
Temporal Variability and Major Challenges of Sugar Production in Uttar Pradesh

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Abstract

The present study was envisioned to track down the spatial variability in production of sugar industries in Uttar Pradesh. There was main emphasize on spatial pattern, some issues and challenges which are being faced by the sugar industry and perspectives of sugar industries in Uttar Pradesh. Factor affecting sugar industries are also studied in this present study.

Key Words: *Spatial pattern, Sugar Industries, Sugar Mills, Spatial Variability, Sugarcane*

Introduction

Sugar industry is one of the key industries in the category of agro-based industry in India. India is among the leading consumers and producer of sugar in the world. Nearly about 5 crore farmers and their family's livelihood depend upon sugar industry directly or indirectly. In India 700 installed sugar mills having crushing capacity of about 340 lakh MT of sugar having their annual turnover about 80,000 crores. These figures show how the leading role in Indian economy is being played by sugar industry. But as the sugar prices tends to falling down for a couple of years in a row while sugarcane prices tend to moving up over the last few years, has create the serious problems for industry, including that of liquidity¹. Sugar industry also faces the problems of power shortage, old machinery, lack of up-gradation on industrial infrastructure and labor shortage, strikes of labor and increasing demand for more and more wages. Decreasing government assistance also creates the problems for sugar industry.

Literature Review

D.K Pandey and Vikas Agarwal studied the problems and challenges being faced by sugar industry. According to them in India sugar industry is going through a lot of problems in comparison with the sugar industry in various countries, and as most of private sugar mills are involved in providing the basic requirements which are paramount for the development rural

India such as education facility, health facilities and other facilities. So, it is utmost important to decipher the problems of sugar industry from initial stage (sugarcane) to final stage (sugar sale)².

Dr. Karigoleshwar (2018) discussed about the problems and challenges in the industry in north Karnataka and concluded that if India want to attain the prestige of self-sufficiency and the status of net exporter and want to become a important player in the field of international market, than to address the various issues there is need of some well-coordinated and concerted efforts for the Understanding and meeting the evolving needs of consumers, farmers and processors. Betterment in output both in terms of yield as well as sugar contents and sugar recovery with adaptation of better harvesting practices and affective linking between sugar mills and farmers becomes utmost important. In order to attain all these above mentioned objectives the government has to do a lot of work by giving support to sugar mills and to the farmers³.

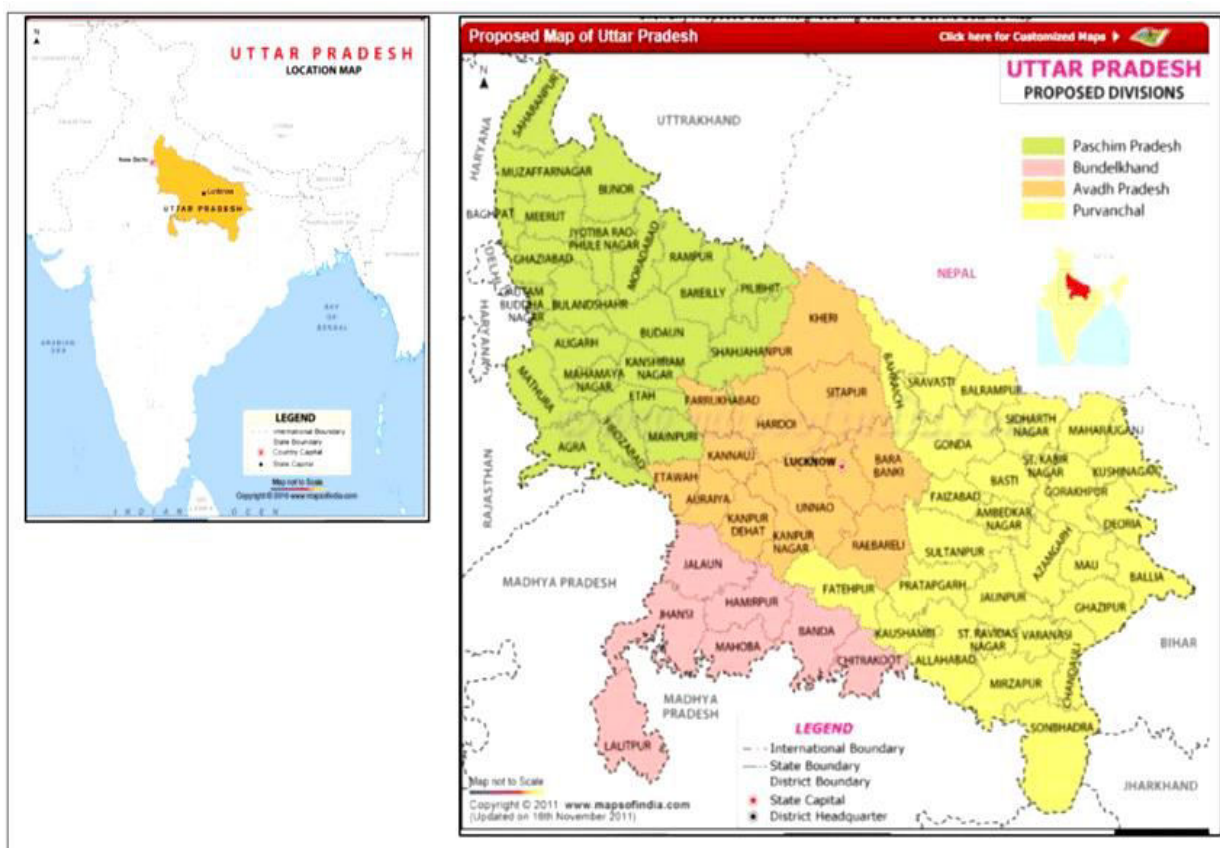
B. Kishori and S. Vigneshwari (2017) discussed about the problems of sugar industry and concluded that the use of resources in the Sugar industry is spatially organized by the countries which involved in production and sale and purchase of sugar in the world. Countries involved on production of sugar are generally developing located in tropical areas. According to them that the trade and export of sugar interconnect the world by this single product, this ensures more production of sugar to cater the requirements of sugar for consumption and use of sugar. More production of sugar will lead to consequences of serious health problems due to health effects and environmental effects. According to them the chain of farmers farming and producing the sugarcane, the workers working in refining process and engineers and exporters give birth to the interconnection of sugar⁴.

Dr. M. Venkateshwara Rao (2014) studied the problems of Indian sugar industry and concluded that as sugar industry comes under the category of agro-based industry, the trends in production of sugar fluctuate greatly as due to irregularity in monsoon and as output of the sugarcane is affected greatly by the fluctuations in price of sugarcane. Price of the competitive food crops and cane price fixed by government affects the availability of raw material which in return determines the output of sugar industry.⁵

Study Area

Indian state of Uttar Pradesh has been selected as study area for the present study. Having total geographical area of 243,286 square kilometers, it is fourth largest state in terms of area after Rajasthan, Madhya Pradesh and Maharashtra. Having total population 235.6 million population, it is most populated state of India. Located in north-central part of the country, it is a frontier state and shares its international border with Nepal which is 579 kilometer in length which spreads in seven districts of the state. Geographically it is situated between 23°52' to 30°24' northern latitude and 77°05' to 84°38' east longitude. In east-west its length is 650 kilometers

and 240 kilometers in north-south direction. It comprises of 7.33% of the total area of India. Ganga-Yamuna Doab, Ghagra plains, the Terai region are some important plains located in Uttar Pradesh which are being developed by depositional work of Ganga and its tributaries. Fertile alluvial soil and water provided by these rivers makes it one the fertile agricultural state of the country. Uttar Pradesh shares its border with Rajasthan in the west, Haryana, Himachal Pradesh and Delhi in the north-west direction, Bihar in the eastern direction, Madhya Pradesh in the south direction and with Jharkhand and Chhattisgarh in the south-east direction. From administrative point of view Uttar Pradesh has been divided into 75 districts and into 18 divisions while city of Lucknow is works as state capital.



Location map of Uttar Pradesh

Data Base

Following data base have been used for this study
Statistical Diary Uttar Pradesh, 2020
Statistical Data, Cane Commissioner, Uttar Pradesh

Aims and Objectives

Present study is an attempt to achieve the given objectives

1. To decipher the temporal pattern of Sugarcane in Uttar Pradesh
2. To examine the temporal pattern of sugar industry in the study area.
3. To analyse the factor affecting the productivity of sugar industry.
4. To study the issues and challenges are being faced by sugar industry.
5. To find out the suitable strategies to foster the industry

Methodology

For the present study the trend analysis of sugar industry has been done and graphical representation of the data has been to done.

Factor Affecting the Productivity of Sugar Industry

Following factors affect the productivity of sugar industry

1. Availability of raw material: availability of raw material i.e., sugarcane play its important role in localization, development and in productivity of sugar industry. As sugarcane is perishable crop means it lost its sucrose content quickly after harvesting of the crop, so it is important to locate the sugar industry near to the producing area to increase the sugar recovery after processing.
2. Power supply: to process the sugarcane production process availability of power supply in huge amount is essential, as sugar industry have to done processing, purification of sugar required uninterrupted power supply.
3. Availability of man power: to complete the whole process of sugar production is labor intensive. Which means it required a lot of man power. So availability of cheaper and skilled labor force is also an important factor affecting the production of sugar industry.
4. Means of transportation: availability of cheaper and speedy means of transportation is an important factor affecting the productivity of sugar industry. As sugarcane is perishable crop so easily and timely arrival of this crop from field to area of sugar mill required a well-developed network of transport to make sure the high recovery of sugar content after harvesting.
5. Availability of capital: establishment, maintenance transportation and labor force required huge amount of capital so availability of capital also affect the performance of sugar industry.
6. Government policies: government policies, subsidies, also play major role in development of sugar industry.
7. Climate: productivity and quality of sugarcane is greatly affected by weather conditions.

Trends in production of Sugarcane cultivation in Uttar Pradesh

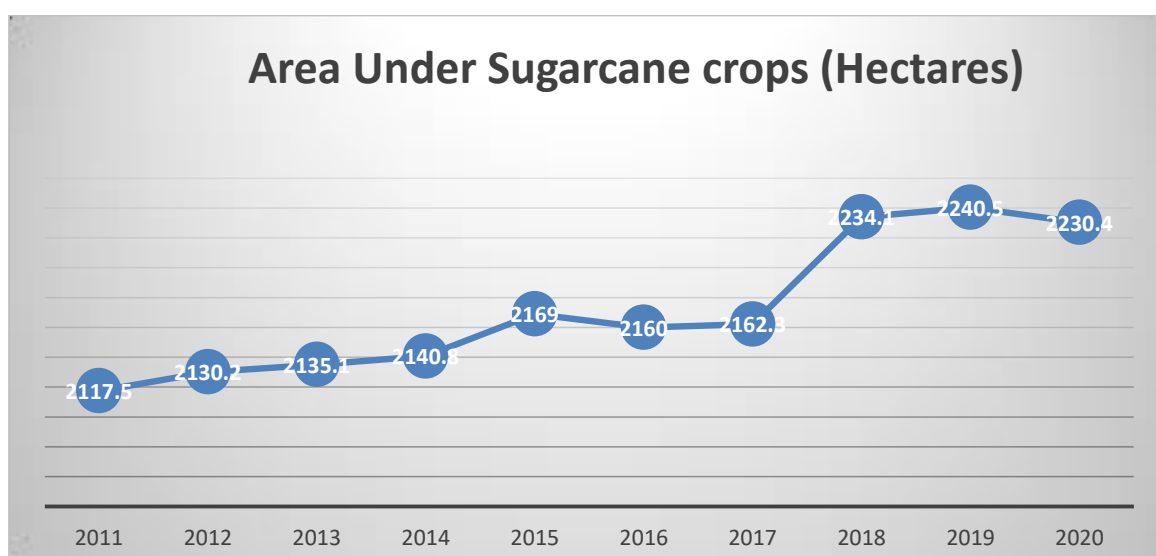
Table given below shows the trends in area under sugarcane, production of sugarcane and yield of sugarcane crop in Uttar Pradesh during the time period of 2011 to 2020. It shows

Table No. 1: Area under Sugarcane, Production of Sugarcane and Yield of Sugarcane in Uttar Pradesh during 2011-2020

Year	Area under Sugarcane Crop (Hectares)	Production of Sugarcane (000 Tonnes)	Yield of Sugarcane (Kgs/Hectares)
2011	2117.5	126110.0	595.70
2012	2130.2	127220.0	599.90
2013	2135.1	128111.0	605.25
2014	2140.8	133061.4	621.55
2015	2169.0	145385.0	670.29
2016	2160.0	140169.2	688.92
2017	2162.3	177056.0	698.93
2018	2234.1	179698.0	792.45
2019	2240.5	189677.0	808.07
2020	2230.4	198672.0	820.30

Data Source: Statistical Dairy of Uttar Pradesh 2020 and Statistical Abstract of Uttar Pradesh 2020.

Graph No.1: Area under Sugarcane (Hectares) in Uttar Pradesh during 2011-2020

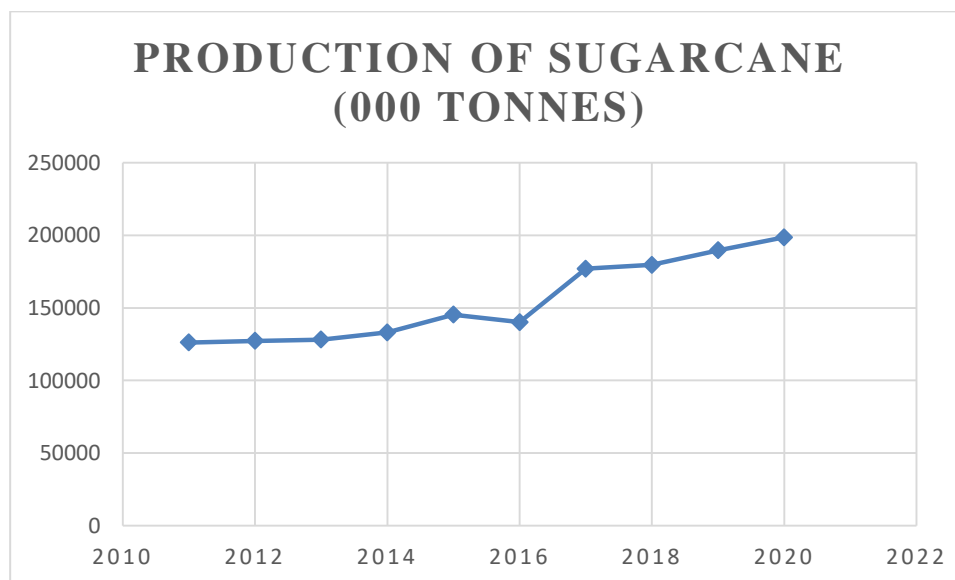


Data Source: Statistical Dairy of Uttar Pradesh 2020 and Statistical Abstract of Uttar Pradesh 2020.

that there are increasing trends in sugarcane acreage, output, and productivity. It is clear from the table that area under sugarcane in Uttar Pradesh showing the upward trends in the time period of 2011-2020. Years of 2012, 2013, 2014, 2015 and 2018-2019, witnessed the maximum increase in area under sugarcane in Uttar Pradesh i.e., 2130.2, 2135.1, 2140.8, 2169, 2234 and 2240 hectares as compare to the previous years on the other hand the years of 2016 and 2020 shows the decreasing trends in terms of area under sugarcane in Uttar Pradesh as compare to area under previous years, which was 2160.0 and 2234.4 hectares respectively.

If we discuss about the trends in production of sugarcane than we observe an upward trend in production of sugarcane in Uttar Pradesh. It is clear from the table that production of sugarcane in Uttar Pradesh is increasing during the time period of 2011-2020. Years of 2012 to 2015 and 2017 to 2020, witnessed the maximum increase in area under sugarcane in Uttar Pradesh i.e., 127220.0, 128111.0, 133061.4, 145385.0, 177056.0, 179698.0, 189677.0 and 198672.0 metric tonnes. From the table given above it is clear that the years of 2015, 2017, 2018, 2019 and 2020 witnessed the maximum increase in production of sugarcane as compare to the previous years on the other hand the years of 2016 shows the decreasing trends in terms of production of sugarcane in Uttar Pradesh as compare to area under previous years, which was 140169.2 metric tons, which shows declining trend than the production of sugarcane in 2015.

Graph No. - 2: Production of Sugarcane (000 Tonnes) in Uttar Pradesh during 2011-2020

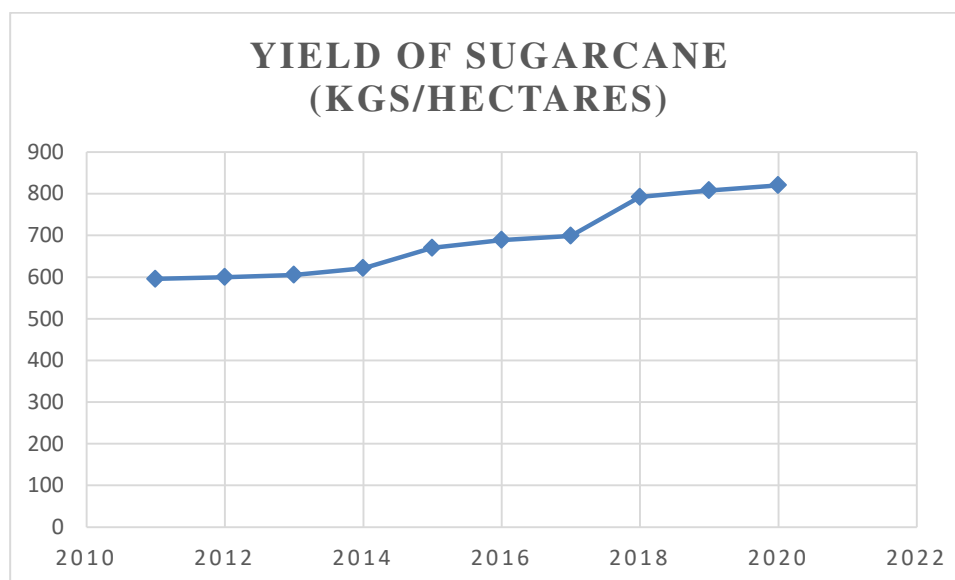


Data Source: Statistical Dairy of Uttar Pradesh 2020 and Statistical Abstract of Uttar Pradesh 2020.

If we discuss about the trends in yield of sugarcane than we observe that yield of sugarcane is increasing continuously in Uttar Pradesh. It is clear from the table that production of sugarcane

in Uttar Pradesh is increasing during the time period of 2011-2020. From the table given above it is clear that the years of 2015 and 2018 witnessed the maximum increase in yield of sugarcane as compare to the previous year's, rest of the years shows nominal increase in yield of sugarcane.

Graph No.- 3: Yield of Sugarcane (KGS/Hectares) in Uttar Pradesh during 2011-2020



Data Source: Statistical Dairy of Uttar Pradesh 2020 and Statistical Abstract of Uttar Pradesh 2020.

Production of Sugar in Uttar Pradesh during 2011-2020

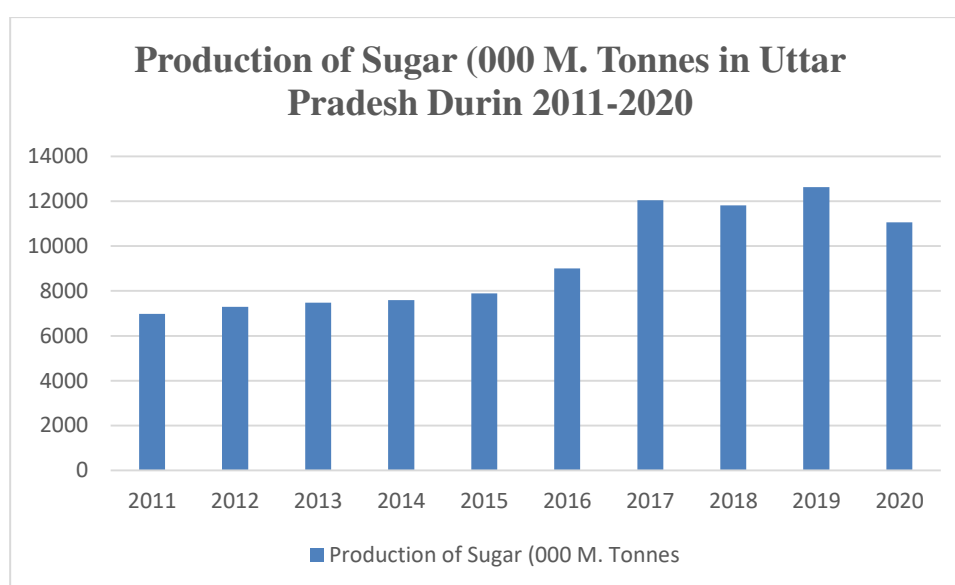
Table No.- 1: Production of Sugar in Uttar Pradesh during 2011-2020

Year	Production of Sugar (000 M. Tonnes)
2011	6974
2012	7300
2013	7480
2014	7590
2015	7889
2016	9012
2017	12050
2018	11822
2019	12637
2020	11059

Data Source: Statistical Dairy of Uttar Pradesh 2020 and Statistical Abstract of Uttar Pradesh 2020.

Above given table and graph given below show the trends in production of sugar in Uttar Pradesh during 2011-2020. From this table we can observe that there is continue increase in production of sugar in Uttar Pradesh except two years of 2018 and 2020 witnessed decline in production of sugar. Years of 2012, 2015, 2016, 2017, and 2019 witnessed the maximum increase in Sugar output in Uttar Pradesh while the years of 2013, 2014 witnessed moderate increase in production of sugar. After all discussion it can be started that the sugar output in Uttar Pradesh is going to up and downs and fluctuating from time to time.

Graph No.- 4: Production of Sugar (000 M. Tonnes) in Uttar Pradesh during 2011-2020



Data Source: Statistical Dairy of Uttar Pradesh 2020 and Statistical Abstract of Uttar Pradesh 2020.

Issues and Challenges being Encountered by Sugar Industry

Following are the issues and challenges are being encountered by sugar industry.

1. **Old Machinery:** in sugar mills of Uttar Pradesh machinery is very old and maintenance cost of this machinery is very high and it is difficult to replace this machinery with new one, which is costly and increase the burden on sugar mill which are facing too many problems. *Because of this old machinery the production of sugar got affected.*
2. **Unfavorable Government Policies:** government policies, cutting down of subsidies, increase power cess, and increase in power cut, heavy custom duty on import and export of machinery and final products, interstate custom duty, also affect the productivity of sugar industry.

3. **Labor Strikes:** frequently labor strikes by mill workers; politics of labor union for their demands also becomes a challenge for sugar mills.
4. **Scarcity of Pure Raw Material:** attack of insects, herbs etc affect the amount of sugar content in sugarcane and over utilization of chemicals, fertilizers, herbicides and insecticides also affect the amount and quality of sugarcane which affect the quality of sugar.
5. **Unfavorable climate,** lack of irrigation due to irregularity in rainfall and sometimes excess rainfall and floods also affect the sugarcane which in return affect the production of sugar industry.

Suitable Strategies to Protect the Sugar Industry

Following strategies shall be adopted to help the sugar industry to survive.

1. Allocation of sufficient funds to renovate and to install new machinery and sufficient support in terms of subsidies, loan and sufficient relaxation in interest will also be helpful in renovation of sugar industry.
2. To ensure the availability qualitative raw material, qualitative seeds, qualitative chemicals, fertilizers, insecticides etc. must be provide to the farmers in order to ensure the qualitative production of raw material. Arrangement of transport facilities, provision of sufficient power supply will also be useful.
3. Establishment of a effective mechanism to coordinate between labor unions and mill owners will also be useful to create affective environment which will be helpful in increase the production and productivity of sugar industry.

Conclusion and Recommendations

After discussing the trends in area under sugarcane in concerned state we can inference that it is increasing regularly in Uttar Pradesh during the time period of 2011-2020. After analyzing the data related to production and yield of sugarcane in Uttar Pradesh it can be concluded that the production and yield of sugarcane in Uttar Pradesh is increasing continuously some time at higher rate and sometimes at moderate rate.

After discussing about the trends in production of sugar in Uttar Pradesh it can be concluded that the production of sugar in Uttar Pradesh is increasing regularly though the rate of increase sometimes seems to be slow down sometimes due to result of a lot of factors such as availability of raw material, power shortage, lack of human resources, fluctuation in demand and export of sugar, condition of machinery, non-availability of capital resources, unfavorable government policies etc.

It can be concluded that provision of sufficient capital, low interest loan, provision of affective mechanism and coordination between sugar mill owners and labor union will also be useful to create a productive environment.

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