CHAPTER - 8

CONCLUSION
CHAPTER VIII

CONCLUSIONS:

The proposed study "A study of transportation of sugarcane with special reference to co-operative sugar industry in Ahmednagar district of Maharashtra" is divided into total eight chapters. The discussion in the foregoing chapter can be summed up in the form of summery conclusions and suggestions as follows.

Efficient transport system is the life blood of any industry. Sugar industry requires the transport facilities. After harvesting sugarcane starts deterioration. If the cane is not crushed within eight hours after harvesting it increase fibre percentage in cane as well as purity of the juice percentage. Therefore timely and efficient system of sugarcane transportation plays a vital role in sugar industry.

Number of co-operative sugar factories increasing in India. In 1994 there was 316 licences given to co-operative sugar factories. Out of this 149 licences are given in Maharashtra state, and in Ahmednagar district there are 14 co-operative sugar factory. This district stood first regarding number of co-operative sugar factories (table 2.2).

The sugar industry is the second largest agro based industry, next to textile, in India. It plays a very significant role in Indian economy. There are 571 licenced sugar factories in India during 1994-95.

Maharashtra is one of the state of producing large scale sugar in India. The Maharashtra state is leading in sugar
production. There were 108 co-operative sugar factories in Maharashtra in 1993-94, out of this, 104 sugar factories were established in co-operative sectors and only 04 sugar factories in private sector. The percentage of co-operative sugar factories was 96.29% (table 2.3). Maharashtra is leading in the co-operative sugar movement. It ranks highest in number of co-operative sugar factories.

Ahmednagar district ranks first in number of co-operative sugar factories. There are 19 sugar factories in the district are established, out of this 14 are in co-operative sector and 05 in private sector. The sugar industry occupies the place of pride in the economy of Ahmednagar district.

The first co-operative sugar factory in India was established on 31st December, 1950 at Loni (Pravaranagar) in Ahmednagar district of Maharashtra state. The pioneering successful attempt laid the foundation stone of co-operative sugar factory in India.

1. Ahmednagar district having largest area under sugarcane crop compared to other district in the state. In the 1991-92 area under sugarcane crop was 75,800 hectares and average per hectare sugarcane production was 82.83 (table 2.4) MT.

In the year 1981-82 total area under sugarcane crop was 3.66 lakh hectares in Maharashtra. It increased upto 4.23 lakh hectares in 1993-94, but per hectare average sugarcane production shows declining trend. It was 97 MT in 1981-82 it reduced upto 81.15 MT in 1993-94.
Though area under sugarcane is increased, but sugarcane production declined (table 2.5). This is the one of the cause of shortage of sugarcane in the working area.

2. The sugarcane crushing shows increasing trend in India and Maharashtra but sugarcane crushing in Ahmednagar district showing declining trend in the year 1983-84 total crushing in the district was 44.45 lakh MT it reduced upto 36.49 lakh M.T. in the year 1988-89 (table 2.8)

3. In the district net area under irrigation is increasing. In the year 1985-86 it was 2,06,254 hectares & it increased upto 2,71,299 hectares in the year 1990-91. Newasa Taluka is having large irrigation by well water, whereas Pathardi and Akola taluka's are having lower facilities of well water (table 2.13)

4. Total crushing capacity of Rahuri & Pravaranagar factories is 4000 M.T. TCD (Tonnes Crushing Daily). it is 4000 T.C.D.capacity. Whereas two units are small scales these are Jagadamba and Vrudheshwar having 800 TCD capacity (table 2.14)

5. Each sugar factories in the district having overlapping villages because large number of sugar factories are established in the district (table 2.15). Newasa taluka having largest area under sugarcane crop in the district. In the year 1985-86 area under sugarcane crop was 9410 hectares, area increased upto 15,777 hectares in 1990-91, because of availability of surface and well irrigation facilities. Showing 167 percent
increased in area under sugarcane crop.

6. The area under sugarcane crop in Kopargaon taluka shows declining trend. In the year 1985-86 it was 9945 hectares it reduced up to 7334 hectares in 1990-91. Due to shortage of surface irrigation facilities, well irrigation and fluctuating rain in the taluka, Parner, Karjat and Jamkhed having lowest area under sugarcane crop (table 2.16).

7. In the district total area under irrigation was 3,59,197 hectares and out of this area under sugarcane crop was 77597 hectares in 1991-92. This shows 21.60 percent area was under sugarcane crop out of total area under irrigation.

Out of total irrigated area Newasa taluka is having 37-38 percent area under sugarcane crop. Shevagaon taluka having 37 percent area under sugarcane crop. Jamkhed and Parner are having lowest area under sugarcane crop i.e. 5.62 % and 5.5 % respectively. Kopargaon taluka is having 15.25 percent area under sugarcane crop. (table 2.17)

8. In Ahmednagar district Sangamaner factory and Shrigonda factory getting 100 % sugarcane from working area outside of working showing zero percentage.

Whereas in the year 1988-89 Pravara factory brought 80.37 % sugarcane from outside of working area, because of shortage of sugarcane in working area. In the same period Sanjivani factory brought 74.70 % sugarcane from
outside of working area. (table 2.18)

9. The crushing of sugarcane is increasing in the district. In the year 1987-88 total crushing was 33,39,920 M.T. it increased up to 6505314 M.T in 1990-91 (table 2.24)

Few sugar factories in Ahmednagar district brought sugarcane from outside of state, due to shortage of sugarcane. These are Kopargaon, Sanjivani & Ganesh. Sangamaner, Shrigonda & Dyaneshwar gets ample sugarcane in the working area for harvesting.

10. Indian agriculture is a "gamble in monsoon". There is a large fluctuating in rain. Per hectare sugarcane production is lower in the district because sugarcane growers till adopting old technique of sugarcane cultivation. Dr. K. N. Raj rightly pointed out that "raising productivity of land requires not only more inputs like labour, water and fertilizers but incentives to make these inputs worth while.

11. For increasing sugar recovery percentage, sugarcane should be harvested as per its maturity. At the time of harvesting juice bricks should be minimum 18-20 percentage, sucrose sugar 16-18 percentage and purity more than 85 percent. Therefore before harvesting cane bricks should be checked. Maturity wise harvesting gives 10 to 15 % higher yield and at least 0.5 % higher recovery.

12. When there is harvesting of sugarcane labour should cut the sugarcane with ground level.
13. Harvesting season days shows declined trend in Maharashtra. In the year 1990-91 harvesting season days was 229 it is reduced upto 140 days. Sugar recovery in Maharashtra shows increasing trend. In the year 1990-91 it was 10.76 percent it increased upto 11.14 percent in the year 1993-94 (table 3.3)

14. C07401, C0M7714, C08021, C08014 are best qualified variety from the point of view of yielding high sugar recovery. C0740 and C07219 are the two varieties which sugarcane growers take high sugare varities in the district. After harvesting sugarcane bricks percentage increased more in C0740 varities compared to C07219. After 96 hours of harvesting, bricks percentage found in C07410 was 24.26. Whereas in C07219 varities it was 24.10. Pol percentage and purity reducing with laps of time after harvesting.

15. In the area of Dyaneshwar co-operative sugar factory, three types of sugarcane crops are taken by the farmers in the district. These are Adsali, suru and Ratoon. Average per hectare yield of Adsali type sugarcane crop is 99 M.T. Suru crops 71 M.T. and Ratoon is 57 MT. Yield of Adsali crop is higher than suru and Kodawa crop in the year 1991-92 (table 3.7)

In the working area of Pravaranagar factory per hectare average yield of Adsali crop was 112-210 MT in the year 1991-92. In the same peroid per hectare yield of suru type was 55.60 MT (table 3.8) Adsali sugarcane
crop gives higher yield, but it require more period for maturity. Khodwa type crop gives lowest per hectare yield compared to Adsali and suru crops. This ranges from 15 MT to 90 MT per hectare.

16. For getting good sugar recovery factory will have to produce quality cane only, which varieties having good recovery. Technical efficiency of sugar factory means good sugar recovery and minimum losses in production process.

17. Technologist association and Deccan sugar Technology Association subscribed view that technical efficiency depend mainly upon the quality of sugarcane. But it has been also accepted that quality of sugarcane is not only responsible for technical efficiency, other factors are also responsible.

18. Many factories in the district facing a problem of shortage of sugarcane in working area because there are so many defects are observed in the cane cultivation.

19. Stale sugarcane crushing affects on factory and on sugarcane growers factory loss the sugar recovery and sugarcane growers loose weight of sugarcane.

20. Reduction in sugarcane weight is different from the month of November and December after duration of eight hours sugarcane reduced 1.45 percent and 0.7 percent after period of 24 hours duration weight reduction percentage is 4.45 percent and 2.30 percent. Lowest sugarcane weight reduction found in the month of December.
Highest sugar weight reduction is found in the month of April i.e. in the summer season. After 8 hours of harvesting the weight of sugarcane is reduced up to 4.40% and after 24 hours duration reduction in weight of sugarcane is found 7.30 percent. (table 3.12)

In the month of December after eight hours of sugarcane harvesting, bricks percentages are 0.04 percent and after 24 hours duration it is 0.07 percent showing net increase of 0.03 percent. In the month of April after harvesting, bricks percentage was 0.20 percent and after 24 hours duration brick percentage increased up to 0.57 percent. (table 3.13)

21. Pol percentages and purity of juice also affected after a period of 24 hours and finally, it results into lower sugar recovery, due to stale sugarcane crushing. Sugar recovery having tremendous effect in summer season as compared to winter season.

In stale crushing PH and bricks percentage are increased, where as pol percentage purity reduces, it affects sugar recovery. When fresh cane crushed it gives 11.06 recovery and after 72 hours duration, same sugarcane gives only 10.63 percent sugar recovery. (table 3.15)

22. Sangamaner, Sanjivani and Dnyaneshwar factories are having good sugar recovery compared to other factories in the district. Recovery of Vrudheshwar factory found lowest in the district.
23. Sangamaner factory is running efficiently in the district. Total lost hours are total 10.36. On account of shortage of sugarcane lost hours were 3.54. in the year 1992-93. In Vrudheshwar factory lost hours are 68.60 in the 1992-93 out of this 57.76 hours are lost due to shortage of sugarcane. In the same period lost hours of Jagdamba was 55.56 out of this 47.21 hours are lost due to shortage of sugarcane in the working area. Total lost hours are less in Sangamner, Pravaranagar, Dyaaneshwar, Mulla and Shrigonda factory as compared to other factories in the district.

24. Crushing rate per 22 hours found lowest in Vrudheshwar factory. It was 680 MT. Highest crushing rate found in Pravaranagar factory. It was 3625 MT. The crush rate of Rahuri factory was 3392 MT in 1992-93. In the year 1992-93 total cane crushed by Pravaranagar factory was 662259 MT. This factory stood first in crushing. (table 3.22)

25. Average per hectare cost of cultivation of sugarcane in Maharashtra is Rs. 23,292/- average cost of cultivation changes according to zonewise. The cost of south zone was Rs. 25,150/- central zone Rs. 24,123 and north zone Rs. 20,032/-. Total operational cost was 77.55 percent in Maharashtra state (table 4.1) Total operational cost is higher in central zone it is Rs. 18,974 per hectare.

Sugarcane is planted under planting method and S.T.P. seedling transplanting method. Under planting method net saving of Rs. 2450/- and seedling
transplanting method net saving is Rs. 3283/- (table 4.2 and 4.3)

If low cost technology adopted there will be net saving of Rs. 3800/- in cost of production of per hectare in sugarcane. (table 4.4)

26. Sugarcane price is related to sugar recovery. In the year 1988-89 for 8.5 percent sugar recovery minimum price was Rs. 19.50. It is increased up to Rs. 37.10 in the year 1994-95 it is increased upto Rs. 39.10 (table 4.8) in the year 1995-96. Sugarcane price linked with sugar recovery. In the year 1990-91 Basic minimum price of sugarcane at Rs. 23 per quintal linked to recovery of 8.5 percent or bellow with a premium at 27.0588 paisa per quintal for every 0.1 percent increases in recovery above 8.5 percent.

27. In 1995-96 Basic minimum price of sugarcane of Rs. 39.10 per quintal linked to a recovery of 8.5 percent or bellow with a premium of 46 paisa per quintal for every 0.1 percent increase in recovery above 8.5 percent up to 10 percent and premium of 60 paisa per quintal for every 0.1 percent increase in in above 10 percent. In short sugarcane price linked with sugar factory. Per quintal minimum sugarcane price of Sangamaner factory and Rahuri factory was Rs. 55.60 because of higher recovery of these factory in the year 1994-95. (table 4.9).

Lowest sugarcane price found in the Vrudheshwar factory
which was Rs. 45.08 in the year 1994-95. Many sugar factories in Ahmednagar district are running more than 100 percent capacity.

28. Kopargaon and Sanjivani factories are spending large amount on harvesting and transportation of sugarcane. Each sugar factories in the district having overlapping sugar factories (table 4.11). Each sugar factories in the district also having overlapping villages of sugarcane. (table 4.12)

29. Per quintal processing cost of sugar increases every year. In the year 1990-91. Per quintal sugar processing cost of Pravaranagar sugar factory was highest. It was Rs.349.03. Whereas lowest cost found of Sangamnaesar factory it was Rs. 236.05 in the same period. (table 4.14).

30. In the year 1990-91 per tone sugarcane harvesting and transport cost of Kopargaon sugar factory was Rs. 135.91 and in the same period per tone lowest cost found in Shrigonda factory was Rs. 71.51. This shows availability of sugarcane in the working area (table 4.15).

31. Percentage of harvesting and sugarcane transportation cost of Kopargaon sugar factory with one quintal sugar production cost shows increasing trend. In the year 1986-87 the percentage was 11.23 and increased up to 17.78 in the year 1990-91. (table 4.16) In Mula cooperative factory the percentage of harvesting cost and transport cost percentage was 6.20 in the 1984-85 it
increased upto 12.08 percentage in the year 1989-90. This shows availibility of sugarcane in the working area. (table 4.17)

32. Sugar factories in Ahmednagar district employing Bullock-carts, Tractors and trucks for sugarcane transportation. Per mile operation cost of iron tyre (old type) bullock-cart is Rs. 7.58. Where as per mile operation cost of rubber tyre bullock-cart is Rs.6.40 (table 5.3 and 5.5). Per mile per ton sugarcane transportation rates are increasing. In the year 1981-82 per ton cane harvesting cost was Rs. 13=00 it increased up to Rs. 30=00 in the year 1991-92 again in the year 1996-97 per ton sugarcane harvesting cost increased upto Rs. 43.90. (table 5.4 and 5.5)

Sugarcane cost for first mile was Rs. 06 in the year 1981-82 it increased upto Rs. 20.50 in the year 1996-97. Next per tone and per mile cost was Rs. 1.30 in the year 1981-82. It increased upto Rs. 4.40 in the year 1996-97 showing increasing percentage of 338.46 (table 5.4 and 5.5)

33. Sugarcane transportation by truck shows increasing trend. In year 1986-87 sugarcane transportation by truck for 1 to 10 miles transportation cost Rs. 21.00 per miles, it increased upto Rs.36.25 in the year 1991-92, shows increase in transport rate percentage 172.65 (table 5.6). For transportation of one MT sugar by truck from 200 miles cost Rs.151.45 in 1986-87 it
increased up to Rs. 272.05 and in the year 1991-92 showing net increase 179.63 percentage.

Rates of sugarcane transportation by truck in the year 1995-96 increased for transportation one MT sugarcane from 200 miles it cost Rs.338.74 (table 5.7). Sugarcane transportation rate by truck is increasing due to increase in prices of Petrol, Diesel and Oil. In the year 1970 per litre price of diesel was Rs.0.80, it increased up to Rs.11.55 in the year 1997. Per litre price of the Petrol was Rs.1.18 in the year 1970 which increased up to Rs.25.46 in the year 1997 during the same period per litre price of oil increased from Rs.8.80 to Rs.58.00 in 1997.

34. Percentage of sugarcane cost and harvesting and transportation cost shows increasing trend in the district. Sugarcane harvesting and transportation cost with one quintal sugar production cost of Shrigonda factory is lowest. It was 7.15 percent in the year 1987-88 and it increased up to 12.50 percent in the year 1991-92 (table 5.22). Higher harvesting and transportation cost percentage found in Kopargaon, Pravanagar and Ashok factory.

35. Percentage of sugarcane cost and harvesting as well as transport cost differ from factory to factory. Every factory having a well established harvesting department. Harvesting department manages transportation of sugarcane from field to the factory gate for crushing.
36. Bullock carts are employed for transportation of sugarcane from short distance i.e. 1 to 15 miles away from the factory. Average sugarcane transportation capacity of old type bullock carts is 0.951 MT. Whereas the capacity of rubber tyre bullock carts is 2.095 MT. Compared to iron tyre carts, rubber tyre bullock carts carries more sugarcane and it damages less road. (table 6.1 and 6.2)

Bullock carts in sugarcane transportation provides fresh sugarcane for crushing. Sugarcane harvesting rates are increasing in the year 1973-74 per ton rate of cane harvesting was Rs. 4.20 it increased upto Rs. 36.60 in the year 1992-93. (table 6.3) Average sugarcane carrying capacity of the tractor is 5.124 MT. Many factories in the Ahmednagar district not employing tractors in sugarcane transportation.

37. Average sugarcane carrying capacity of the truck is 10.319 MT. Trucks are useful in sugarcane transportation when sugarcane brought from outside of working area and from long distance.

38. After harvesting sugarcane, crushing procedure should be started within a short period. After a period of 8 hours, reduction in weight of sugarcane per MT is 14 Kg. If sugarcane crushed after 72 hours it reduces 83 Kg weight and it also reduces 14.515 Kg sugar for per MT.

39. Sugar factories in Ahmednagar district are charging Rs.10.00 to the cartmen as hire charges. Shrigonda
factory employed 900 bullock carts in sugarcane transportation. Sugar factories in Ahmednagar district are taking trucks on hire basis for sugarcane transportation. Shrigonda factory employed 68 trucks for sugarcane transportation in the year 1991-92 (table 6.8). Ganesh factory employed 350 bullock carts and 43 trucks for sugarcane transportation in the year 1991-92 (table 6.9).

Sanjivani factory employed 414 bullock -carts and 62 trucks for sugarcane transportation in the year 1991-92 (table 6.16)

40. Share of bullock carts and trucks in sugarcane transportation differ from factory to factory. In the year 89-90 Ganesh factory carried 39.21 percent sugarcane for crushing by bullock-carts, the percentage reduced 28.65 % in the year 1991-92. In the same period sugarcane transportation percentage by truck is 60.79 percent, it increased upto 71.35 percent in year 1991-92. This indicates shortage of sugarcane in working area and factory carried more sugarcane by truck. (table 6.11)

41. The percentage of bullock cart cost with total transportation cost of sugarcane shows increasing trend. In the year 1989-90 the percentage of bullock cart cost is 2.73 it increased upto 25-75 percent in the year 1991-92. Whereas percentage of truck cost with total sugarcane cost was 97.27 percent in the year 1989-90. It reduced upto 74.25 percent in the year
1991-92 (table 6.11)

42. In Sanjivani factory sugarcane transportation percentage by bullock carts shows increasing trend. In the year 1987-88 the share of bullock carts was 17.99 percent it increased upto 19.90 percent in the year 1991-92. In the same period share of trucks in sugarcane transportation reduced from 82.01 percent to 80.91 percent. (table 6.12)

The percentage of truck cost with total cost shows declined trend it was 82 percent in the year 1987-88 it was reduced upto 81.56 percent in the year 1991-92. Percentage of bullock carts with total cost of sugarcane transportation is 18 percentage in 1987 and it increased upto 18.44 percent in 1991-92 (table 6.12)

43. In Shrigonda factory share of bullock carts and trucks differ from year to year. In the year 1987-88 share of bullock carts in sugarcane transportation was 59.36 percentage and share of trucks was 40.64 percent. In the year 1991-92 share of bullock cart in sugarcane transportation was 58.66 percent and share of trucks was 41.34 percent. This shows availability of sugarcane in working area of the factory. (table 6.13)

44. In Shrigonda factory percentage of bullock carts in sugarcane transportation cost with total cost was 50.80 percent and trucks in sugarcane transportation cost percentage was 49.20%. In the year 1991-92 the percentage of bullock carts in sugarcane transportation
percentage was 49.20%. In the year 1991-92 the percentage of bullock carts in sugarcane transportation is reduced upto 44.58 and trucks cost percentage increased upto 55.47 percent. (table 6.14)

45. There are many causes of sickness of sugar industries but most important is shortage of sugarcane in working area. Therefore there is a necessity to increase sugarcane crop yield, by adopting modern technique of sugarcane cultivation.

46. The factories having capacity 800 MT TCD. for making unit more benificial, minimum cruching capacity should be 2000 MT. Therefore there is a need to increase crushing capacity of these units which are having capacity below than 2000 MT per day.

Last but not least, every sugar factory should get 100% sugarcane required in the working area for crushing, thereby factory will reduce its transportation cost of sugarcane. If fresh sugarcane is crushed, factory gets good sugar recovery. Due to reduction in sugarcane transportation cost, profitability of the sugar factories increases. If sugar recovery is higher, sugarcane growers will get higher prices, because sugarcane prices are linked with sugar recovery.

Sugar recovery does not depend on efficient sugarcane transportation only, but it also depends upon various factors such as, life of plant and machinery, varieties and types of sugarcane, technical efficiency, efficiency of harvesting and transport departments, official managements, recent technique in sugar production etc. It is concluded that efficient and quick sugarcane transportation facility is the crucial factor in the sugar industry, along with other factors.