



SUGARCANE PRODUCTION IN AHMADNAGAR DISTRICT: A STATISTICAL ANALYSIS

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ABSTRACT:

The present paper is an attempt to analyse the spatio-temporal patterns of sugarcane productivity, variations in the area under sugarcane crop and the levels of sugarcane productivity in different tahsils of Ahmadnagar District. The entire work is based on secondary data. The tahsil has been taken as a smallest unit of the study.

Ahmadnagar district occupies an important place in Maharashtra State both from the point of view of the land under sugarcane crop and production of sugar. The cultivation of sugarcane in the district is mainly concentrated in Nevasa, Shrirampur, Rahta, Shrigonda and Kopargaon Tahsil. In recent years, the increase in the area under the sugarcane crop is mainly due to increased irrigation facilities in the district.

The analysis of sugarcane cultivation has revealed a vast variations and instability in the area and production of sugarcane of the district as well as different tahsils. There is also fluctuating changes in sugarcane productivity. During the study period, out of 14 tahsils in the district, 7 tahsils are included in high productivity regions (range of more than 75 M.T./Hectare). Among 14 tahsils in the district, Nevasa Tahsil has better situation in sugarcane area and production while Jamkhed Tahsil has worst situation in sugarcane area and production.

KEYWORDS: *Sugarcane, Productivity, Yield, Tahsil, Trend*

INTRODUCTION:

Sugarcane is the most important cash-crop in India and occupies an important place in Indian economy because it has a very high economic biomass to total biomass ratio. In recent years, there have been drastic changes in the productivity of sugarcane. It is declining due to excess use of water and imbalanced fertilizer doses. There is a need to study in-depth the progress in sugarcane production at district level to understand the problem more clearly.

Districts are the more appropriate administrative units to study regional variations in many aspects. However, agricultural performance generally differs widely within a district due to varying regional characteristics in terms of resource endowments and climate. Therefore, Ahmadnagar District is selected as a study region for the present research.

OBJECTIVE:

The main aim of this study is to analyse the tahsil-wise statistics of sugarcane productivity in Ahmadnagar district.

The other objectives of the study are as follows:

1. To study the temporal trend of sugarcane area and production in Ahmadnagar District.
2. To describe the intensity of sugarcane cultivation in different tahsils.
3. To compare the sugarcane productivity in different tahsils to the district.
4. To determine the sugarcane productivity zones of the district.

DATABASE AND METHODOLOGY:

The entire discussion in the present work is based on secondary data. The spatial and temporal data related to sugarcane crop have been obtained from District Socio-Economic Review Reports, District Census Handbook, and District Gazetteer. The data has been tabulated and analysed on the basis of 14 administrative units (tahsils) of the district.

In this study, at a district level, mainly 40 years (1970-71 to 2010-11) data and at tahsil level, data during 1997-98 to 2010-11 has been used for the spatio-temporal analysis of sugarcane cultivation. The spatial data during 1987-88 to 2010-11 related with sugarcane yield has been used to map out the levels of sugarcane productivity in the district. Here, sugarcane productivity computed on the basis of the total production and total area of sugarcane in respective administrative unit.

The entire discussion of this paper is arranged into two major sections. Section-I discusses the area and production of sugarcane. Section-II contains levels of sugarcane productivity in the district.

STUDY AREA:

For the present district level statistical analysis of sugarcane cultivation, the whole Ahmadnagar district is selected as a study unit. Ahmadnagar district is the most chronically drought prone region of Maharashtra State. It occupying a somewhat central position in Maharashtra State. It extends between 18^o22' North to 19^o59' North latitudes and 73^o32' East to 75^o37' East longitudes. As per 2011 (15th) Census, it is the sixth most populous (4543083) district in Maharashtra State. It has 4.04 percent of population and (17047.67 km²) 5.54 percent area of the Maharashtra State. The district is consisting of 14 revenue tahsils, 19 towns and 1581 villages. Topographically, the entire district can be divided into three major regions viz., Western Hilly Region, Central Plateau Region, Northern and Southern plain Region. There are two major river systems, the Godavari in the north and the Bhima a tributary of the Krishna in the south. The climate of the district is hot and dry. It is characterized by a hot summer and general dryness during all seasons except the south-west monsoon season. The average annual rainfall is 56.87 cm. There are three broad types of soils- Black, Red and Laterite Soil.

ANALYSIS AND DISCUSSION:

Ahmadnagar district occupies an important place in Maharashtra State both from the point of view of the land under sugarcane crop and production of sugar. Sugarcane is essentially an irrigated crop and requires plenty of water-supply. The increase in the area under the sugarcane crop is mainly due to increased irrigation facilities in recent years in the district. The cultivation of sugarcane is mainly concentrated in Nevasa, Shrirampur, Rahta, Shrigonda and Kopargaon Tahsil.

Changes in the Area, Production and Yield of Sugarcane in the District:

Table-1: Trends in Area, Production and Yield of Sugarcane in Ahmadnagar District

Year	Area (00 Hectare)	Production (00 Metric Ton)	Yield (Kg/Hectare)
1970-1971	317	35999	113562
1980-1981	469	49841	106271
1990-1991	532	47992	90211
1992-1993	530	43094	81309
1994-1995	600	54281	90468
1996-1997	546	44161	80881
1998-1999	596	52318	87782
2000-2001	671	51639	76958
2002-2003	494	33030	66862
2004-2005	170	10018	58929
2006-2007	930	61378	66000
2008-2009	1138	76225	67000
2010-2011	1295	116936	90314

The changes in the Area, Production and Yield of Sugarcane in Ahmadnagar District for the forty years (1970-71 to 2010-11) are given in table-1. During 1970-71 to 2010-11, the area, production and yield of sugarcane crop in the district have fluctuating trends. The area under sugarcane crop in the district increased from 317 hectares in 1970-71 to 1295 hectares in 2010-11. In 2004-05, minimum area under sugarcane crop (i.e., 170 hectares) is observed. On the contrary, maximum area under sugarcane crop (i.e., 1295 hectares) is seen in 2010-11. The production of sugarcane in the district has more fluctuating trend than the trend of sugarcane area. During the study period, the highest production of sugarcane is found in 2010-11 and the lowest in 2002-03. The productivity of sugarcane in the district decreased from 113562 kg/hectare in 1970-71 to 90314 kg/hectare in 2010-11.

Spatio-Temporal Variations in the Area, Production and Yield of Sugarcane

Sugarcane is the dominant crop in Ahmadnagar District. It is grown varying degrees in almost all tahsils of the district. Since 1997-98 to 2010-11, every tahsil in the district has the same increasing trend in the area of

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sugarcane crop (Table-2). There are five tahsils in the district, where the more than 10 percent arable land of the tahsil is under sugarcane crop. These Tahsils are Kopargaon, Nevasa, Rahta, Shrigonda and Shrirampur. In 1997-98 and 2010-11, Nevasa Tahsil has nearly one-fourth sugarcane area of the district. During the study period, the maximum percentage of sugarcane area is observed in Nevasa Tahsil and minimum in Ahmadnagar Tahsil.

Table-2: Tahsil-Wise Area of Sugarcane in Ahmadnagar District

Sr. No	Tahsil	Area (00 Hectares)				% of Tahsil's Agricultural Land				% of District's Sugarcane Area			
		1997-98	2001-02	2005-06	2010-11	1997-98	2001-02	2005-06	2010-11	1997-98	2001-02	2005-06	2010-11
1	Ahmadnagar	210	950	650	1269	0.88	0.94	0.67	0.94	0.48	1.47	1.28	0.98
2	Parner	752	N.A.	1565	6488	2.50	N.A.	1.09	4.70	1.73	N.A.	3.07	5.01
3	Shrigonda	5939	7380	10485	25302	34.74	5.95	9.13	20.01	13.64	11.38	20.60	19.54
4	Karjat	200	250	680	6194	1.46	0.24	0.70	5.42	0.46	0.39	1.34	4.78
5	Jamkhed	90	380	135	1530	0.47	0.39	0.15	1.28	0.21	0.59	0.27	1.18
6	Shevgaon	5237	5450	1430	7493	12.36	7.23	1.93	9.04	12.03	8.41	2.81	5.79
7	Pathardi	600	900	125	4605	1.06	0.90	0.11	4.09	1.38	1.39	0.25	3.56
8	Nevasa	10688	19690	5500	31368	27.99	24.18	7.33	31.37	24.55	30.37	10.80	24.23
9	Rahuri	5976	11350	2577	7998	29.02	18.31	3.70	9.59	13.73	17.50	5.06	6.18
10	Sangamner	4200	7250	7452	6319	8.85	8.60	7.56	6.53	9.65	11.18	14.64	4.88
11	Akola	2340	190	1650	2249	7.46	0.50	4.02	4.33	5.38	0.29	3.24	1.74
12	Kopargaon	3200	5750	7382	11711	18.70	9.55	13.71	18.37	7.35	8.87	14.50	9.04
13	Rahta	-	-	4500	9504	-	-	11.39	20.59	-	-	8.84	7.34
14	Shrirampur	4100	5300	6772	7449	17.19	10.00	13.99	12.20	9.42	8.17	13.30	5.75
District Total		43532	64840	50903	129479	11.42	5.73	4.41	9.72	100.00	100.00	100.00	100.00

Table-3 :Tahsil-Wise Production and Yield of Sugarcane in Ahmadnagar District

Sr. No	Tahsil	Production (00 Metric Ton)				% of District's Sugarcane Production				Yield (Kg/Hectare)			
		1997-98	2001-02	2005-06	2010-11	1997-98	2001-02	2005-06	2010-11	1997-98	2001-02	2005-06	2010-11
1	Ahmadnagar	143	523	286	1068	0.39	1.26	0.62	0.86	68095	55053	44000	84161
2	Parner	827	N.A.	1437	5793	2.23	0.00	3.11	4.66	109973	75000	91821	89288
3	Shrigonda	5701	5314	12572	28238	15.40	12.8	27.17	22.71	95993	72005	119905	111604
4	Karjat	98	178	542	4963	0.26	0.43	1.17	3.99	49000	71200	79706	80126
5	Jamkhed	36	156	177	763	0.10	0.38	0.38	0.61	40000	41053	131111	49869
6	Shevgaon	3666	1145	440	4282	9.90	2.76	0.95	3.44	70002	21009	30769	57147
7	Pathardi	396	423	53	5028	1.07	1.02	0.11	4.04	66000	47000	42400	109186
8	Nevasa	8657	13586	5130	29627	23.38	32.73	11.09	23.83	80997	68999	93273	94450
9	Rahuri	6215	6810	2246	9614	16.79	16.41	4.85	7.73	103999	60000	87156	120205
10	Sangamner	3612	6018	7668	6201	9.76	14.50	16.57	4.99	86000	83007	102899	98133
11	Akola	2106	226	1053	1620	5.69	0.54	2.28	1.30	90000	118947	63818	72032
12	Kopargaon	2080	3795	5315	10232	5.62	9.14	11.49	8.23	65000	66000	71999	87371
13	Rahta	N.A.	N.A.	4100	9462	N.A.	N.A.	8.86	7.61	N.A.	N.A.	91111	99558
14	Shrirampur	3485	3339	5255	7456	9.41	8.04	11.36	6.00	85000	63000	77599	100094
District Total		37023	41511	46273	124346	100	100.0	100.0	100.0	85048	64021	90904	96036

The production of sugarcane in the district doubled in four decades increasing from just 3599900 M.T. in 1970-71 to 11693600 M.T. in 2010-11.

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During the middle period (Between 1970-71 and 2010-11) unstable trends have been observed in the production of sugarcane. Among 14 tahsils, Nevasa Tahsil has the highest production of sugarcane and Jamkhed Tahsil has the lowest. Nevasa tahsil accounts for nearly 24 percent of the production of the district. Vast alluvial plain, large scale use of irrigation and fertilizers are the important factors which have helped Nevasa Tahsil to acquire this status. Table-3 shows that Shrigonda, Shevgaon, Kopargaon, Rahuri, Rahta and Shrirampur are the other important sugarcane producing tahsils in the district. During 14 years (1970-71 to 2010-11), except Akola tahsil all tahsils in the district has the same increasing trend in the production of sugarcane. The yearly growth rates of sugarcane production of eight tahsils (viz., Karjat, Jamkhed, Pathardi, Ahmadnagar, Parner, Shrigonda, Kopargaon and Nevasa) are greater than the district's average (16.85%) and remaining six tahsils have below the average of district.

There are also large variations in the yield of sugarcane in different tahsils. During study years, the largest yield (131111 Kg/hectare) has been observed in Jamkhed Tahsil (in 2005-06) and smallest yield (21009 kg/hectare) in Shevgaon Tahsil (in 2001-02). The number of tahsils which have the higher yield than the district's average yield increased from five in 1997-98 to six in 2010-11. During study years (1970-71 to 2010-11), out of 14 tahsils in the district, 3 tahsils i.e., Akola, Parner and Shevgaon Tahsil have the negative trends. The highest positive change in the yield of sugarcane is seen in Pathardi Tahsil and smallest or negative change in Parner Tahsil.

Levels of Sugarcane Productivity in the District

On the basis of the average sugarcane productivity of different tahsils, the entire district is divided into three broader productivity regions. These are as follows:

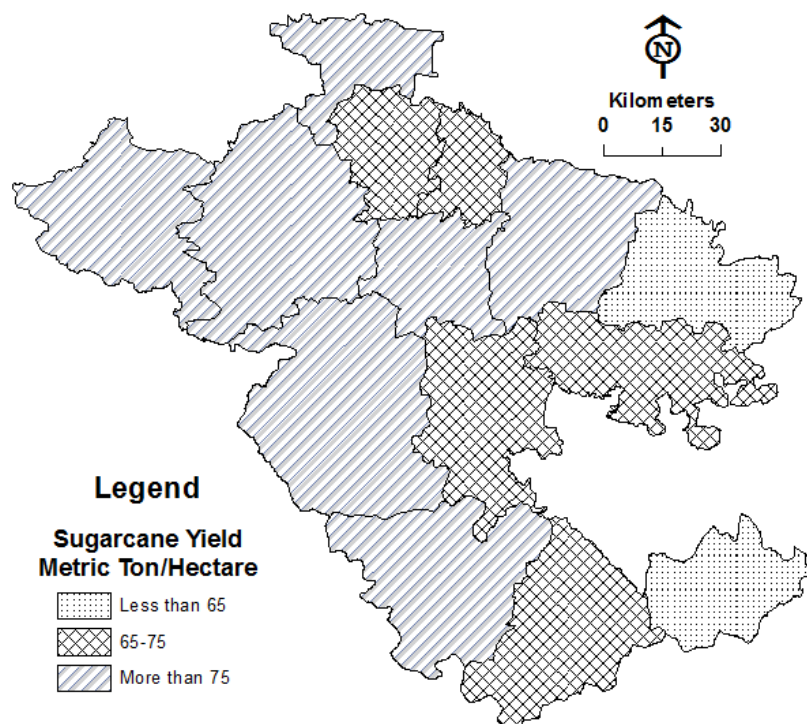
Table-4: Sugarcane Productivity Regions in Ahmadnagar District

Sr. No	Regions	Class Interval (Metric Ton / Hectare)	Included Tahsils	No of Tahsils
1	High Productivity	More than 75	Akola, Kopargaoon, Parner, Nevasa, Rahuri, Sangamner and Shrigonda,	7
2	Medium	65-75	Ahmadnagar, Pathardi, Karjat, Rahta and Shirampur	5
3	Low Productivity	Less than 65	Shevgaon and Jamkhed	2

Map-1 and Table-4 provides information on the number of tahsils in different productivity categories alongwith distribution of their average sugarcane productivity. The per hectare productivity is below 65 M.T./Hec. in only two tahsils of the district. About 35 percent of tahsils recorded productivity between 65 and 75 M.T./Hec. and fifty percent tahsils recorded productivity above 75 M.T./Hec. Low- productivity tahsils are generally found to be smaller in area than the high productivity tahsils. Generally, tahsils of low productivity are characterized by low rainfall and low irrigated area which also result in a lesser amount of fertilizer use.

In terms of regional variations in sugarcane productivity it has been observed that sugarcane productivity per unit of net sown area in most productive tahsil (Sangamner Tahsil) in Ahmadnagar District is more than 54 percent of the tahsil having lowest productivity (Jamkhed Tahsil).

Map-1
Sugarcane Productivity Regions in Ahmandnagar District



CONCLUSION AND SUGGESTION:

The analysis of sugarcane cultivation in Ahmadnagar District during the 40 years has revealed a vast variations and instability in the area and production of sugarcane of the district as well as different tahsils. There is also fluctuating changes in sugarcane productivity. During the period 1987-88 to 2010-11, nearly 50 percent tahsils included in high productivity regions (range of more than 75 M.T./Hectare). Among 14 tahsils in the district, Nevasa Tahsil has better situation in sugarcane area and production. On the contrary, Jamkhed Tahsil has worst situation in sugarcane area and production. But in Jamkhed Tahsil, highest sugarcane productivity was recorded in 2005-06.

To increase the sugarcane productivity in low and medium productivity tahsils of the district, the emphasis should be laid on land reform measures, technological change and infrastructure development (mainly irrigation). Simultaneously, it is necessary to bring about changes in the attitude of farmers

and aware them about selection of high yield varieties and new water conserving methods.

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