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## SPATIO TEMPORAL PERSPECTIVE OF SUGAR INDUSTRY IN KOLHAPUR DISTRICT OF MAHARASHTRA (INDIA)

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### ABSTRACT

**S**ugar industry is one of the most important agro based industry in the district. The increase of sugar cultivated area and growth of sugar industry has manifold effects on socio-economic conditions in the district. This attempt has been made to 2009-10 to 2014-15 area under sugarcane cultivation in Kolhapur district. There were 23 sugar factories existed in Kolhapur district in 2014-15. This was possible due to the sugarcane cultivation. Kolhapur district has extensive well irrigation facilities and well drained soil suitable for sugar cane cultivation, also farmers of the district taking efforts to provide high yielding varieties of sugarcane. The sufficient and well distributed monsoon rains; rapid population growth and substantial increases in sugar production capacity have made Kolhapur



district the largest sugar producer of Maharashtra.

**KEYWORDS:** Sugar industry, Sugarcane crushing, sugar production and Concentration etc.

### INTRODUCTION:

India is one of the largest producers of sugarcane and sugar in the world (Gaikwad, 2014; Kumbhar, 2016). At present India is the second sugar producing country in the world, the first being Brazil, accounting for around 15 per cent of the global sugar production. Sugar industry occupies an important place among organized industries in India. Sugar industry

being as agro-based industry plays important role in the national as well as state economy. Sugar industry accounts for a huge investment of over Rs.800 billion and provides employment to about five lakh rural peoples. Also the sector supports about 60 million farmers and their families are engaged in cane cultivation, making significant contribution towards socio-economic development in the rural areas of the India. Now a day Sugar industry has acquired great significance in India and Maharashtra. On account of this Maharashtra is known as sugar hub of the country. The production of sugar and the sugar recovery is

highest in Maharashtra in the country. There are 226 sugar industries installed with crushing of 0.60 million tons per day. Out of these 157 sugar industries are co-operative and 69 industries in private sector. The growth of sugar industry is not uniform through out of Maharashtra. Kolhapur district is one of the major sugar producing districts in the Maharashtra (India). It is known as sugar bowl of the Maharashtra. The economical Social and Educational development of the region has become possible because of the sugar co-operative movement. Sugar industry area is lot of employment in this region (Varkhade, 2010). Kolhapur district has area under sugarcane cultivation is 151238 hectares and 23 sugar factories during the year 2015. Kolhapur district contributed 13.53 per cent of total sugarcane area of the state. The

total crushing capacity of the sugar factories in Kolhapur district is about 95650 Mt, which are 17.10 per cent of Maharashtra state. The average recovery of the Kolhapur district is 12.55 per cent which is the highest as compared to other sugarcane producing district in Maharashtra.

Therefore in this paper an attempt has been made to study the spatio-temporal aspects of sugar industry in Kolhapur district.

**STUDY AREA**

The Kolhapur district is situated in South west part in Maharashtra State. The total area extend is of 7685 sq.km. which is about 2.50 per cent of the total area of the state. It lies between 15°43’ and 17°17’North latitudes and 73°40’ and 74°42’east longitudes. It is surrounded by Sangli district to the north, Belgum district of Karnataka state to the east and south and Ratanagiri and Sindhudurg district to the west. The main rivers of the district are Krishna, Warana, Panchaganaga, Doodhganga, Kumbhi-kasari, Hiranyakeshi which are helpful for irrigation and sugar cane production. This area lies under the tropical belt and its hot climate and humid atmosphere are favorable for the growth of sugarcane (Medhe, 2010). The climate ranges from the rainiest in the Gaganbawda region which has an average annual rainfall of over 4000 mm. This district consist 12 tahsils covering 1739 villages as per 2011census.The total population of the district is 38.74 lakh in 2011.

**OBJECTIVES**

The present study was under taken with the following objectives

1. To study the growth of crushing and sugar production.
2. To study the concentration of sugar factories.

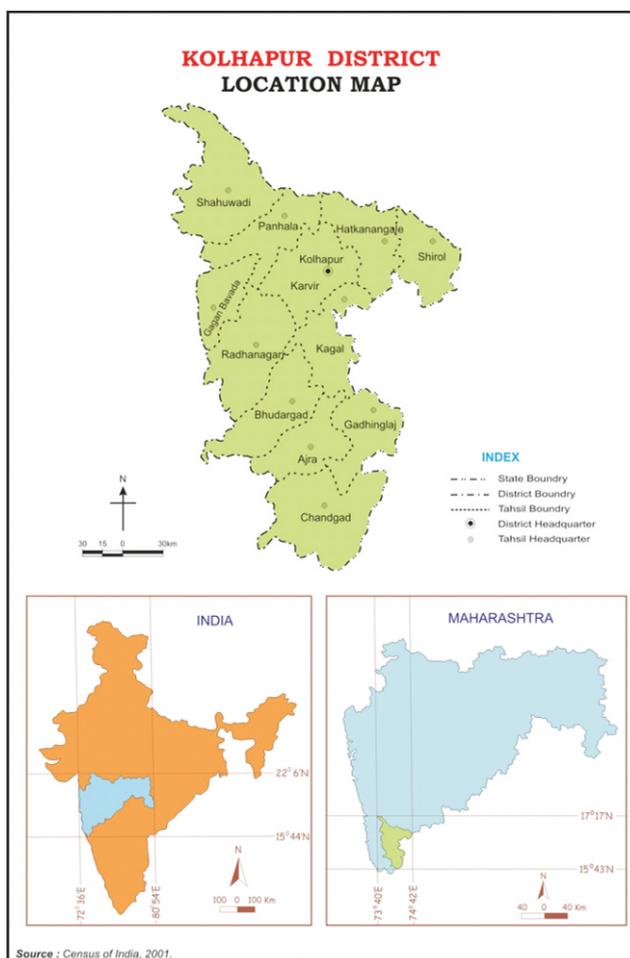


Fig. 1

**DATA BASE AND METHODOLOGY**

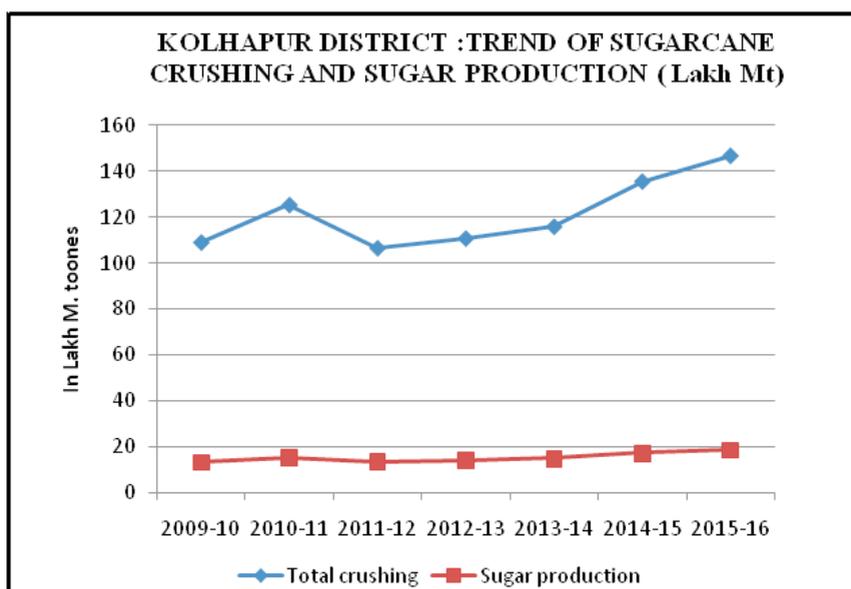
The study was conducted in Kolhapur district of Maharashtra. The present study is based on secondary data collected District Statistical Office, Department of Agriculture Kolhapur District. Season and Crop Reports published by the Department of Agriculture (2009-10 to 2014-15). Socio-economic Review of Kolhapur District, District Census Hand Book, Gazetteer Agricultural Epitomes and Agricultural Statistical information Maharashtra State etc. were also scanned for setting relevant information.

**Table No.1: Trend of Sugarcane Production in Kolhapur District**

Year	Total crushing	Growth rate (%)	Sugar production	Growth rate (%)	Recovery (in %)	Growth rate (%)
2009-10	108.97	00.00	13.37	00.00	12.27	00.00
2010-11	125.20	14.89	15.34	14.73	12.26	0.08
2011-12	106.49	-14.94	13.49	-12.05	12.67	3.35
2012-13	110.68	3.93	14.05	4.15	12.70	0.23
2013-14	115.83	4.65	14.86	5.76	12.83	1.02
2014-15	135.40	16.89	17.24	16.01	12.76	-0.54
2015-16	146.55	8.23	18.51	7.36	12.62	-1.09

Source: Maharashtra Rajya Sahakari Sakhar Karkhana Sangh Ltd, Diary – 2009-10 to 214-15.; Gavit, et.al, 2016

Table 1 reveal that the Trend of sugarcane crushing, Sugar production and Average recovery percentage in Kolhapur district during last 2009-10 to 2015-16. It is observing the table No.1 that sugar crushing; production and recovery were increased from 34.48, 38.44 and 2.85 per cent respectively. At the beginning of 2009-10, total crushing is 108.97 lakh metric tonnes and beside the sugar production is 13.37 lakh metric tons with 12.27 per cent recovery rate. In comparison to 2009-10 to 2010-11, Sugar production (13. 37 Lakh Mt. to 15.34 Lakh Mt) and Sugarcane crushing (108.97 Lakh Mt. to 125.20 Lakh Mt.) increased but sugar recovery is decreased 0.08 per cent. In the season 2011-12 sugar production (13. 37 Lakh Mt. to 15.34 Lakh Mt) and Sugarcane crushing (125.20 Lakh Mt. to 106.49 Lakh Mt.) was decreased due to incidence of disease and pests on crop and sugarcane purchase rate sugarcane crushing is delayed. After that sugarcane crushing, sugar production and average recovery was increased infrequently. In the case of 2014-15 average recovery percentages, it is decreased from 2014-15 due to the drought condition, water shortage from the beginning of summer last two year.



**Fig.2**

### SUGAR FACTORIES IN KOLHAPUR DISTRICT

Kolhapur districts are famous as sugar belt in the country. Sugar industry is one of the most important agro based industry in the district. The first sugar factory was started at Kolhapur in 1932. After that Late Shree Tatyasaheb Kore established Warana Cooperative sugar factory in 1956 at Warananagar of Kolhapur district. Today around 23 sugar factories, of which 17 are co-operatives and 06 are private factories in the district. In the last season (2015-16), a total of 21 sugar factories had crushed 146.55 lakh metric tons of cane and produced 18.51 lakh metric tons of sugar. The total daily crushing capacity of these sugar factories is 95650 metric tons. Out of the total sugar factories 02 sugar factories i.e Daulat Shetkari S. S.K Ltd, Halkarni and Indira Gandhi Mahila S. S.K Ltd, Tambhale had not crushed in the last season due to financial and local management problem.

Table 2 reveals that the spatial distribution of sugar factories in Kolhapur district. Largest number of Sugar factories is concentrated in the Kagal tahsil (04), followed by Karveer, Hatkanangale and Chandgad (each 3), Shirol and Panhala ( each 2) and Ajara, Gadhinglaj, Radhanagri, Gaganbawada, Shahuwadi and Bhudargad tahsils have ( each1) in Kolhapur district. Kagal, Karveer, Hatkanangale and Chandgad tahsils shared 50 per cent of Sugar factories of district.

**Table No. 2: Tahsil-wise Sugar Factories in Kolhapur District -2014-15**

Sr. No	Tahsil	Sugar Industry	Crushing Capacity	Cooperative / Private
1	Ajara	Ajara S. S.K. Ltd, Gavase	2500	
2	Gadhinglaj	Appasaheb Nalavde, S. S.K. Ltd, Harali.	2500	Cooperative
3	Kagal	Shri Chatrapati Shahu S. S.K, Kagal	5000	Cooperative
		Sadashivrao Mandlik S. S.K ,Hamidwada.	3500	Cooperative
		Dudhganga- Vedganga S. S.K.Ltd, Bidri.	4500	Cooperative
		Sirsenapati Santaji Ghorpade Sugar Factory Ltd,	3500	Private
4	Karveer	Chhatrapati Rajaram S. S.K Ltd, Kasbabavada, Kolhapur	3500	Cooperative
		Bhogavati S. S.K Ltd, Parite.	4000	Cooperative
		Kumbhi Kasari S. S.K Ltd, Kuditre.	3000	Cooperative
5	Radhanagri	Mahadik sugar and Agro product Ltd, Farale.	1250	Private
6	Gaganbawada	Dr. D. Y. Patil S. S.K Ltd,	2500	Cooperative
7	Shirol	Shri Datta Shetkari , Ltd, Shirol.	7000	Cooperative
		Gurudatta Sugars Ltd, Aakiwat-Takliwadi	4900	Private
8	Shahuwadi	Udayshingh Gaikawad S. S.K Ltd, Bambawade,	2500	Cooperative
9	Hatkanangale	Sharad Sahakari Sakhar Karkhana Ltd, Narande	2500	Cooperative
		Jawahar Patil S. S.K Ltd Hupari,	9000	Cooperative
		Deshbhakta Panchaganga S. S.K Ltd, Ichalkaranji	5000	Cooperative
10	Bhudargad	Indira Gandhi Mahila S. S.K Ltd, Tambhale.	2500	Cooperative
11	Panhala	Tatyasaheb Kore S.S. K, Warnanagar	12000	Cooperative
		Datta S. S.K Ltd, ( Dalmiya Bharat Suger) Asurle Porle	5000	Private
12	Chandgad	Daulat Shetkari S. S.K Ltd, Halkarni.	3500	Cooperative
		Ecocane Sugar Energy ( Nalavade Sugars Ltd, Mahalunge.	2500	Private
		Hemras Technology Ltd, Channhatti-Rajgoli	3500	Private
Total		23	95650	

Source: Maharashtra Rajya Sahakari Sakhar Karkhana Sangh Ltd, Diary, 2014-15.

Kolhapur district was also having continually flowing rivers like Warna, Krishna, Kumbhi, Kasari, Dudhganga, Panchganga, Vedganga and basins of these rivers containing fertile soil which is suited for sugarcane crop. It is mainly raised in the areas of availability of perennial source of irrigation, suitable climatic condition, Technological innovations like sprinkler, drip irrigation high yielding tonnage sugarcane and local spiritual leadership. The tahsils like Kagal, Karveer, Hatkanangale and Shirol come under the rivers cape area of the district. These tahsils are leading of sugarcane producing in Kolhapur district. The sugar industry is raw material oriented agro-based industry. There for the sugar industries are located in the sugarcane producing areas. The development of high yielding varieties of sugarcane, increased inputs of chemicals fertilizers and better this perennial crop management. The sugar factories were implemented different schemes for the development of sugarcane cultivation and to fulfill the demand of the raw material. As resulted in to high per hectare yield and high sugar recovery in cane and high extent of cane cultivation in this zone.

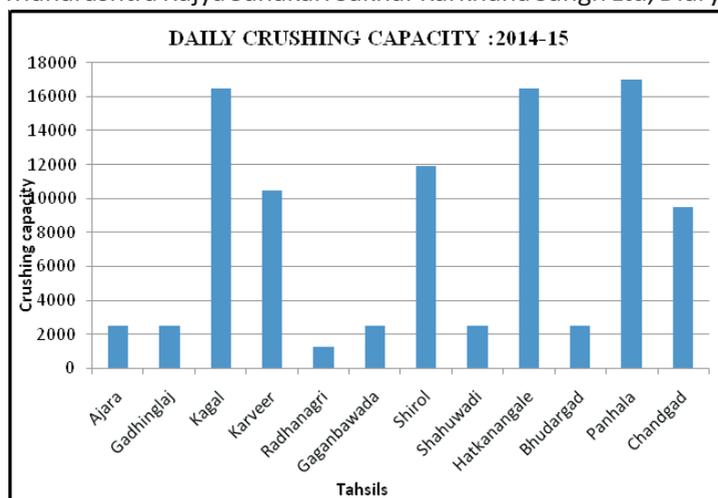
**DAILY CRUSHING CAPACITY**

Per day Daily crushing capacity of sugar industries in the Kolhapur district is 95650 metric tons. It is various from 1250 to 12000 TCD. Tatyasaheb Kore S.S. K, Warnanagar have the highest per day Daily crushing capacity is 12000 metric tons and Mahadik sugar and Agro product Ltd have lowest 1250 metric tons per day daily crushing capacity in Kolhapur district (fig.3).

**Kolhapur District Daily crushing Capacity Sugar Factories (2014-15)**

Sr. No	Tahsils	Crushing Capacity
1	Ajara	2500
2	Gadhinglaj	2500
3	Kagal	16500
4	Karveer	10500
5	Radhanagri	1250
6	Gaganbawada	2500
7	Shirol	11900
8	Shahuwadi	2500
9	Hatkanangale	16500
10	Bhudargad	2500
11	Panhala	17000
12	Chandgad	9500
Total	95650	

Source: Maharashtra Rajya Sahakari Sakhar Karkhana Sangh Ltd, Diary, 2014-15.



**Fig.3**

Daily crushing capacity mainly depends upon the availability of cane as well as the ability of personnel in avoiding mechanical stoppages, breakdowns and production bottlenecks (Mohite, 1947). Fig. 2 shows the tahsilwise daily crushing capacity in Kolhapur district. Phanala (17000 metric tons), Kagal and Hatkanangale (each 16500 metric tons) tahsils have topper in the sugarcane crushing because of this area possesses fertile alluvial soils of river basins and high rate of adoption of farm technology.

## CONCLUSION

We can conclude that Sugarcane cultivation is largely controlled by the physio- socio-economic conditions prevailing in the district. It has adequate irrigation facilities and other complementary inputs therefore maximum sugar factories are located in this area whereas Kagal, Karveer, Hatkanangale and Shirol. All essential factors are available for sugar industry in these tahsils. There are 23 sugar industries installed in Kolhapur district with average sugarcane crushing capacity is 95650 metric tons per day. Out of the total sugar mills in the district 2 factories are non- operating due to financial and other political problems. Average recovery of Kolhapur district is 12.55 per cent which is the highest as compared to Maharashtra. The farmers faced by the various problems poor quality fertilizers, shortage of fertilizers, manures, weeding, sugarcane cutting and labor problems especially crushing time. There is a need of coordinated and concerted effort for appreciation and consolidation of the needs of the consumer.

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