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Growth Pattern of Sugarcane and Problems of Its Marketing in India

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ABSTRACT: *Paper makes an attempt to examine growth patterns of sugarcane in different states of the country, factors affecting its price and problems of its marketing over the period (1980-81 to 2014-15) in India as a whole and Uttar Pradesh in particular. Paper is mainly based on the secondary data and information. India occupies the second position in the world, next only to Brazil in regard to sugarcane production. The positive trend in area, production and productivity of sugarcane in U.P. makes in evident that the performance of crop in the state is satisfactory as compared to national level. This paper suggests that it is necessary to fix sugarcane price by Central Government on a long term basis, say at least for three years with provision of suitable escalation to provide for the changing pattern of realization. Also a great inadequacy of Indian roads system is felt in view of the need of better marketing of agricultural produce particularly in case of sugarcane crop. This is an unexplored area of research which has been covered in this paper.*

Keywords: *Fixation of Sugarcane Price in India, Growth Pattern of Sugarcane, Problem of Sugarcane Marketing, Transportation of Sugarcane*

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I. INTRODUCTION

India is one of the leading sugarcane producing countries in the world. It occupies the second position, next only to Brazil in regard to area under sugarcane and sugarcane production. [1] The average area and production of sugarcane is to the tune of 3310.60 thousand hectares and 205726.20 thousand tons respectively during 1980-81 to 1994-95. India shares the fifth position with Brazil in respect to the productivity recording 61.80 tons per hectare during the reference period. Indonesia occupies the first position in productivity (82.93 tons per hectare) followed by Australia (81.10 tons per hectare), USA (79.20 tons per hectare) and Mauritius (77.29 tons per hectare) during 1980-81 to 1994-95 (Table- 1). The positive trend in area, production and productivity of sugarcane in U.P. makes in evident that the performance of crop in the state is satisfactory as compared to national level. Sugarcane is a perishable crop and cannot be store like other agricultural crops (cotton, wheat, rice etc), which reduces bargaining power of farmers and effects sugar mills in many ways.

The average area under this crop in UP is 1718.33 thousand hectares, recording 51.90 per cent of the national acreage, which is the first position among all sugarcane growing States of India. It also occupies top position in respect of production (89324.47 thousand tons) but ninth position in respect of productivity (51.71 tons per hectare) during the same period. Quite a large number of special programmes have been launched by the Central and State Governments for development of sugarcane crop. Research centres specially made for generation of technology in sugarcane have also been functioning in different regions. This paper makes an attempt to examine growth patterns of sugarcane over the period in the country.

Another aspect, which is closely related to the area, production and productivity of sugarcane, is its marketing. The most important thing for crop is its perishable nature. The perishable nature of sugarcane crop also limits the options for the cultivators. They have to sell their sugarcane within a very short period, otherwise it will go dry and they would be put into a great loss. The farmers cannot store it. Sugarcane has to be cut from fields and it has to be transported immediately to some nearby sugar processing centres and thereafter it must be crushed and juice converted into sugar without loss of time. Hence, the organization of cane marketing and the role of different means of transport and good roads in factory areas are of considerable importance, calling for more urgent attention.

[1] Indian Sugar Year Book (ISMA), New-Delhi, (1980 to 2014).

Table-1: Average area, production and productivity of sugarcane in major producing countries of the world during 1980-81 to 2013-14.

Sl. No.	Countries	Area (000 ha)	Production (000 tons)	Productivity (tons per ha)
1	Brazil	4169.47	257950.47	61.80
2	India	3310.60	205726.20	61.80
3	Cuba	1265.33	62797.87	49.40
4	China	1023.40	61255.47	59.78
5	Pakistan	817.20	32282.73	39.11
6	USA	330.27	26106.47	79.20
7	Australia	325.27	26398.40	81.10
8	Indonesia	321.93	26681.27	82.93
9	Bangladesh	169.73	6764.07	39.88
10	Mauritius	73.47	5670.67	77.29

Source: Average calculated from the data of different ISMA Year Books

II. OBJECTIVES

The main objectives of this paper are as follows:

1. The examine the trends in area, production and productivity of sugarcane in different states of India and compare the same with national and global levels;
2. To examine and analyze the present pattern of sugarcane marketing;
3. To examine and analyze the role of different means of transportation of sugarcane.
4. To suggest some suggestions for the improvement of sugarcane marketing.

III. METHODOLOGY

This paper intends to study and examine the issues framed in the objectives, with the reference of growth patterns of sugarcane, sugarcane marketing and its transportation problems. Paper is mainly based on the secondary data and information. Different published sources have been utilized. The corresponding data in respect of different states of India and major sugarcane producing countries of the world are collected from different published sources of India Sugar Year Book, New Delhi. Other data related to the UP has been collected from Cane Commission's Office, Lucknow. The compound growth rate of area, production and productivity has been calculated by using the following formula:

$$r = \left[\left(\frac{Y1}{Y0}\right) - \begin{matrix}1/t\\ 1\end{matrix}\right] \times 100$$

In the logarithmic form, equation is as follows:

$$r = \left[Anti\ Log\ \left(\frac{\Sigma Log\ Pt - \Sigma Log\ Po}{\Sigma t}\right) - \ 1\right] \times 100$$

Whereas:

Σ Log Pt	=	Log ×1 + Log × 2+ Log ×n …….
Σ Log Po	=	n × Log × 1
Σ t	=	n (n-1)/2
Y1 or Pt	=	Current year
Yo or Po	=	Base Year
T	=	Time or number of years
Xn	=	Frequency
R	=	Compound Growth Rate

IV. RESULTS AND DISCUSSION

4.1 Trends in Area, Production and Productivity of Sugarcane:

The area, production and productivity of sugarcane in the world during 1985-86 to 1994-95 are presented in Table-2. [2] The area and production of sugarcane which were 15920 thousand hectares and 932178 thousand tons in 1985-86 increased to 18318 thousand hectares and 1147992 thousand tons up to 1994-95. But the productivity of sugarcane which was 58.55 tons per hectare has not increased remarkably and reached up to 62.67 tons per hectare during the period.

[2] FAO Production Year Book, 1986 to 1995.

Table-2: Area, production and productivity of sugarcane in the world

(1985-86 to 1994-95)

Sl. No.	Year	Area (000 ha)	Production (000 tones)	Productivity (tons per ha)
1	1985-86	15920	932178	58.55
2	1986-87	16563	967878	58.44
3	1987-88	16955	996078	58.75
4	1988-89	17972	1090802	60.69
5	1989-90	16878	1035096	61.33
6	1990-91	16998	1038-92	61.07
7	1991-92	17100	1046287	61.19
8	1992-93	17606	1075893	61.11
9	1993-94	N.A.	N.A.	N.A.
10	1994-95	18318	1147992	62.67

N.A. - Not Available

Source: FAO Production Year Book, 1986 to 1995

The growth rates of area, production and productivity are positive but the growth rate of productivity is poor and only 0.59 per cent, whereas the growth rates of area and production are statistically significant during this period at global level (Table- 3). The growth rates of area under sugarcane are positive in all countries except Cuba (-0.37%). The trend of growth rate of production is statistically significant in all the countries except Cuba and Mauritius during this period. The growth rate of productivity is not satisfactory as 50 per cent if the major sugar producing countries show a negative growth rate during the period 1980-81 to 1994-95. Countries like Cuba (-3.31%), China (-0.10%), USA (-0.57%), Indonesia (-0.93%) and Mauritius (-1.08%) show a negative growth rate of productivity during the period. India during the period 1980-81 to 1994-95 registers a productivity of 1.40 per cent per annum. It is clearly indicative fact, that during this period, the productivity growth of sugarcane in the world (0.59%) shows the stagnancy over the period.

Table-3: Compound growth rates of area, production and productivity of sugarcane in major producing countries of the world from 1980-81 to 2013-14

Sl. No.	Countries	Area (%)	Production (%)	Productivity (%)
1	India	2.51	3.94	1.40
2	Brazil	1.08	2.00	0.92
3	Cuba	-0.37	-3.67	-3.31
4	China	2.26	2.15	-0.10
5	Pakistan	3.03	4.75	1.61
6	USA	1.92	1.33	-0.57
7	Australia	2.03	2.56	0.51
8	Indonesia	3.00	2.04	-0.93
9	Bangladesh	1.49	2.14	0.64
10	Mauritius	0.57	-0.52	-1.08
	World	**1.68**	**2.28**	**0.59**

Source: Calculated from the data of different ISMA Year Books

The area, production and productivity of sugarcane of India and UP, during 1980-81 to 2014-15 are given in Table-4. It shows that the area, production and productivity of sugarcane increased in the country from a level of 2667 thousand hectares to 5322 thousand hectares, 154248 thousand tons to 354800 thousand tons and 57.84 tons per hectare to 69.89 tons per hectare during the period respectively. The production and productivity of sugarcane in UP have increased from 1363 thousand hectares to 2190 thousand hectares, 64205 thousand tons to 129840 thousand tons and 47.11 tons per hectare to 60.00 tons per hectare respectively during the period.

Table-4: Area, production and productivity of sugarcane in India and UP

(1980-81 to 2014-15)

Years	Area (000 ha)	Production (000 tons)	Productivity (tons per ha)	Area (000 ha)	Production (000 tons)	Productivity (ton per ha)
	India			Uttar Pradesh		
1980-81	2667	154248	57.84	1363	64205	47.11
1981-82	3193	186358	58.36	1660	76440	46.05
1982-83	3358	189506	56.43	1783	81387	45.65
1983-84	3110	174076	55.97	1688	78244	46.35
1984-85	2953	170319	57.68	1543	77888	45.54
1985-86	2862	171681	59.99	1490	73058	49.03
1986-87	3079	186090	60.44	1648	84736	50.50
1987-88	3279	196737	60.00	1801	93064	51.67
1988-89	3329	203037	60.99	1761	88523	55.32
1989-90	3438	225569	65.61	1761	97422	55.32
1990-91	3686	241045	65.39	1856	103562	55.80
1991-92	2844	253995	66.08	1933	111098	57.47
1992-93	3572	228033	63.84	1858	102929	55.40
1993-94	3422	229659	67.11	1761	104082	59.10
1994-95	3867	275540	71.25	1839	110239	59.95
1995-96	4150	281100	67.78	1974	119830	60.07
1996-97	4170	277560	66.49	2111	125348	59.40
1997-98	3966	279545	71.13	1985	129267	65.01
1998-99	4050	288721	71.20	1974	116483	59.00
1999-00	4200	299325	70.94	2011	115419	57.40
2000-01	4322	295963	68.58	1938	106068	54.70
2001-02	4412	297215	67.37	2035	117982	58.00
2002-03	4524	287388	63.57	2167	122062	56.30
2003-04	3966	233870	59.38	2030	112864	55.50
2004-05	3666	237086	64.75	1955	118720	60.70
2005-06	4200	281179	66.92	2156	125560	58.20
2006-07	5156	355521	69.02	2247	133921	59.60
2007-08	5066	348190	68.87	2179	124855	57.20
2008-09	4424	285034	64.55	2084	109080	52.33
2009-10*	4178	292300	70.02	1977	117180	59.20
2010-11*	4945	339170	68.60	2135	120565	56.70
2011-12*	5035	342200	68.09	2162	128850	59.60
2012-13*	5225	352500	69.02	2172*	129022*	59.70*
2013-14*	5235	352700	69.37	2179*	129530*	59.80*
2014-15*	5322	354800	69.89	2190*	129840*	60.00*

Source: ISMA, Sugar Year Book (1980-1996& 2011-12)
*Estimated

The compound growth rates (CGR) of area, production and productivity in different sugarcane growing states of India are shown in Table-5. Trend in growth in area (2.51%) production (3.94%) and productivity (1.40%) are positivity significant at all India level. Among all the sugarcane growing states in India, Gujarat shows highest growth rate in production (6.10%) and highest in area (4.96%) next only to Karnataka (5.39%) Orissa is the only state which registers negative growth rates in all the three areas of area (-5.80%), production (-6.06%) and productivity (-0.27%) during the period 1980-81 to 1994-95. Uttar Pradesh shows a positive trend in growth rate in area, production and productivity. The growth rate of productivity is fairly higher in case of Bihar (2.59%) as compared to UP (1.62) during the period, followed by (2.47%) Haryana, (2.17%) Kerala and (2.05%) Madhya Pradesh. The low growth rate of productivity is mainly due to the lack of irrigation facility, more dependency of rain water, which is uncertain, low type of technology use by the farmers and less use of good quality of sugarcane as farming. The growth rate of area in states follows as such Assam (-1.90%), Bihar (0.69%), Haryana (0.28%), Kerala (-1.90%), Madhya Pradesh (-0.35%), Orissa (-5.80%), and Rajasthan (-1.82%), during the period 1980-81 to 1994-95 (Table-5). The growth rate in these states is due to lack of

dependable market super which constrained the famers to use yield raising technology. [3] At national level the growth rates of area, production and productivity are positive. It shows that the growers of sugarcane at national level have adopted modern technology, which has increased productivity. Along with the rise in productivity and significant rise in area indicated that there is dependable market super for sugarcane in India.

Table-5: CGR of area, production and productivity of sugarcane in different states of India

(1980-81 to 1994-95)

States	Area	Production	Productivity
Assam	-1.90	-0.90	1.02
Andhra Pradesh	3.11	3.17	0.05
Bihar	0.69	3.30	2.59
Gujarat	4.96	6.10	1.09
Haryana	0.28	2.76	2.47
Karnataka	5.39	5.21	0.74
Kerala	-1.90	0.23	2.17
Madhya Pradesh	-0.35	1.69	2.05
Maharashtra	4.81	4.28	-0.50
Orissa	-5.80	-6.06	-0.27
Punjab	1.05	1.85	0.79
Rajasthan	-1.82	-1.09	0.74
Tamil Nadu & Pondicherry.	3.87	4.55	0.65
Uttar Pradesh	2.02	3.67	1.62
Others	-0.48	-0.02	0.46
Total	**2.51**	**3.94**	**1.40**

Source: ISMA, Sugar Year Book (1980-1981 to 1994-95)

The classification of growth rates of area, production and productivity of major sugar producing countries of the world and the states of the India during the period 1980-81 to 1994-94, has been shown in table-6. The significant fact is that most of the countries of the world including India have a positive growth rates in area, production and productivity during this period. Maharashtra state along with the countries like USA, China and Indonesia have shown positive growth rates in area and production but a very nominal negative growth rate in the productivity. On the other side, Assam and Rajasthan states are showing negative growth rates in area and production but normal positive growth rate in productivity. Orissa is the state, which is showing similarity with the Cuba in the sense that the growth rate of area, Production and productivity are negative during the period. The most significant event which can be ideal for any crop reducing area but increasing in production and productivity are found in the case of Madhya Pradesh and Kerala, where growth rate of area is negative but the growth rates of production and productivity are found positive during the period (Table-6).

Table-6: Classification of growth rates of area, Production and productivity of sugarcane

Classification	Major sugarcane producing states of India	Major sugarcane producing Countries of world
+A+P+Y	Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Punjab, Tamil Nadu & Pondicherry, Uttar Pradesh	India, Brazil, Pakistan, Australia, Bangladesh
+A+P+Y	Maharashtra	USA, China, Indonesia
-A+P+Y	Madhya Pradesh, Kerala	……
-A-P+Y	Assam, Rajasthan	…….
+A-P-Y	Nil	Mauritius
-A-P-Y	Orissa	Cuba
A=Area P= Production Y= Productivity	(-) = Negative Growth (+) = Positive Growth	

[3] Tyagi, R .C. (1995) Problems and Prospects of Sugar Industry in India: Alternate Strategies for Development'. Mittal Publications, New Delhi

At global level, a signification rise in area, production and productivity has been found during the period. The significant rise in output has been influenced by the significant rise in area and productivity. One of the related factors to the acreage and production of sugarcane crop is its marketing and policy. In India, marketing of sugarcane is a subject of its pricing policy, decided by Central and State Governments. At this juncture, it is necessary to examine and analyze the present pattern of sugarcane marketing and its related problems.

4.2 Pattern of Sugarcane Marketing:

Sugarcane is the main raw materials of sugar industry, khandsari units and gur manufactures. The cost of sugarcane accounts for a large proportion of total production cost. Most of the sugar factories in India depend for their requirement of cane on a large number of cane growers. [4] The number of farmers who supply cane varies broadly from region as also from factory to factory. A noticeable feature of the sugar industry is that majority of the factories obtain a considerable quantity of sugarcane from long distance. Only a few factories manage to get all the sugarcane they require from their gate area, that is, an area roughly within a radius of 15 kilometers or so. In North India, arrangements for purchasing cane from distance areas are made by opening outstation purchasing centres where cane growers deliver their sugarcane and from that the factories transport it by rail or road to their gates. In South India, except for a few factories delivery is taken at the factory gate even though the sugarcane might be coming from 80-100 kilometers from the factory.

For transport of sugarcane over long distance the factories offer transport facilities to cane growers by engaging their own vehicles or hired vehicles at their disposal. The cost of transport is recovered from the cane growers by adjustment in the cane price of otherwise. In the states of Uttar Pradesh, Bihar, Haryana and Punjab, however, Cane Growers Societies or Unions have been organized for supplying cane to the sugar factories. In Uttar Pradesh, the entire supplies of cane to factories are met by the cane growers Unions.

The Bihar Government passed the Bihar State Sugar Factories control Act, 1937 and Uttar Pradesh Government passed the Sugar Factories Control Act, 1938. Both these Acts provided not only for the regulation of the supply, purchase and price of sugarcane but also for licensing of sugar factories and fixation of sugar prices. The latest enactment in force in Uttar Pradesh and Bihar respectively are the Uttar Pradesh Sugarcane (regulation of supply and purchase) Act, 1953 and the Bihar Sugarcane (regulation of supply and purchase) Act, 1971.

4.3 Role of Co-operatives in the cane marketing:

The cane cooperatives Societies have important role to play as an important agency supplying cane to the sugar factories. The factories are under obligation to play the co-operative societies commission on their cane purchased directly from the farmers also. Although, in the states, there are two agencies for marketing of cane, viz. (i) Co-operative Development and Cane Marketing Union; and (ii) direct purchase from the growers by the Sugar mills. The sugar mills supply canes either through the individual cane growers or the Co-operative Development and Cane Marketing Unions to which the primary sugarcane societies are affiliated. The agencies for marketing of cane in the reserved areas of sugar mills are the primary sugarcane societies. Every Union is managed and organized by a Managing Committee, which consists of members elected from amongst the primary societies. The primary societies in addition to the function of cane marketing make advance of loans to the sugarcane farmers. The loans are realized from farmers from the factory.

The share of the cooperative in respect of supply of cane is on the decline in Bihar, while the corresponding share has been on the increase in Uttar Pradesh. The declining trend in Bihar is owing to the fact that only a limited number of cane growers are the members of the Cane Marketing and Development Unions. Secondly, the Unions in Bihar have been losing their interests and consequently, their importance too, in cane supply to the factories either due to non-payment of Union Commission or its lying in arrear for year. The presence of two marketing agencies is said to be not desirable for the administrative set up for cane marketing in Bihar in particular. It is suggested that a single efficient marketing agency for sugarcane as in Uttar Pradesh under the Cane Commissioner will prove, more successful.

4.4 Factors Affecting Sugarcane Price:

There are a large number of factors that have some bearing on sugarcane price in general. The most important and relevant factors that influence the prices of sugarcane are: (i) Seasonal factors; (ii) Price of gur and khandsari; (iii) Price of alternative agricultural produce; and (iv) Fixation of price by the government. These points need elaboration to clarify the method of fixation of cane price. [5]

[4]Economic Trends, Vol. V, No. 19, (1ST October 1976), Sickness in sugar industry

[5] Tyagi, R.C. (1999), 'Crisis in Sugar Industry; Sugar Policy Needs a Change', The Bihar Journal of Agricultural Marketing, Vol. VII, No. 3, July- Sep.

(i) Seasonal Factors:

It is the mercy of monsoon that is decisive in agricultural life of the country. There is good crop of sugarcane provided seasonal conditions such as timely and sufficient rainfall, required amount of moisture and absence of pests and diseases prove conductive to the cane crop. Other things remaining as they are, the increased supply of cane due to higher yield leads to lower cane price as payable by the sugar factories. As against this situation, the sugar factories will be compelled to offer higher prices to growers in case of lower cane production as a result of seasonal or weather condition. Thus, it is clear that fluctuations in cane price are due to seasonal factors also.

(ii) Price of Gur and Khandsari:

The problem of equitable distribution of available sugarcane to the sugar industry, gur and khandsari units is of great significance not only for stabilizing the sugar industry competition. On an average 30 to 35 per cent of the sugarcane produced in the country was utilized in the manufacture of sugar, while about 54 to 58 per cent was used for the manufacture of gur and khandsari and the balance 12 per cent goes to feeding, chewing, seeding and other uses. Although, the use of sugarcane increase in sugar factories since 1990 to 1996 but even then a major portion of sugarcane is used for the purposes other than manufacture of sugar. Recently, suggestions have been made from certain quarters that gur and khandsari manufactured the radius of 15 kms of sugar factories may be banned so that the marketing of the entire sugarcane production in the area should be made to the factories.

(iii) Price of Alternative Agricultural Produce:

It is well known fact that sugarcane occupies land for a longer period than any other agriculture crops. It complete growth period extending from 10 months to 18 months. In UP, Bihar and Punjab States the complete growth period of sugarcane takes a period of full one-year in the normal course. During this period two or more other crops including both food crops and cash crops can be grown, which can give the farmers a quicker return for their input invested in place of sugarcane. Paddy, maize, wheat, oilseeds, chilly and different types of pulse crops are the alternatives for sugarcane produce. Sugarcane also needs larger investment in the inputs when compared to wheat and paddy crops in which technological break though has already been achieved. The price of these products affects the price of cane payable by the sugar mills. Higher price of cereals and other money crops give impetus to the diversion of sugarcane area to their produce. The situation obtaining in this way completes the sugar mills to pay higher prices for the created scarcity of sugarcane supply. The adverse situation leads to the diversion of food crop and other cash crop acreage to growing of cane crop. Consequently, the factories may enjoy the advantageous position in getting cane at the statutory minimum price fixed by the Government. Thus, the price of alternative agricultural produce has a bearing on the cane supply position and cane price.

(iv) Fixation of Cane Price by the Government:

The Agricultural Price Commission (APC) was set up in 1965 to advise the Government on the price policy for agricultural commodities including sugarcane. [6] The Commission in its earlier reports on policy for sugarcane had observed that fixation of Statutory Minimum Price (SMP) at a level lower than that recommended by the Commission not only adversely affected the supply of sugarcane but also resulted in escalating demand for sugar. Central Government fixes the sugarcane price for a sugar season on CACP. Table-7 illustrates that there is difference between the sugarcane price recommended by Agricultural Price Commission and the price fixed by the following four aims: (i) a minimum cane price; (ii) a basic level of sugar recovery; (iii) a premium of every 0.1 per cent increase in sugar recovery over the basic level; and (iv) the average sugar recovery of the factory during a fixed period (optimum period).

The Government announced the statutory minimum prices at Rs. 34.50, Rs. 39.10, Rs. 42.50 and Rs. 45.90 per quintal linked to a basic recovery of 8.5 per cent for the year 1993-94, 1994-95, 1995-96 and 1996-97 respectively. With the announcement of Statutory Minimum Price (SMP), State Government simultaneously announced high State Advised Price (SAP), despite being urged repeatedly to refrain from announcing such cane prices as only the central government has the authority to fix the sugarcane price under the Sugar Control Oder 1966. The UP Sugar Mills Association accordingly represented this matter to the State Government that it would not be possible to pay such a high state advised prices of the cane anymore and subsequently filed Writ Petition in the Allahabad High Court challenging the fixation of state advice cane price. The Allahabad High Court by a land mark judgment dated December 11, 1966, decided that the State Government had no power to fix the state advised prices for the cane under any status and quashed the order dated November 15, 1996, issued by the UP State Government fixing the state advised cane price at Rs. 72 per quintal for the season 1996-97.

[6] Report of the sugar industry inquiry commission (1974), Vol I & II, Chapter XI, p. 1031

Further, the Court directed the Central Government to institute a High Powered Committee to study the various aspects of the sugar industry and make recommendations to thoroughly revise the laws prevailing in India relating to sugar, sugarcane and sugarcane marketing.

Table-7: Sugar Price Recommended by CACP and Price Fixed by the Government

Period	Recommended by CACP			Fixed by Government		
	Rs. per Qtl.	Basic Recovery	Premium Paise per Qtl.	Rs. per Qtl.	Basic Recovery	Premium Paise per Qtl.
1976-77	9.50	8.5	11.18	8.50	8.5	10.00
1977-78	9.50	8.5	11.18	8.50	8.5	10.00
1978-79	10.00	8.5	11.76	10.00	8.5	11.76
1979-80	10.00	7.5	11.76	12.50	8.5	14.71
1980-81	13.00	8.5	15.29	13.00	8.5	15.29
1981-82	15.50	8.5	18.24	13.00	8.5	15.29
1982-83	13.50	8.5	15.88	13.00	8.5	15.29
	+2.00**					
1983-84	14.00	8.5	16.48	13.50	8.5	15.88
1984-85	14.00**	8.5	16.47	14.00	8.5	16.47
	+2.00**					
1985-86	16.51	8.5	19.41	16.50	8.5	19.41
1986-87	17.00	8.5	20.00	17.00	8.5	20.00
1987-88	18.50	8.5	20.50	18.50	8.5	21.76
1988-89	19.50	8.5	22.35	19.50	8.5	22.94
1989-90	22.00	8.5	23.52	22.00	8.5	27.06
1990-91	24.00	8.5	28.80	23.00	8.5	27.06
1991-92	26.00	8.5	30.59	26.00	8.5	30.59
1992-93	27.00	8.5	31.76	31.00***	8.5	36.47
1993-94	36.50	8.5	42.94	34.50	8.5	40.89
1994-95	38.50	8.5	45.29	39.10	8.5	46.00****
1995-96	42.50	8.5	54.00	42.50	8.5	60.00@
1996-97	45.90	8.5	57.00	45.90	8.5	57.00

* Premium for every 0.1 per cent increase in recovery over the basic recovery

** The commission recommended Rs. 2.00 per Qtl. as the cost of transportation of sugarcane from field to factory gate/ purchase centre within a radius of 16 kms

*** Consequent upon the decontrol of fertilizer prices, the support price of paddy, wheat and cane were revised.

**** For recovery up to 10%

@ For recovery of 10 per cent and above

Source: Indian Sugar Year Book, (1995, 96, 97).

4.5 The Role of Transport in Sugarcane Marketing:

Sugarcane is a perishable item. Development of transport facilities for its prompt carriage is an essential requirement for cane marketing. For successful marketing of sugarcane, arrangements for its quick disposal have to be made at the proper time with the help of means of suitable transport within economic distance. Taking the broad features of means of transport on all India basis for sugarcane transportation the following means of transport may be considered: (i) Bullock- carts and Rubber-tire carts; (ii) Rail (Good Train).

4.6 Transportation of sugarcane through Motor Trucks and Tractors with Trailers:

About 60 per cent of the sugarcane is borne or carried to the sugar factories by bullock carts and rubber tire carts on an average through pitiable bad roads. It is a known fact that bullock carts are slow- moving means of carriage in comparison to motor trucks and trains and as such they take longer time in transporting the cane to the factories resulting in drayage and evaporation of sugar contents. In addition, the inadequacy of roads and feeder roads linking the village cane areas further add to losses in sugar recovery. [7] Traditionally and for convenience sake a very high percentage of sugarcane is transported from fields to the sugar factories by bullock carts. This process leads to lapses of much time between the harvesting and crushing of sugarcane in the factories. The time lag is bound to be generally increased, because the cane has to be carried out over a distance

[7] Pillai M.P., (1972), 'Realistic Cane Price Policy- The Need of the Hour', Indian Sugar, Annual Number, July Indian Sugar Year Book (1995-96-97) Vol. I, pp. 15-16, New Delhi.

of about 5 kms to 20 kms after rainy season by rural kuccha roads particularly in Uttar Pradesh and Bihar. The greater delay in transporting the greater will be the loss in sugar recovery.

4.7 Transportation of Sugarcane through Motor Trucks and Tractors with Trailers:

The lack of roads and feeder roads has been a major obstacle to the admission of trucks, tractors and other power driven vehicles in to the interior areas in the country- side with the consequence that transportation of sugarcane still now continues to be on its past traditional line with the same slow speed as five decades ago. For the last 30 years or so, transport of cane will cover only distances covering 20 to 80 kms are in practice by motor, trucks. But area within the radius of 15 to 25 kms of a sugar factory can be better served by motor trucks for transporting cane for marketing purpose. The Bhargava Commission had suggested that as far as possible no cane grower should be allowed to transport his cane by bullock- cart over a distance of more than 8 kms. In Uttar Pradesh and Bihar most of the cane- growers carry their cane to the gates of the factories by bullock carts within a radius of 10 to 16 kms. Considering economic consideration and checking cruelty to animals besides the huge loss of cane across on account of drayage due to delay in transport. The suggestion of commission in this regard seems to be worthy of implementation. [8]

4.8 Transportation of Sugarcane through Rail Transport:

The average distance of carriage of rail-cane was estimated by tariff board at about 60 kms, though in some cases the range of distance varied between 16 kms to 210 kms in the country. Before 1965, Bihar factories crushed about 33 per cent of their total cane crush, carried by rail. Now this percentage has fallen down and it is now about 25 per cent in Bihar. In spite of increased importance of road transport in the present context of sugarcane carriage, the importance of rail can- not is refused. It is so because rail transporting is very fast and as such it saves cane from being dried and thereby save the sugar content from being lass.

V. CONCLUSION AND SUGGESTIONS

At national level the growth rates of area, production and productivity are positive and significant. The positive trend in area, production and productivity of sugarcane in U.P. makes in evident that the performance of crop in the state is satisfactory as compared to national level. Since most of the cultivable land is under the agricultural use and is at its optimum in coming times it is necessary that desired demand should be met by improving productivity. It can be achieved through the use of modern indigenous technology and improved quality of seed by the farmers and spreading this new improved technology throughout the country by a suitable extension media.

The problem of sugarcane marketing and its inadequate pricing policy adversely affect on the acreage proportion causing low production and followed by low productivity, resulting in a great national loss. It is felt necessary to fix price of sugarcane by Central Government on a long term basis, say at least for three years with provision of suitable escalation to provide for the changing pattern of realization. These prices should be fixed by the Central Government as per Sugar Control Order 1966, in which only the Central Government had the authority to fix the sugarcane price, to avoid the clash between mills association and co-operative growers association. In this way, it good the possible to insure and stabilize a steady cane marketing and cane acreage in the country.

A great inadequacy of Indian roads system is felt in view of the need of better marketing of agricultural produce particularly sugarcane. The roads and feeder roads are in pitiable condition, which require immediate attention, so to promote cane marketing and its transporting to the cane processing centres like sugar mills, Gur and Khandsari units. In such conditions where sugarcane is a perishable item, it is necessary to transport it by quicker mode of conveyance like trucks or Train instead of using bullock carts.

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