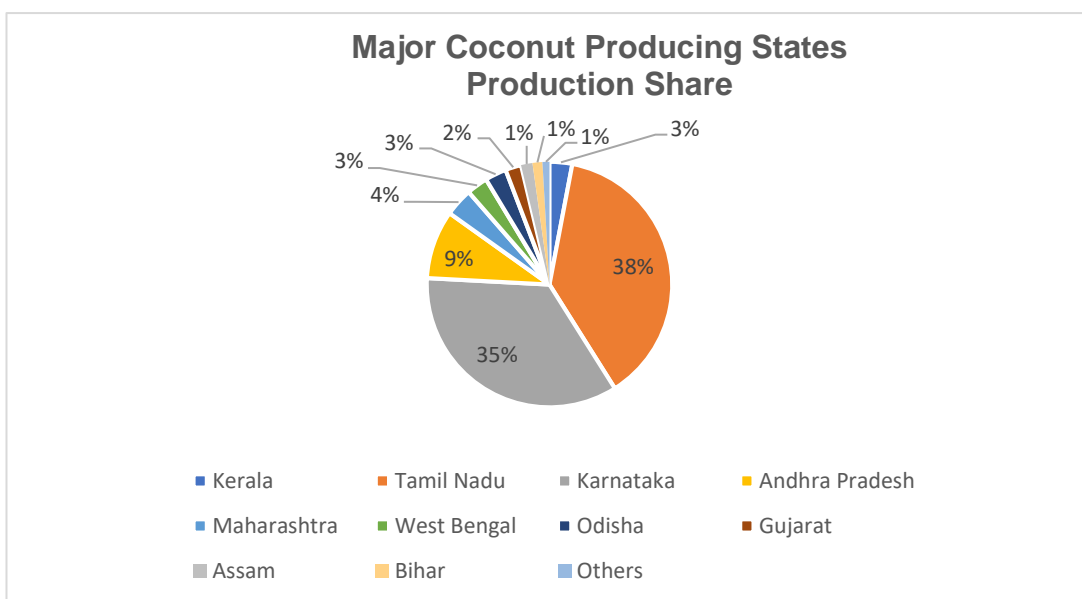
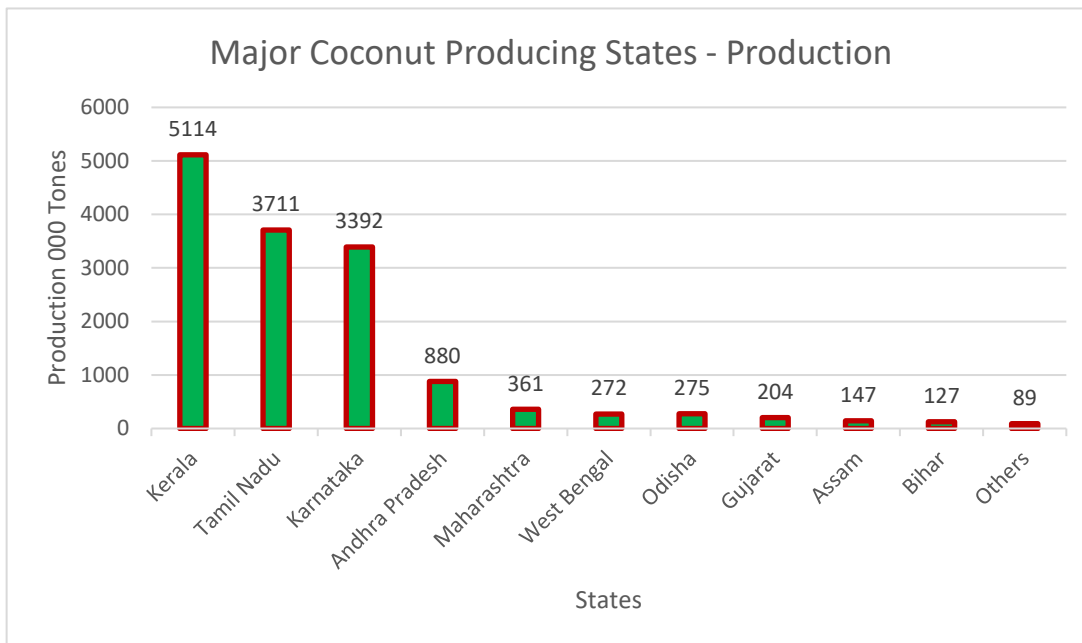


Table -4 presents the projected area, production and productivity for Coconut for 2025-26 and 2030-31. It is seen that the production has been estimated of the order of 23666 thousand Tones and 25653 thousand Tones in 2025-26 and 2030-31 respectively. The area will be 2222 thousands ha in 2025-26 and 2296 thousand ha in 2030-31. The yield rate will be 10845 Kg per ha in 2025-26 and 11534 Kg per ha 2030-31.

**Table –4 Projected Production, Area and Productivity for Coconut**

	2025-26	2030-31
Production 000 Tones	23666	25653
Area 000 ha	2222	2296
Yield Kg per ha	10845	11534

## CONCLUSION

The paper has attempted to understand and analyze the growth pattern of major Coconut growing states in India. The above results highlighted that growth of area, production and productivity for major states in India was positive and statistically significant. Despite the establishment of Technology Mission on Coconut by the CDB, the production of the Coconut crop has not improved significantly. The productivity of coconuts can be increased by promoting irrigation, introducing improved varieties of coconuts and encouraging the farmers to make use of them. Effective market intelligence and market promotional activities should be undertaken by the Government Organizations. Coconut-based farming system and primary farm level processing should be popularized.

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