



# Estimate the compound growth rate (CGR) of area, production & productivity of Sugarcane in India

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## Abstract

The present study was carried out to estimate the compound growth rate of area, production, and productivity of sugarcane in India. The current study made use of secondary data on area, production, and productivity from 2006–7 to 2019–20 that was collected from various government sources, including the Directorate of Economics and Statistics and the Department of Agriculture, etc. To examine the growth rates in area, production, and productivity of sugarcane in the Indian plains for the period of 2006–7 to 2019–6 by using simple descriptive statistics and linear growth rates (compound annual growth rates). The results of this study about the growth rates in the area and the production and productivity of the sugarcane crop show positive and significant growth. In context of the area, India's plains show positive and significant growth. Sugar cane production in the Indian plains is increasing significantly. In the context of productivity in India, sugarcane shows positive and significant growth.

**Keywords:** Compound growth rate, area, production, productivity & significant growth

## 1. Introduction

Sugarcane (*saccharum* sp.) is a main source of sugar in India and holds prominent position as a cash crop. Sugarcane belongs to the genus *saccharum* in the family Gramineae. India occupies the second place in respect to area and production after Brazil. **Agriculture** is the most important sector of **Indian Economy**. Indian agriculture sector occupies 18 per cent of India's Gross Domestic Product (GDP) and provides **employment** to 50 per cent of the country's **workforce**. Sugarcane is the popularly grown commercial crop all over the world including India. Agriculture forms the back bone of the Indian economy and despite concerted industrialization in the last four decades; agriculture occupies a place of pride. Being the largest industry in the country agriculture is the livelihood for over 70 percent of population in the country. It contributed 57 percent of the national income in 1950-1951 but contributes now around 32 percent of the national income. Agriculture provides employment to around 65 percent of the total work force. Agricultural growth has direct impact on poverty eradication. Many of the industries still depend on the agricultural sector for raw materials as well as

for market. Agriculture provides employment to around 65 percent of the total workforce in the country. It has been the source of supply of raw materials to our leading industries such as cotton and jute, textile industries, sugar, vanaspathi and plantations. It is the main support for India's transport system. Agriculture growth is also an important factor in containing inflation, raising agricultural wages and for employment generation.

## 2. Materials and Methods

### 2.1 Method of enquiry and data collection

The current study made use of secondary data on area, production & productivity from 2006-07 to 2019-20 were collected from various government sources including the Directorate of Economics & Statistics and Department of Agriculture etc. to estimate the compound growth rates in area, production and productivity of Sugarcane.

### 2.2. Analytical tools

#### 2.2.1 Computation of growth rate

Annual compound growth rates in area, production and productivity of Sugarcane in India was done by fitting an exponential function of the following form.

$$Y = \alpha \beta^t$$

$$\text{Log } Y = \text{log } \alpha + t \text{ log } \beta$$

Where, Y= Area, production & productivity of Sugarcane in India.

$\alpha$ = Constant

$\beta$ = Regression coefficient

t= time in year Compound growth rate (%) =  $(\text{Antilog } \beta - 1)100$ .

#### 2.2.2. Results and Discussion

The growth rate trends in area, production, and productivity depend on many factors. For instance, agricultural productivity in most cases depends on the area sown under the crops and the total production of that particular crop. The production of a crop not only depends on the area sown under it but is also affected by the technology adopted therein, entrepreneurship, and economics of production. Table 1.2 and Figure 1.1 show the growth rates (CAGR) from 2000-01 to 2009-10 in the area, production, and productivity of sugarcane in India.

### 3. Growth rate in area, production and productivity of Sugarcane

The growth rate in area, production, and productivity of sugarcane in India is presented in Table 3.1. It can be clearly seen from the table that the area, production, and productivity of sugarcane in India registered a significant positive growth rate.

In context of India's area Sugarcane shows positive, significant growth. In the context of production in India, sugarcane shows positive and significant growth. In the context of productivity in India, sugarcane shows positive and significant growth.

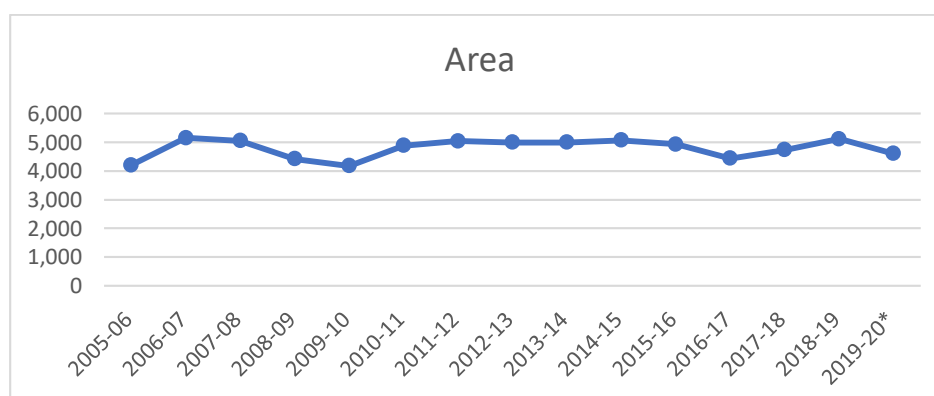
**Table.1** Compound Growth Rate of area, production and productivity of Sugarcane in India

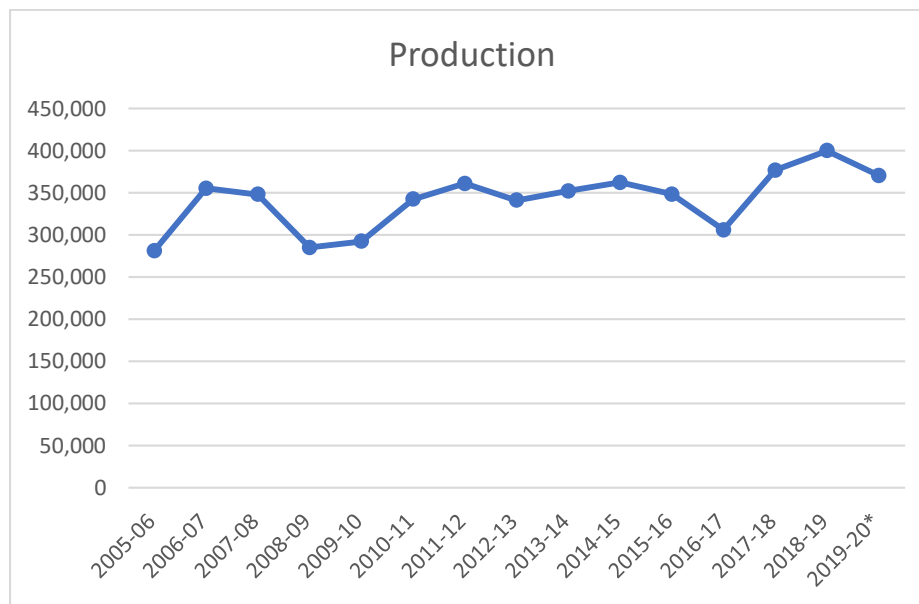
S. No	Region	Compound Growth Rate		
		Area	Production	Productivity
1.	Sugarcane	0.65%	1.99%	1.33%

**Table.2** Area, production and productivity of Sugarcane in India

S.No	Year	Area under sugarcane ('000 hectare)	Production of sugarcane ('000 tonnes)	Yield of sugarcane per hectare (tonnes)
1	2005-06	4,201	281,172	66.9
2	2006-07	5,151	355,520	69.0
3	2007-08	5,055	348,188	68.9
4	2008-09	4415	285,029	64.6
5	2009-10	4175	292,302	70.0
6	2010-11	4886	342,382	70.1
7	2011-12	5038	361,037	71.7
8	2012-13	4998	341,198	68.3
9	2013-14	4993	352,141	70.5
10	2014-15	5067	362,333	71.5
11	2015-16	4927	348,448	70.7
12	2016-17	4436	306,070	69.0
13	2017-18	4732	376,905	79.6
14	2018-19	5114	400,157	78.3
15	2019-20*	4603	370,500	80.50

Source: Directorate of Economics & Statistics Ministry of Agriculture, Govt. of India.

**Fig.1** Trend in area of Sugarcane in India

**Fig.2** Trend in production of Sugarcane in India**Fig.3** Trend in productivity of Sugarcane in India

#### 4. Conclusion

The growth rate in area, production, and productivity of sugarcane in India is presented in Table 3.1. It can be clearly seen from the table that the area, production, and productivity of sugarcane in India registered a positive and significant growth rate. In context of the area of sugarcane in India, this shows positive and significant growth. In the context of production, sugarcane in India shows positive and significant growth. In context of productivity, sugarcane in India clearly shows positive and significant growth.

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