

Fluctuating Trend of Sugarcane Cultivation in India

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Abstract

Sugarcane is the 9th most valuable and commercial crop in the world. It is cultivated in more than hundred countries, India is a second largest producer with 341,200 thousand metric tonnes. India is a suitable country for the cultivating sugarcane crop because India is a tropical country. The sugarcane cultivating farmers are facing many problems such as low productivity, short crushing season, fluctuating production trends, low rate of recovery, a high cost of production, lack of adequate working capital, old and obsolete machinery, low per capita consumption, etc. The entire study is based on secondary data and it is focused on the following objectives is, to examine the annual growth rate of area, production and yield of the sugarcane in India during the study period of 2000-20001 to 2016-2017 and to analyze that the variations of area, production, and yield during 2014-15 in major producing states in India. It is observed that the overall trend of sugarcane cultivation regarding area, production and yield of annual growth rate is fluctuating. The biggest growth rate of sugarcane is registered in a similar period of 2006-2007 and simultaneously area, production and yield of sugarcane its smallest growth rate is received in the same period of 2003-2004. The yield of sugarcane highest annual growth rate is accounted in 2004-2005. Among the major producing states of sugarcane in India, which revealed that among the states Uttar Pradesh stood at a first place and had been categorizing in the last place Bihar is the last place for regarding under cultivated of area and production of sugarcane. The highest growth of area and production of sugarcane recorded in 2006-2007 and its growth rate was lower regarding the area, production and yield in 2003-04.

Keywords: Sugarcane, Production, Cultivation, Fluctuating, Productivity.

Introduction

Agriculture is the prime sector of Indian economy nearly 54.6 percent of the population is engaged in agriculture and allied activities which contributes 17 percent to the country's Gross Value Added (current price 2015-16, 2011-12 series). It not only contributes to national income and also significantly to production, employment and demand generation through various backward and forward linkages. Moreover, the role of the agricultural sector in alleviating poverty and in ensuring the sustainable development of the economy is well established¹. According to the Food and Agriculture Organization (FAO) unless or else noted, lists the most significant agricultural products produced by the countries of the world. Besides sugarcane is the 9th most valuable crop by value \$56,903,836 thousand us dollars².

Sugarcane is a significant commercial crop of the world and is cultivated in more than hundred countries, the leading countries being Brazil, India, China, Thailand, Pakistan, Mexico and Colombia. Its botanical name was *Saccharum officinarum* and for sugar beet, it is *Beet Vulgare*³. Whereas sugarcane is grown mainly in the tropical and sub tropical zones of the southern hemisphere, sugar beet is grown in the temperate zones of the northern hemisphere. Sugarcane is cultivated over an area of 20.10 million hectares with a production of 1,318.10 million tonnes and productivity of 65.5 tonnes per hectare in the world. Of which the cultivation of area, production, and yield differ widely from country to country. Brazil has the highest area (5.34 million hectares) while Australia has the highest productivity (85.1 tonnes per hectare). Among the sugarcane growing countries, India is the largest producing and cultivating of an area after Brazil.

The sugarcane is one of the most profitable crops, it provides raw material to the sugar industry and largest agro-based processing industries, helpful for the socio-economic development of rural community and national economy. Around 5.0 million growers are depended and involved in the cultivation of sugarcane crop and the sugarcane-based industry. This sector provides employment opportunity to more than one and half million skilled and unskilled workers in the manufacturing of sugar, kharif and gur⁴.

Statement of the Problem

Agriculture is commonly risk and uncertainty which are inescapable factors in India. The uncertainties of weather, yields, prices, government policies, global markets, and other factors have affected the yield from agriculture. The cultivators of sugarcane crop are facing with several problems such as low productivity, short crushing season, fluctuating production trends, low rate of recovery, high cost of production, high support prices payable to farmers, lack of adequate working capital, partial decontrol and the uncertain export outlook, regional imbalances in distribution, old and obsolete machinery, low per capita consumption, etc. Productivity is mainly depended on weather and other external factors, and market prices are affected

by supply and demand in a world market. In India, the productivity of sugarcane is fluctuating due to soil type, rain fall, fertilizer, climate, the use of irrigation, etc. The price challenge for a sugarcane crop is depended on some factors such as stock levels, a supply of sugarcane and export demand.

Methodology

The present study is exclusively based on secondary data like previous studies, various journals, government reports, magazines, etc. The data on area, production and yield of sugarcane crops in India, was particularly collected from Handbook of Statistics on the Indian Economy-2016-2017, Reserve bank of India. The researcher has used the annual growth rate analysis and percentage analysis.

Objectivities

The following objectives have accomplished the study

1. To examine the variations of an area, production, and productivity of sugarcane among states in India.
2. To analyze the annual growth rate of an area, production and yield of the sugarcane in India during the study period of 2000-20001 to 2016-2017.
3. To explore that the Area, Production and Yield of sugarcane Major Producing States in India in 2014-2015

Review of literature

Ajay Kumar and Rak esh Singh (2017)⁵, focused on the measurement of farm risk regarding the area, production, productivity and price for sugarcane production in Uttar Pradesh and Maharashtra. The study observed that production risk was lower in Uttar Pradesh (7.85 percent) as compared to Maharashtra (36.89 percent). The productivity risk in Uttar Pradesh and Maharashtra were 4.49 and 10.04 percent respectively as well as price risk showed high in both state Uttar Pradesh and Maharashtra with 45.59 and 49.55 percent respectively. The study found that risk linked with an area, production, productivity and price risk in Uttar Pradesh was lower as compared to Maharashtra. Priyanka Upreti and Alka Singh (2017)⁶, a study revealed that the trends

in the area, production, productivity, costs, returns and profitability of sugarcane and to determine the factors which are contributing toward productivity of sugarcane in major sugar producing states of Uttar Pradesh and Maharashtra. The area extension has important contributed to increased production of sugarcane, but productivity has remained stagnant. The cost of cultivation of sugarcane also witnessed a rising trend and due to higher use of inputs, it was found to be higher for Maharashtra compared to Uttar Pradesh. However, the growth of the value of output has outpaced the growth of the cost of cultivation and thus rising trend of profitability was observed higher for Uttar Pradesh than Maharashtra. The positive and significant contribution was human labor, machine, fertilizers, insecticides and size of plot towards the productivity of sugarcane .

Begum et al. (2016) 7, study indicated that the area under cultivation of sugarcane crop is declining resulting of a closure of few sugar mills in the State and due to lack of adequate market facility for the crop and its products. The marginal rate increases in the area cultivation of sugarcane obviously due to growing demand and increased price for jaggery.

More et al. (2017) 8, the study examined the trend of an area, production and productivity of sugarcane in India during different time periods. It is observed that the area under cultivation of sugarcane in India and especially in six major sugarcane growing states has been increased during pre-liberalization period and it has been increased but less magnitude in post-liberalization period. The production of sugarcane in India has been increased during the pre-liberalization period. However, it remained sluggish during a post-liberalization period. The increase in production of sugar in India during the pre-liberalization period was relatively more as compared to the post-liberalization period. This might be due to a shift in acreages under sugarcane and caused by a decline in the productivity of sugarcane.

Krishnakant et al. (2015) 9, study found that the cost and returns of sugarcane production for different size group of farms in the study area of Meerut district of Uttar Pradesh. The study focused on four categories such as marginal, small, medium and large

farmers of sugarcane growers. The study resulted that the cost of cultivation of sugarcane planting was Rs. 172679, the share of the operational cost, land rent and material costs was 38, 22 and 26 percent, respectively. The cost of cultivation of sugarcane ratoon was to be Rs.129752.65 with a share of the operational cost, land rent and material cost of 41, 29 and 14 percent, respectively

Results and Discussion

Sugarcane is a most imperative cash crop of India. It provides basic input for the second largest agro-based industry after the textile sector. In 2010-11 is about 527 working sugar factories were located with a total crushing capacity of about 242 lakh tones in India. The sugar industry is being helpful in generating the substantial employment opportunity in the rural sector directly and through its ancillary units. In India sugarcane cultivation has been a focal point for socio-economic development in the rural areas by mobilizing rural resources, generating employment and enhancing farm income¹⁰.

The table 1 results indicated that the area under sugarcane was high (5.06 million hectares) in 2007-2008 and it was low (3.66 million hectares) in 2004-2005. The production of sugarcane was high (362.33 million tonnes) in 2014-2015 and it was low (233.86 million tonnes) in 2003-2004. The yield of sugarcane per hectare was high(70091 Kg.hectare) in 2010-2011 and it was low(63576 Kg.hectare) in 2002-2003. There was a fluctuating trend in area, production and productivity of sugarcane during the period of study due to weather conditions, lack of rain fall, flooding, calamities, etc.

The table 2 analysis shows that the annual growth rate of an area, under sugarcane, was high (22.67) in 2006-2007 and it was low (-13.05) in 2003-2004. The production of sugarcane growth rate was higher (26.44) in 2006-2007 and it was lower (-18.62) 2003-04. The annual growth rate of productivity was highest (9.05) in 2004-2005 and it was lowest (-6.60) in 2003-2004. The analysis shows that regarding under the area, production and yield annual growth rate was fluctuating due to climate change, etc.

Table 1 Area, Production and Yield of Sugarcane in India during the Study Period of 2000-2001 to 2016-2017

Year	Area (Million Hectares)	Production (Million tonnes)	Yield (Kg/hectare)
2000-01	4.32	295.96	68577
2001-02	4.41	297.21	67370
2002-03	4.52	287.38	63576
2003-04	3.93	233.86	59380
2004-05	3.66	237.09	64752
2005-06	4.20	281.17	66919
2006-07	5.15	355.52	69022
2007-08	5.06	348.19	68877
2008-09	4.42	285.03	64553
2009-10	4.18	292.30	70020
2010-11	4.88	342.38	70091
2011-12	5.04	361.04	71668
2012-13	5.00	341.20	68254
2013-14	5.01	352.14	69839
2014-15	5.14	362.33	69859
2015-16	4.93	348.44	70720
2016-17	4.38	306.72	69886

Source: Handbook of statistics on the Indian Economy, Reserve bank of India, 2016-2017, (<http://dbie.rbi.org.in>)11.

Table 2 Annual Growth rate of Sugarcane in India during the Study Period of 2000-2001 to 2016-2017

Year	Area (AGR)	Production (AGR)	Yield (AGR)
2000-01	-	-	-
2001-02	2.08	0.42	-1.76
2002-03	2.49	-3.31	-5.63
2003-04	-13.05	-18.62	-6.60
2004-05	-6.87	1.38	9.05
2005-06	14.75	18.59	3.35
2006-07	22.62	26.44	3.14
2007-08	-1.75	-2.06	-0.21
2008-09	-12.65	-18.14	-6.28
2009-10	-5.43	2.55	8.47
2010-11	16.75	17.13	0.10
2011-12	3.28	5.45	2.25
2012-13	-0.79	-5.50	-4.76
2013-14	0.20	3.21	2.32
2014-15	2.59	2.89	0.03
2015-16	-4.09	-3.83	1.23
2016-17	-11.16	-11.97	-1.18

*AGR- Annual Growth Rate.

Table 3 brings out among the states, Uttar Pradesh stood at is a first place (2.14 million hectares) regarding area under cultivation of sugarcane whereas the state of Odisha accounted by lowest ((0.01 million hectares) are under the cultivation of sugarcane. The highest (133.06 million tonnes) production of sugarcane is in Uttar Pradesh and its lowest share (0.20 million tonnes) is in Odisha. The

productivity of sugarcane was high (106788 Kg./ Hectare) in Tamilnadu and its lowest (36760 Kg./ Hectare) yield in Assam. It is clearly shown that among the states in India, Uttar Pradesh stood at first place and Bihar is the last place regarding under the cultivation of area and production of sugarcane whereas Tamilnadu was the first place and Assam was the last place regarding yield of sugarcane.

Figure 1 Annual Growth Rate of Sugarcane in India during the Study Period of 2000-2001 to 2016-2017

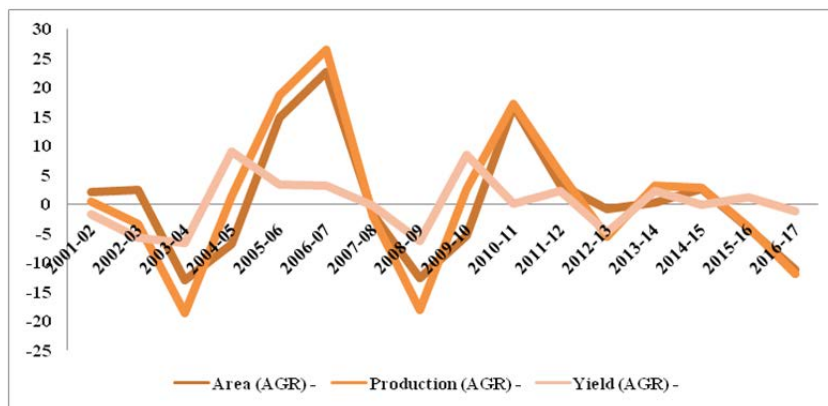


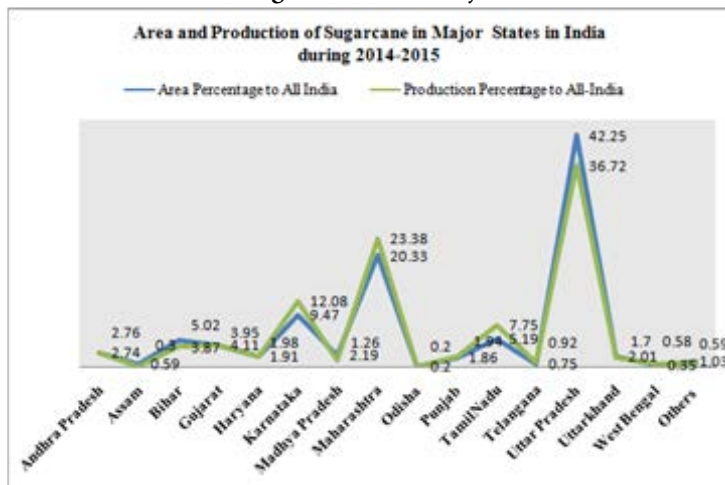
Table 3 Sugarcane Area, Production and Yield of Major Producing States in India in 2014-2015 (Area- Million Hectares, Production- Million Tonnes, Yield-Kg./ Hectare)

State	Area	Percentage to All-India	Production	Percentage to All-India	Yield
Andhra Pradesh	0.14	2.74	9.99	2.76	71849
Assam	0.03	0.59	1.10	0.30	36760
Bihar	0.25	5.02	14.03	3.87	55179
Gujarat	0.21	4.11	14.33	3.95	68894
Haryana	0.10	1.91	7.17	1.98	73907
Karnataka	0.48	9.47	43.78	12.08	91200
Madhya Pradesh	0.11	2.19	4.57	1.26	41144
Maharashtra	1.03	20.33	84.70	23.38	82232
Odisha	0.01	0.20	0.72	0.20	71929
Punjab	0.09	1.86	7.04	1.94	74883
TamilNadu	0.26	5.19	28.09	7.75	106788
Telangana	0.04	0.75	3.34	0.92	87974
Uttar Pradesh	2.14	42.25	133.06	36.72	62155
Uttarakhand	0.10	2.01	6.17	1.70	60608
West Bengal	0.02	0.35	2.11	0.58	118767
Others	0.05	1.03	2.14	0.59	*
All India	5.07	100.00	362.33	100.00	71512

Source: Directorate of Economics & statistics, DAC&FW (Agricultural Statistical Glance 2016)12.

*Since area/production is low in individual states, the yield rate is not worked out.

Figure 2 Areas and Production of Sugarcane in the Major States in India during 2014-2015



Conclusion

The study concluded that the sugarcane is an important commercial crop in India and it is a primary raw material for all major sweeteners produced in the country. However, the study shows that the overall area, production, and yield of sugarcane crop's annual growth rate performance are fluctuating. Among the states in India, Uttar Pradesh is the first place and Odisha is the last place regarding under cultivated of area and production of sugarcane whereas Tamilnadu is the first place and Assam is the last place regarding the productivity of sugarcane.

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