Cost Analysis in Cooperative Sugar Mills in Tamilnadu

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Introduction

Sugar industry is one of the important agro based industry which contributes significantly to the growth of the global economy by providing large scale direct employment to several thousands of peoples and indirect employment to several lakhs of farmers and agricultural workers in the rural areas who are involved in cultivation of cane, harvesting, transport and other services. Brazil is the largest producer of sugar in the world. India and Thailand are some of the major producers of sugar in Asian region. The global sugar industry shows the growing trend with the expectation that the per capita consumption of sugar and demand will be increased. International price of sugar is increased due to the expectation that sugar production of Thailand, the world's second largest sugar exporter, will be reducing by 25 percent. Following the global trend the Indian supply of sugar also expected to decrease because of low rainfall in Uttar Pradesh and Maharastra in which the 60 percent of national sugar production collectively take part. Tamilnadu is one of the major producers of sugar in India next to Uttar Pradesh and Maharastra. Though the present scenario in Indian and global sugar industry is look like very good the returns gained by Indian sugar mills are very low compared with inter national level. The profits earned by sugar mills in Brazil, Thailand are very high due to the operating environment. But most of the sugar mills in India particularly in Tamilnadu incurring losses due to many reasons. Some of the reasons are increase in costs involved during production and the recovery of sugar per ton sugar cane crushed also not up to the international level.

Statement of the Problem

The sugar industry in India has certain peculiar characteristics than other manufacturing industry. As far as the industry concerned the sugar mills have to go on purchasing sugar cane during season, crush and produce sugar only to stock it and waiting for the government order to release for sale throughout the year bit by bit. The sales function in sugar industry differs from other industries. The release of sugar is fully under the control of union government. Currently, sugar mills are required to surrender 10% of the sugar produced by them as levy for the public distribution system. The remaining 90% free sale sugar can be sold in the open market, but even here it is the Government (the Sugar Directorate) that

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decides the quantum of sugar to be offloaded every month. Accordingly, mills are released a monthly free sale quota (FSQ), beyond which they cannot sell in the open market.

The sugar industry has to face severe crisis due to steep fall in realization of free sale sugar price. Most of the sugar mills are incurring heavy losses. The main causes for this problem were periodic upward revision in the procurement price of sugar cane with out increasing the sale prices. The operating environment of the sugar mills, control on price and movement of sugar has led to losses in all sectors in general and cooperative sector in particular.

Performance of sugar industry in Tamilnadu

Sugar Industry in Tamilnadu is an important agro-based industry next to textile industry. It plays a vital role in the economic development of the State and particularly in rural areas. There are 38 Sugar mills in Tamilnadu, of which 16 are in Cooperative Sector and 19 in the Private Sector. Apart from this, the Tamilnadu Sugar Corporation Limited, a Public Sector Company set up in 1974 under the Companies Act is running three Public Sector Sugar Mills. The total crushing capacity of the 38 factories in Tamilnadu is 1, 04,550 Tones Crushing per Day (TCD) and about 180 lakh tones per annum. Out of 16 Cooperative Sugar Mills two mills are not working from the season 2001-2002 and 2002-2003. One Public Sector sugar mill is not working from 2002-2003 season and one private Sector sugar mill is not working from 2003-2004 season. Due to the suspension of crushing, in the above four mills, the number of working mills is 34 with a crushing capacity of 95,800 tones per day (TCD).

During 2003-2004 crushing season, 92.80 lakh tones of cane was crushed and 9.20 lakhs tones of sugar was produced with an average recovery of 9.92%. In addition, Private Mills produced 2.08 lakh tones of sugar from imported raw sugar. During 2004-2005 crushing season all the mills estimated to crush about 99.61 lakhs tonnes of cane and to produce 9.84 lakh tonnes of sugar with an average recovery of 9.88%. As on 28.2.2005 the Cooperative, Public and Private Sector Sugar Mills in Tamil Nadu have crushed 49.90 lakh tonnes of cane and produced 4.98 lakh tonnes of sugar with an average recovery of 9.97%. The utilization of crushing capacity for 2004-2005 season is expected to be 58% against 56% of 2003-2004 season. In the 2003-2004 season the crushing was undertaken only in 14 Cooperative and two public sector sugar Mills. The cane crushed was 28.05 lakh tonnes with an output of 2.78 lakh tonnes of sugar. For the 2004-2005 crushing season, it is envisaged that out of the 19 cooperative/ public sector sugar mills, only 16 sugar Mills could crush. As on 28.2.2005 these mills have crushed 21.75 lakh tonnes of cane and produced 2.17 lakh tonnes of sugar with an average recovery of 9.96%.

Objectives of the study

With out control over the sugar cane purchase price and sale price, sugar mills were

to focus on the cost incurred during the time of production and the efficient recovery of sugar to reduce the losses. Effective cost control methods and improved recovery of sugar will increase the profitability and improve performance of the sugar mills. In order to improve the recovery of sugar and to control the costs this study makes an attempt to,

- To analyze and observe the trends in various cost elements among co operative sugar mills.
- To analyze the break-even recovery of sugar in co operative sugar mills.

Methodology and Data collection

It is an empirical research in which the researcher has analyzed the cost of production, components of cost of production and the recovery of sugar. Percentage method has been used to analyze the cost elements and breakeven recovery of sugar. The secondary data, which was compiled, form three selected cooperative sugar mills for the period of 1994-1995 to 2001-2002, has been used for the analysis. The sugar mills were selected based on the accessibility and the availability of data.

Frame work of analysis

In order to analyze and observe the trend in cost elements and recovery of sugar Percentage, Arithmetic Mean, Standard Deviation and Co-efficient of Variance of the variables are calculated. And based on the above calculated values the trend in cost elements and recovery of sugar is analyzed, observed and commented.

It is observed from Table-1 that cane cost is the major component of total cost of production of sugar mill (M1), which contributes 50 – 77 percent of total cost of production with the average of 61 percent. It goes as high as 77 percent in the year 1994-1995 and low as 50 percent in the year 1997-1998. Next to cane cost interest is the important cost component, which constitutes on an average of 15 percent and goes as high as 24 percent in 1997-1998. It is inferred form the table that the amount of interest is steadily increased and shows the upward trend. The next major cost component is salaries and wages. It contributes 9-11 percent of total cost of production, which is high in 1996-1997 as 11.5 percent and low in 2001-2002 as 9.1 percent with the average of 10.16 percent.

The other elements that contribute significantly to total cost of production of sugar mill (M1) are conversion cost, depreciation, repairs & maintenance and administration expenses. They jointly contribute 10-15 percent of total cost of production. All these expenses except depreciation shows the fluctuating trend over the years. But depreciation shows the increasing trend due to increase in wear & tear in fixed assets.

The cane cost consists of amount paid to cane growers and consumption of sugar cane. The cane price and consumption of sugar cane may differ from year to year.

Table-2 shows the trend in various cost components of sugar mill (M2). It is observed from

the table that the cane cost contributes 45-75 percent of total cost of production. It is high in the year 1994-1995 as 74 percent and low as 45 percent in 2001-2002 with the average of 62 percent. It is inferred form table-2 that the amount of interest paid is increasing over the year and it constitutes 15 percent averagely to total cost of production. And it contributes 27 percent in 2001-2002 as highest and 4 percent as lowest in 1994-1995. The next major component is salaries and wages, which contributes 10-17 percent to cost of production with the average of 13 percent and it, is high in 1997-1998 as 16.7 percent. It shows a fluctuating trend over the period.

Conversion cost and Repairs & Maintenance are the other elements that contribute significantly to total cost of production. The conversion cost steadily contributes around 4 percent to cost of production over the study period. Repairs & maintenance shows the fluctuating trend and it is high as 5 percent in 1996-1997. Depreciation contributes less than1 percent and the amount of depreciation shows a downward trend except 2000-2001. Administration expense shows the fluctuating trend but the amount of administration expense is decreasing in last two years. In 1997-1998 the cost of production is very low because of low quantity of sugarcane consumed and crushed. In 2001-2002 the proportion of cane cost to total cost of production is very low as 45 percent because of increase in the amount paid as interest. And the proportion of cane cost to cost of production is nearly same as in the sugar mill (M1) as 50-75 percent.

But in the case of sugar mill (M3), it is observed from table-3 that the cane cost constitutes 64-72 percent of cost of production. Proportion of cane cost is high in 1994-1995 as 72 percent and low as 64 percent in 2001-2002 with the average of 68 percent. It is inferred from table-3 that salaries & wages and interest are the major components of cost of production next to cane cost. Salaries and wages are high in proportion in 1998-1999 as 10.63 percent with the average of 9.5 percent. The amount of salaries and wages shows the increasing trend, but its proportion to cost of production is fluctuating over the years. Interest shows the increasing trend in the last four years. It is high in 2001-2002 as 15 percent and low in 1994-1995 as 2 percent with the average of 9 percent.

Conversion cost and administration cost are other elements that contribute significantly to cost of production. Both show a fluctuating trend over the years. Conversion cost contributes 2-5 percent and administration expense contributes 3-7 percent to cost of production.

Depreciation, repairs & maintenance and selling & distribution are the other components. Depreciation consistently contributes around 3 percent to total cost of production except 1994-1995. Repairs & maintenance and selling & distribution expenses are fluctuating over the years.

Proportion of cane cost to cost of production is 63-75 percent and other cost elements to cost of production are 25-35 percent. It shows effective

management of fixed cost elements compared with sugar mills (M1) and (M2).

Table-4 shows the trends in cane crushed and break-even cane crushing over the period. It is inferred that the quantity of cane crushed by Sugar mill M1 is maximum in the year 1994-1995 and low in the year 1997-1998. Where the cane crushed by sugar mill M2 and M3 were high in 1995-1996. In 2001-2002 sugar mill M2 crushed the minimum quantity of sugar and cane crushed by sugar mill M3 is low in1997-1998. Quantity of cane crushed shows the fluctuating trend over the period and it differ from one mill to other.

Quantity of cane crushed by sugar mill M2 is very poor compared with sugar mills M1 and M3. It averagely crushes 30,000 metric tones where the average cane crushed by sugar mill M1 and M2 are 43,000 and 47,000 metric tones. Quantity of sugarcane crushed is depending upon the area of sugar mill situated and the cultivation of sugar cane in that area.

Only in the year 1994-1995 sugar mills M1 and M2 were crushed the quantity of cane over the breakeven crushing. And all other years they did not reach the break even crushing. But sugar mill M3 crushed the cane below the break even crushing in all the years. All the three mills are managed to crush over the cutoff cane crushing in all the years.

Table-5 : Trends in Production of sugar and Break-even Production among the cooperative sugar mills (In Metric Tonnes)

	Sugar mill (M1)		Sugar mill (M2)		Sugar mill (M3)	
Year	**Sugar Produced**	**Break even Sugar Production**	**Sugar Produced**	**Break even Sugar Production**	**Sugar Produced**	**Break even Sugar Production**
1994-1995	461914.00	461505.88	344021.00	384347.73	360706.32	400911.43
1995-1996	354460.00	441730.93	383332.00	473200.34	494876.08	629791.74
1996-1997	314904.00	461487.92	233984.00	325516.10	410125.70	512855.01
1997-1998	230527.00	322081.42	153938.00	228283.18	308007.83	366971.06
1998-1999	267410.00	404938.73	245826.00	300564.82	346335.15	407820.06
1999-2000	350799.00	556181.51	281506.00	375823.88	447229.22	514544.82
2000-2001	374275.00	443883.55	250773.00	329941.53	429347.90	496581.42
2001-2002	435170.00	505993.71	175149.00	245133.68	420183.41	473204.02

It is observed form the table-5 that the sugar produced by sugar mill M1 is high in 1994-1995 where it is 1995-1996 in sugar mills M2 and M3 and the quantity of sugar produced by all the three mills is low in the year 1997-1998. Production of sugar shows the fluctuating trend over the period. And it depending upon the quantity of cane crushed and recovery of sugar. Though it depends on the quantity of cane crushed it reflects the trend in cane crushed. Sugar produced by sugar mill M2 is very low compared with production of sugar mills M1 and M3 because of low quantity of cane crushed.

From table-6 it is observed that recovery of sugar shows the fluctuating trend in all the three sugar mills. Recovery of sugar is high in the year 2001-2002 and low in the year 1996-1997 for all the three mills. Sugar mill M1 recovered more than break-even recovery of sugar once in the period at 1994-1995. all the other years it did not manage to reach the break even recovery of sugar. But sugar mills M2 and M3 are never reach the break-even recovery of sugar over the period. But the three mills recovered more than the cutoff recovery of sugar in all the years. Difference between actual recovery and breakeven recovery is high in 1999-2000 as nearly 4 percent in sugar mill M1 where it is in sugar mill m2 as 3.88 percent in 2001-2002 and in sugar mill M3 it is 2.15 percent in 1995-1996.

Recovery of sugar is poor in sugar mill M1 compared with sugar mill M2 and M3. It is observed that in sugar mill M3 the difference between actual recovery and break-even recovery is very low. It shows the efficient recovery of sugar compared with other two mills M1 and M3. But all the three mills show the increasing trend in recovery of sugar in the last three years. But the recovery of sugar is very poor in the three sugar mills compared to sugar recovery at National level of around 10 percent and at other countries like Australia, Brazil etc., where it is above 14 percent[1]. Recovery of sugar mainly depends on cane quality and planted machines. Higher the cane quality and use of modern Machines results in higher recovery.

Table-7 : Trends in Sales of sugar and Break-even sales among the cooperative sugar mills (Rs. In Lakhs)

	Sugar mill (M1)		Sugar mill (M2)		Sugar mill (M3)	
Year	**Sales**	**Break even sales**	**Sales**	**Break even sales**	**Sales**	**Breakeven sales**
1994-1995	4,391.41	4,387.53	2,078.15	3,712.34	2,940.49	3,793.66
1995-1996	4,093.61	5,101.49	4,126.90	4,719.31	4,928.94	6,211.02
1996-1997	3,458.76	5,068.77	2,919.60	3,738.30	4,537.62	5,744.68
1997-1998	3,146.12	4,940.84	2,543.95	2,639.12	3,944.29	4,482.28

	Sugar mill (M1)		Sugar mill (M2)		Sugar mill (M3)	
Year	**Sales**	**Break even sales**	**Sales**	**Break even sales**	**Sales**	**Breakeven sales**
1998-1999	3,262.79	4,940.84	1,991.20	3,630.26	4,160.07	5,048.88
1999-2000	4,158.94	6,593.87	2,437.97	4,458.95	4,400.70	6,286.11
2000-2001	5,026.96	5,961.89	3,488.73	4,345.72	4,943.97	6,391.25
2001-2002	5,303.90	6,167.11	3,152.47	3,171.94	6,088.09	5,834.09

It is inferred from table-7 that the amount of sale by sugar mill M1 is high in the year 2001-2002 and low in 1997-1998. In sugar mill M2 the amount of sales is high in 1995-1996 and low in 1998-1999. But in sugar mill M3 the amount is maximum in 2001-2002 and minimum in 1994-1995. In 1994-1995 the sales by sugar mill M1 and in 2001-2002 sales of sugar mill M3 are more than the break even sales. Sugar mill M2 never reached the break even sales over the period. The amount of sales by sugar mill M2 is very low because of low quantity of sugar crushed.

Results and discussions

From the forgoing study of various aspects related to cost elements and its trends, and break even recovery of sugar in the cooperative sugar mills the following are observed,

- Cane cost is the major component of cost of production that contributes 75 percent to the cost of production of the three sugar mills.
- The next major cost element is Interest paid. It shows an increasing trend over the period. It forms 10-25 percent of the total cost of production of the sugar mills in the last three years, at an average of 15 percent over the period.
- Salary and Wages is another major cost component, which contributes 8-16 percent of cost of production in the sugar mills. Other cost elements are collectively contributing less than 10 percent to the cost of production.
- Sugar mills M1 and M2 were crushed cane over the breakeven crushing at 1994-1995 only. In all other years they didn't reach the break even crushing. But sugar mill M3 didn't reach the break even crushing in all the years. But average cane crushed by sugar mill M2 is very poor at 30,000 metric tones where it is 43,000 and 47,000 metric tones in Sugar mills M1 and M3 respectively.
- Sugar cane crushed by sugar mills M1 and M3 is more consistent than sugar mill M2 where it is inconsistent over the period
- Trend in sugar produced by sugar mills reflect the same trend in cane crushed because production of sugar is depending on the quantity of sugar cane crushed.
- Sugar produced by sugar mill M2 is inconsistent and very low in quantity at an

average of 25,000 quintals over the period where it is consistent and maximum in quantity by sugar mill M3.

- Sugar mill M1, only in 1994-1995 recovered excess of break-even recovery of sugar. But sugar mill M2 and M3 were didn't reach the break-even recovery in all over the period. The difference between actual recovery and break-even recovery is very low in sugar mill M3 compared with other two mills, it shows the efficiency in recovery of sugar than the other mills.
- Average recovery of sugar is very low in sugar mill M1 at below 8 percent where it is more consistent in sugar mill M3 at an average of 8.6 percent.
- Recovery of sugar is very poor in the three sugar mills at 7-9.5 percent where it is around 10 percent at national level and 14 percent in other countries like Australia, Brazil etc.
- Break even sales is achieved by sugar mill M1 in 1994-1995 and by sugar mill M3 in 2001-2002 where in sugar mill M2 it didn't reach the break-even sales during the years. Amount of sales is more consistent in sugar mill M1 and the average sale is high in sugar mill M3 at 4,493 lakhs. But in sugar mill M2 it is very low and inconsistent at an average of 2,800 lakhs.

Limitations of the study

Even though it is a systematic study, it has its own limitations. The following are the limitations of the study,

- The results are based on the data of selected co operative sugar mills only. The practices of maintaining the cost differ from one to another.
- Cost of sugar cane and the conversion cost are also varying depending on the location of the sugar mill and the availability of sugar cane also depends on the cultivation of sugar cane in the surrounding areas.
- Elements of fixed cost also differ from one place to other based on the availability of labour, modern machineries and capital structure of the organization.
- The study is based on the past 8 years cost records of the selected sugar mills only.

Conclusion

From the study it is concluded that performance of co-operative sugar mills in Tamilnadu is very poor when compared with international sugar industry. This is due to sugar mills do not have effective control over the cost incurred during the production and low recovery of sugar from the sugarcane crushed. In order to have a better control over the cost new techniques like activity based costing etc., to be followed. Recovery of sugar can be improved by using modern machineries. Hence it will improve the productivity and increase the profitability.

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Table-1 : Trend value of various cost Components of co-operative Sugar mill (M1) (Rs.In Lakhs)

Year	Cane cost	Total conver cost	Salaries & wages	Deprec iation	Repairs & Mainte nance	Interest	Selling distribu tion	Adminis tration Expenses	Total cost of Produ ction
1994-1995	3,649.83 (77.20)	172.25 (3.64)	504.94 (10.68)	26.34 (0.56)	127.39 (2.69)	99.59 (2.11)	7.76 (0.16)	139.66 (2.95)	**4,727.76 (100.00)**
1995-1996	3,778.17 (71.00)	220.66 (4.15)	525.76 (9.88)	22.01 (0.41)	166.96 (3.14)	410.71 (7.72)	6.63 (0.12)	190.66 (3.58)	**5,321.56 (100.00)**
1996-1997	3,412.92 (64.01)	219.76 (4.12)	613.86 (11.51)	19.76 (0.37)	211.79 (3.97)	555.68 (10.42)	2.17 (0.04)	295.95 (5.55)	**5,331.89 (100.00)**
1997-1998	2,393.24 (50.93)	131.25 (2.79)	496.96 (10.58)	309.04 (6.58)	130.57 (2.78)	1,117.34 (23.78)	7.42 (0.16)	113.36 (2.41)	**4,699.18 (100.00)**
1998-1999	2,977.95 (55.40)	143.77 (2.67)	514.23 (9.57)	309.17 (5.75)	101.53 (1.89)	1,186.22 (22.07)	6.44 (0.12)	135.93 (2.53)	**5,375.24 (100.00)**
1999-2000	4,029.78 (58.52)	194.38 (2.82)	698.85 (10.15)	308.24 (4.48)	112.55 (1.63)	1,363.48 (19.80)	6.12 (0.09)	172.47 (2.50)	**6,885.87 (100.00)**
2000-2001	3,862.29 (59.23)	205.29 (3.15)	640.88 (9.83)	313.10 (4.80)	156.35 (2.40)	1,236.08 (18.96)	6.00 (0.09)	100.40 (1.54)	**6,520.39 (100.00)**
2001-2002	3,676.33 (57.11)	260.09 (4.04)	585.93 (9.10)	315.00 (4.89)	155.22 (2.41)	1,334.31 (20.73)	4.51 (0.07)	105.63 (1.64)	**6,437.02 (100.00)**
Average	***3472.56*** **(61.68)**	***193.43*** **(3.42)**	***572.68*** **(10.16)**	***202.83*** **(3.48)**	***145.30*** **(2.61)**	***912.93*** **(15.70)**	***5.88*** **(0.11)**	***156.76*** **(2.84)**	***5662.36*** **(100.00)**

(Note: Figures in parenthesis indicate percentage on total cost of production)

Table 2 : Trend value of various cost Components of co-operative Sugar mill (M2) (Rs.In Lakhs)

Year	Cane cost	Total conver cost	Salaries & wages	Deprec iation	Repairs & Mainte nance	Interest	Selling distribu tion	Adminis tration Expenses	Total cost of Produ ction
1994-1995	2813.04 (74.01)	179.60 (4.73)	428.71 (11.28)	46.31 (1.22)	92.24 (2.43)	150.53 (3.96)	1.91 (0.05)	88.71 (2.33)	**3801.05 (100.00)**
1995-1996	3369.56 (69.95)	246.45 (5.12)	474.45 (9.85)	38.50 (0.80)	199.91 (4.15)	380.60 (7.90)	9.84 (0.20)	97.73 (2.03)	**4817.04 (100.00)**
1996-1997	2349.55 (61.37)	208.21 (5.44)	448.57 (11.72)	34.95 (0.91)	196.51 (5.13)	500.11 (13.06)	0.40 (0.01)	90.10 (2.35)	**3828.40 (100.00)**
1997-1998	1416.03 (52.44)	126.46 (4.68)	450.93 (16.70)	30.22 (1.12)	88.10 (3.26)	527.15 (19.52)	0.23 (0.01)	61.18 (2.27)	**2700.30 (100.00)**
1998-1999	2304.43 (62.26)	173.15 (4.68)	514.12 (13.89)	25.54 (0.69)	63.86 (1.73)	547.39 (14.79)	1.77 (0.05)	71.11 (1.92)	**3701.37 (100.00)**
1999-2000	2773.27 (60.94)	194.99 (4.28)	629.19 (13.83)	23.74 (0.52)	92.41 (2.03)	743.00 (16.33)	2.35 (0.05)	91.95 (2.02)	**4550.90 (100.00)**
2000-2001	2529.92 (57.25)	196.67 (4.45)	589.89 (13.35)	22.82 (0.52)	117.36 (2.66)	882.44 (19.97)	6.62 (0.15)	73.04 (1.65)	**4418.76 (100.00)**
2001-2002	1474.48 (45.57)	139.49 (4.31)	520.77 (16.10)	24.04 (0.74)	103.87 (3.21)	902.78 (27.90)	6.51 (0.20)	63.56 (1.96)	**3235.50 (100.00)**
Average	**2378.79 (61.76)**	**183.13 (4.81)**	**507.08 (13.62)**	**30.77 (0.83)**	**119.28 (3.14)**	**579.25 (15.75)**	**3.70 (0.09)**	**79.67 (2.11)**	**3801.99 (100.00)**

(Note: Figures in parenthesis indicate percentage on total cost of production)

Table-3 : Trend value of various cost Components of co-operative Sugar mill (M3) (Rs.In Lakhs)

Year	Cane cost	Total conver cost	Salaries & wages	Deprec iation	Repairs & Mainte nance	Interest	Selling distribu tion	Adminis tration Expenses	Total cost of Produ ction
1994-1995	2729.54 (71.95)	163.09 (4.30)	398.10 (10.49)	32.21 (0.85)	95.31 (2.51)	79.52 (2.10)	3.52 (0.09)	292.37 (7.71)	**3793.66 (100.00)**
1995-1996	4444.29 (71.55)	299.52 (4.82)	489.67 (7.88)	150.41 (2.42)	163.64 (2.63)	364.35 (5.87)	2.11 (0.03)	297.03 (4.78)	**6211.02 (100.00)**
1996-1997	3833.77 (66.74)	231.84 (4.04)	497.51 (8.66)	153.67 (2.67)	176.84 (3.08)	533.80 (9.29)	2.14 (0.04)	315.11 (5.49)	**5744.68 (100.00)**
1997-1998	2962.18 (66.09)	146.17 (3.26)	458.54 (10.23)	154.00 (3.44)	98.64 (2.20)	452.59 (10.10)	(4.07 (0.09)	206.09 (4.60)	**4482.28 (100.00)**
1998-1999	3491.87 (69.16)	158.82 (3.15)	536.70 (10.63)	156.65 (3.10)	82.83 (1.64)	378.69 (7.50)	7.49 (0.15)	235.83 (4.67)	**5048.88 (100.00)**
1999-2000	4340.89 (69.06)	194.44 (3.09)	577.79 (9.19)	158.05 (2.51)	119.95 (1.91)	583.08 (9.28)	11.28 (0.18)	300.63 (4.78)	**6286.11 (100.00)**
2000-2001	4252.03 (66.53)	178.59 (2.79)	569.07 (8.90)	142.43 (2.23)	107.60 (1.68)	869.11 (13.60)	11.79 (0.18)	260.63 (4.08)	**6391.25 (100.00)**
2001-2002	3731.74 (63.96)	180.16 (3.09)	571.79 (9.80)	152.12 (2.61)	149.95 (2.57)	871.50 (14.94)	11.27 (0.19)	165.56 (2.84)	**5834.09 (100.00)**
Average	**3723.29 (68.13)**	**194.08 (3.57)**	**512.40 (9.47)**	**137.44 (2.48)**	**124.35 (2.28)**	**516.58 (9.08)**	**6.71 (0.12)**	**259.16 (4.87)**	**5474.00 (100.00)**

(Note: Figures in parenthesis indicate percentage on total cost of production)

Table - 4 : Trends in Cane crushing and Break-even cane crushing among the cooperative sugar mills (In Metric Tonnes)

	Sugar mill (M1)			Sugar mill (M2)			Sugar mill (M3)		
Year	Cane crushed (MT)	Cut-off cane crushing	Breakeven cane crush	Cane crushed (MT)	Cut-off cane crushing	Breakeven canecrush	Cane crushed (MT)	Cut-off cane crushing	Breakeven cane crush
1994-1995	515102.00	419210.58	514499.31	387425.00	348913.75	432824.01	420766.53	355454.87	466176.08
1995-1996	458014.00	429299.21	567777.64	464984.00	440016.49	574272.26	628826.92	611204.56	800243.63
1996-1997	445941.00	441719.52	653665.60	317963.00	302607.92	442277.30	540222.72	478203.44	675698.30
1997-1998	300661.00	223711.33	419923.62	182767.00	158461.97	271120.17	365749.81	302239.10	435832.61
1998-1999	363555.00	340194.75	550188.49	285355.00	238245.63	349088.06	417917.28	355708.27	491942.17
1999-2000	487899.00	483649.91	773548.69	330521.00	293639.25	441107.84	507030.03	420902.54	583384.15
2000-2001	449831.00	356923.19	538693.63	284567.00	234973.66	374507.99	452175.18	362364.43	522717.28
2001-2002	476293.00	341044.99	553603.62	181177.00	128987.32	253499.15	440969.13	332943.19	496541.47

Table - 6 : Trends in Recovery of sugar and Break-even Recovery among the cooperative sugar mills (In percentage)

	Sugar mill (M1)			Sugar mill (M2)			Sugar mill (M3)		
Year	Recovery	Cut-off recovery	Breakeven recovery	Recovery	Cut-off recovery	Breakeven recovery	Recovery	Cut-off recovery	Breakeven recovery
1994-1995	8.97	7.30	8.96	8.88	8.00	9.92	8.60	7.27	9.53
1995-1996	7.78	7.29	9.64	8.24	7.80	10.18	7.87	7.65	10.02
1996-1997	7.06	6.99	10.35	7.36	7.00	10.24	7.59	6.72	9.49
1997-1998	7.67	5.71	10.71	8.42	7.30	12.49	8.42	6.96	10.03
1998-1999	7.36	6.89	11.14	8.61	7.19	10.53	8.29	7.06	9.76
1999-2000	7.19	7.13	11.40	8.52	7.57	11.37	8.82	7.32	10.15
2000-2001	8.24	6.54	9.87	8.81	7.27	11.59	9.50	7.61	10.98
2001-2002	9.14	6.54	10.62	9.67	6.88	13.53	9.53	7.20	10.73