CHAPTER - VII
CONCLUSION AND SUGGESTIONS

7.1 Conclusion:

It is concluded that sugarcane is a renewable, natural agricultural resources because it provides sugar, besides bio fuel, fiber, fertilizer and myriad of by-products with ecological sustainability.

1. It is summarized sugarcane is the most versatile crop which provides tremendous potential to the sample sugar factory to manufacture main product sugar and also produce the main by-products of sugar industry are bagasse, molasses and press mud. (Ref. T. N. 4.1, 4.2, 4.3, 4.4, 4.5)

2. It is concluded that all the sample sugar factories total production of bagasses, molasses and press mud is mainly depends upon quantity of sugarcane crushed for the manufacture of sugar and the available quantity of sugarcane to the factory and crushing capacity of the factory. (Ref. T. N. 1.5, 1.7, 1.9, 1.11, 1.13)

3. It is concluded that all the sample sugar factories bagasse production depending on the fiber content of cane, maturity of cane, the methods of harvesting, and the efficiency or capacity of the sugar plant and bagasse percentage on cane crushed. (Ref. T. N. 1.5, 1.7, 1.9, 1.11, 1.13, 4.1, 4.2, 4.3, 4.4, 4.5)

4. It is summarized that all the sample sugar factories molasses production, depends on the total quantity of sugarcane crushed, capacity of the sugar plant, quality of sugarcane, the quality of juice obtained, the type of juice clarification, boiling techniques adopted and molasses percentage on cane crushed. (Ref. T. N. 1.5, 1.7, 1.9, 1.11, 1.13, 4.1, 4.2, 4.3, 4.4, 4.5)

5. It is concluded that all the sample sugar factories the quantity of press mud depends on the extent of impurities (non-sugar) present in juice, the process of clarification adopted and cane crushed and capacity of the plant. (Ref. T. N. 1.5, 1.7, 1.9, 1.11, 1.13, 4.1, 4.2, 4.3, 4.4, 4.5)
6. It is observed that bagasse is very commonly used as fuel in boilers in sample sugar factories for production of steam. The steam is used in the processing of sugarcane to sugar in the factory and also steam is also used by-products department for processing. Datta sugar factory started co-generation project on bagasses based to produce electrical power i.e. cogeneration. Electricity used sugar factory and by-products department and also sugar mills colony. The surplus power from sugar factory is sold State Electricity Board in its GRID for distribution. Warana sugar factory bagasses are used as raw material for its pulp plant for the production of pulp. All the sample sugar factories surplus available bagasse is sold out and gets income. (Ref. T. N. 4.29, 4.30)

7. It is summarized that all the sample sugar factories molasses in the second important by-products. All these sugar factories give income by way of selling molasses. It is also concluded that major constituent of molasses is sugar is more precisely “Sucrose” with varying proportions of glucose and fructose. In sample sugar factories Datta, Kumbhi, Gadinglaj, and Warana sugar factories molasses can be converted into many value added products produced by distillery plant, ethanol and ENA plant. Because of this factory important advantage of generating reasonable profits. (Ref. T. N. 4.13, 4.15, 4.17, 4.18)

8. It is concluded press mud is another important by-products of sample sugar factories. All these sample sugar factories givers income by way of sale of press mud. Recently Datta, Kumbhi, Gadingalaj and Warana sugar factory press mud used by the factory by composting technique. Composting of press mud with the distillery effluent (spent wash) to increase the manorial values of press mud. All these sugar factories compost can be sold to the farmers and substantial amount of income can be generated. (Ref. T. N. 5.30)

9. Effective and efficient working of any sugar factories distilleries depend on a large extent of the abundant supply of molasses. The high C.V. values (table no.4.13, 4.15, 4.17, 4.18) of molasses used in all sample distilleries indicate more fluctuation in the molasses used. Sufficient supply of sugarcane molasses depends on total quantity of sugarcane crushed, capacity of the sugar factory, molasses percentage on cane crushed and market price of molasses. (Ref. T. N. 1.5, 1.7, 1.9, 1.11, 1.13)
10. The capacity utilization is the most important factor in reducing the production cost, optimum capacity utilization results in reducing the use of oil, lubricant and process chemicals etc. The capacity utilization has its impact on their technical and financial performance. The better utilization of the rated capacity in an index of better performance. In the study period three sample sugar factories distilleries shows higher C.V. value Datta-23.20, Kumbhi-19.16, and Gadhinglaj-16.04, and Warana-11.46 indicate more variations in the capacity utilization. (Ref. T. N. 4.13, 4.15, 4.17, 4.18)

11. It is indicated that in sample sugar factories by-product department i.e. distilleries, Ethanol plant, ENA plant its shows overall performance is not up to the mark. The distilleries of sample units capacity utilization based on 300 days, but all the sample distilleries average working days on 199-days only. And also average capacity utilization of distilleries only 59.43 and Datta Ethanol plant only average working 35 days and average capacity utilization 10.27% and Waran Ethanol plant average working days is 47 and average capacity utilization on 11.50% and ENA plant average working days only 29 and mean value of capacity utilization only 10.30%. it shows that all sample units underutilization of the plant. (Ref. T. N. 4.23, 4.24, 4.20, 4.21, 4.22)

12. The total alcohol production depends on large extent on the average recovery of alcohol per metric tons of molasses and total molasses used in the distilleries plant. In the study period all sample distilleries total alcohol production show high C.V. value indicate more fluctuation in these elements. Also the average recovery of alcohol per metric ton of molasses all the sugar factories distilleries shows lower C.V. value (table indicates more stability in the average recovery. Alcohol recovery is the most vital economy indicator of any sugar factories of distilleries. Recent development yield per ton of molasses ranges from 240 liters to 280 liters. (Ref. T. N. 4.13, 4.15, 4.17, 4.18)

13. Molasses has been used in India to produce rectified spirit and alcohol of about 90% purity for producing liquor for human consumption and for producing various chemicals. However with technological development in the recent past, molasses has been effectively used to produce bio-ethanol for blending with petrol as a fuel. (Ref. T. N. 4.20, 4.21, 4.22)
14. The distillery industry today consists broadly of two parts; one is potable liquor and the industrial alcohol anhydrous ethanol for blending with petrol. The potable industry producing Indian Made Foreign Liquor and Country Liquor has a study but limited demand with a growth rate of about 7-10 percentage per annum. The industrial alcohol industry on the other hand is showing a decline trend because of high prices of molasses which is irregularity used as subtract for production of alcohol. The alcohol production is now being utilized in the ratio of approximately 52 percent for potable and the balance 48 percent for industrial and ethanol for blending with petrol use.

15. It was accepted by the Government in 2006, that a mandatory 5% ethanol blending with petrol (EBP) programme and now 10% accepted would directly benefit the sugarcane farmers by assuring the sugar industry a stable and reasonable return for the molasses and then passing a significant part of the same to the farmers.

16. Since the EBP programme was conceived to directly benefit the sugarcane farmers, the ministry of Petroleum and Oil Marketing Companies (POMC) put a specific condition in September 2010, for procurement of ethanol for blending with petrol. As these conditions ethanol should be produced from domestic molasses only. It therefore required that molasses or alcohol cannot be imported by the ethanol producers and the ethanol will have to be produced only from molasses and not sugarcane juice or food grains.

17. Ethanol and alcohol production in India depends largely on availability of sugarcane molasses. Sugarcane production in India is cyclical, ethanol production also varies with sugar and sugarcane production and therefore does not assure optimum supply levels needed to meet the demand at any given time. Lower sugar molasses availability and consequent higher molasses prices affect the cost of production of ethanol.

18. It is studied that by the researcher that in sample co-operative sugar factories attached by-products units systematic planning were not found. Because of causes arises in the way of machinery failure, lack of business mind, not sufficient provide steam and electricity to the by-product units hence by-products units of sample sugar factories are not working efficiently and economically.
19. It is also found that the researcher that in sample by-products units not received quality certification its own products and not received brand name. Also not work out Research and Development department separately in the sample sugar factory and its by-products units. Because of this reason sample sugar factories and its units not awareness in this new policies.

20. Research and development programme namely quality production, training, demonstration and marketing functions not found in sample by-products units.

21. Table no.4.23 all the sample sugar factories average working duration is 199 days and all the sample sugar factories its higher C.V. value indicate more fluctuation in the production days. The working duration of the distilleries largely depends on availabilities of molasses and molasses supply and demand depend on market price of molasses, rectified spirit, and extra natural alcohol. (Ref. T. N. 4.13, 4.15, 4.17, 4.18)

22. Effective and efficient working of any sugar factories distilleries depend on a large extent of the abundant supply of molasses. The high C.V. values of molasses used in all sample distilleries indicate more fluctuation in the molasses used. Sufficient supply of sugarcane molasses depends on total quantity of sugarcane crushed, capacity of the sugar factory, molasses percentage on cane crushed and market price of molasses. (Ref. T. N. 4.13, 4.15, 4.17, 4.18)

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25. Research and development programme namely quality production, training, demonstration and marketing functions not found in sample by-products units.

26. Sample distilleries attached to sugar factory good solution as filler material in the form of press mud (raw material) is readily available for composting plant. This plant negligible power requirement and zero effluent discharge to inland watercourses.

27. The sample sugar factory attached compost plant produced is rich organic and inorganic nutrients and also micronutrients. It can be further enriched with micronutrients to improve its manure value. Because compost can be sold to farmers and substantial amount of income can be generated.

28. Bio-composting is most suitable for distilleries attached with sample sugar factories. Composting fertilizers demanded from farmers is excellent. Four sample sugar factories operated no loss and no profit basis these plant. (Ref. T.N.4.28)

29. It is indicated that availability of press mud may pose a major constraint in sample sugar factory distilleries. The transportation of press mud from nearby sugar factory or supplementing with alternate filler material such as trash, bagasse or other suitable agro-residues etc. may overcome this difficulty. During rainy season aerobic composting may have to be discontinued. (Ref. T.N.4.28)

30. The sample sugar factory distilleries indicated that zero discharge can be achieved through bio-composting project is carried out under truly aerobic conditions. No odour or fly nuisance. The finished product is entirely free from any repulsive odour. It offers destruction of the effluent, high product value with quick payback, dry bag able product and easy to handle and transport. (Ref. T.N.4.28)

31. Warana sugar factory for getting benefit from by-product karakhana has installed bagasse based pulp and paper mill. Warana sugar factory study period paper mill department let out to other private owner. Only study period pulp department is working under the control Karkhana management. Also the factory Sodium Lignosulphonate is produced from black liquor in sugar factory it is another by-product of the sugar factory. (Ref. T.N.4.29)
32. Warana Pulp department 20 TCD per day plant annual production capacity is on 300-days is (6000 M.T.) and lignosulphonate project 8 TCD per day plant annual production capacity is (2400 M.T.) but these two plant utilized very low capacity used. Because of this plant shows high cost of production increased in the study period. (Ref. T.N.4.29)

33. Datta sugar factory Co-generation project on BOOT helps non-requirement of equity and loans, as well as liability to repay, very limited risk. Also benefited steam and power supply to sugar factory, distillery and colony, (Table no.4.30 shows power consumed by sugar factory and distillery in the year 2011-12 is 300.24 lakhs units and year 2012-13 is 592.00 lakhs units.) during season and off-season, free of any cost.

34. Because of co-generation project savings in office and management cost, improved crushing, improved quality and availability of power in commend areas, additional revenue to farmer shareholders by way of royalty and improved commercial viability of sugar factories.

35. Researcher found the main by-products of bagasses marketing in the sample co-operative sugar factories its sales data indicate C.V. value is high shows (table no.5.6) that higher fluctuation in the quantity of bagasses, rate per ton of bagasses and total sales income. Also found that the sample sugar factories Datta (3.28:1), Kumbhi (12.30:1), Warana (2.97:1) and Rajaram (not seen closing balance) its turnover of bagasses sales shows higher it is indicated that maximum sales turnover is obtained by investing minimum possible funds in the inventory which is a sign of better performance of the sales bagasse. Gadhingalaj (0.98:1) sugar factory found it low turnover ratio of bagasse sales, it shows this sugar factory marketing policy is not effectively implemented.

36. It is found that the price of bagasses will depend on the supply and demand position in crushing period. During the year, when there is bumper crop of sugarcane and abundant supplies of sugarcane are made available to the sugar factories, large quantities of bagasse will be saved. In these circumstances naturally the price of bagasse will go down due to availability of surplus bagasse in large quantities. During the years of lean crop of sugarcane due to less crushing the bagasse saved also be less and hence the price of bagasse will be high.
37. The marketing of by-product molasses in the sample cooperative sugar factories sales data C.V. (table no 5.12) is higher found, its indicated higher fluctuation in the quantity of molasses sales, rate per ton of molasses and total incomes from sale of molasses. Also researcher found that the sample sugar factories molasses turnover ratio is high, it is indicated that maximum sales turnover is obtained by investing minimum possible funds in the inventory which is a sign of better performance of the sales molasses. (Ref. T.N.5.12)

38. Researcher found that the 10th June 1993 the Central Government on India relaxed control movement on molasses and started decontrol policy in relation to molasses. From this year the price of molasses in India generally fluctuated from time to time, depending on the policy of the Central Government and State Government and supply and demand position of molasses.

39. It is found that researcher sample co-operative sugar factories are not use new marketing technique for sale of by-products of distilleries. The sugar factories are only using tender method for selling off by-products and ethanol selling only Indian Oil Marketing Companies contracted price. Also researcher found that the alcohol market research, and competitors study has not followed by sample cooperative sugar factories. Because all these reason are affecting on sample cooperative sugar factories and distilleries profit and financial returns.

40. It is found that the State and Central government has put number of restrictions and procedural hurdles as on sample cooperative sugar factories its by-products such as non issued of export permits for interstate transport of molasses and ethanol, delays in issuing no-objections certificates (NOC), higher taxes and levies across different states have impacted the ethanol blending programme, rules and regulations, including a high excise tax of Rs.750 per ton of molasses, which works out to 25 to 30 percent ad valorem, whereas on industrial alcohol the central excise duty is 12.36 percent ad valorem and interstate (octroi) taxes applicable to potable alcohol for industrial use are equally applicable to ethanol for blending with gasoline, there by severely constraining its availability and utilization for ethanol blending programme. All these reasons are affecting on sample cooperative sugar factories and its by-products units by way sales, increased cost of finished product, low profitability.
41. It is found that the researcher sample cooperative sugar factories and its by-products not working its own marketing department and advertising system is used only news papers and periodicals for the by-products sales and also not used brand name for its alcohol products, not offering price discount on sales. Because all these reason affects on its by-products sales and income.

42. It is also found cost of production of lingnoslfonate and pulp department is very high because because lingnoslfonate and pulp department suffer loss in sales in study period. (Ref. T.N. 5.66)

43. The sample sugar factories composting has come to be accepted as one of the good solutions to the problem of distillery effluent treatment. Because of composting technique applied by the factory achieve zero liquid discharge.

44. Above data of composting sales data indicates sample sugar factories composting fertilizer sold to farmers and very small income can be generated by the factory. It shows the ratio of the mean value of Composting sales to the mean value of cane crushed lakh metric tone by the factory Datta:70.87/11.08=Rs.6.39, Kumbhi-27.06/5.36=5.04, Gadubghlaj-14.92/3.23=4.61 and Warana-68.99/12.51=5.51 it found very small returns by way of composting per metric ton cane crushed. (Ref. T.N. 5.27, 5.28, 5.29, 5.30)

45. Composting fertilizer more demand from the factory command area farmers. Because of the factory very low rate of per tons of composting fixed by the factory. (Ref. T.N. 5.27, 5.28, 5.29, 5.30)

46. It is found in sample sugar factories and by-products department manpower power recruitment system unsatisfactory. It is observed that majority of employees are recruited direct by management. “The creation of employment in the command area of the factory” is the motto of sample co-operative sugar factories, past recruitment policy was right for the mixed economy conditions. But now sample co-operative sugar factories have to face free economy policy, international competition ect. It is therefore there is no any alternative to follow scientific recruitment policy.

47. In sample sugar factories supervisory staff was selected only on the interview test and the selection of workers without any test. It is found that in sample sugar factories and by-products department manpower selection method unsatisfactory. In the sample sugar factory majority of manpower utilized
local rural area and directors relatives therefore the workers not work
seriously in the factory. Also researcher found that the manpower selection
process used in sample co-operative sugar factories and its by-products
department is not proper because it is mostly influenced and the bases for
selection process are not considered seriously.

48. In the sample co-operative sugar factories and its by-products department
manpower lack of training and development programme. It is found that in
sample sugar factories supervisors and workers were given only on the job
training, lecture method and VSI training programme. For increasing work
efficiency and more accuracy training is essential for manpower and newly
recruited workers. Majority of work force had not given single trainings,
but increasing work efficiency and adopt modernization, periodic
refreshing trainings should be given to all employees.

49. The table no.5.46 shows the average current ratio of sample co-operative
sugar factories were Datta-1.92:1, Kumbhi-2.14:1, Gadingalhaj-1.62:1,
Warana-2.27:1 and Rajaram-2.79:1 respectively and all sugar factories
average-2.15:1. The mentioned table and other observation the researcher has
found that only one sugar factories i.e. Gadingalhaj sugar factory shortage of
working capital. This factory indicates had not been able to meet the current
liabilities out of its current assets. Datta sugar factory normally low current
ratio and Kumbhi, Warana, and Rajaram sugar factories satisfactory current
ratio.

50. It is concluded that the sample sugar factories, it is found that average debt
equity ratio was more, it is average ratio is 6.20:1 it indicates that more
amount of borrowed capital as compared to own capital. All sample sugar
factories shows debt equity ratio were Datta-4.39:1, Kumbhi-6.54:1,
Gadinghalaj- (-4.65:1), Warana-10.30:1 and Rajaram-14.45:1 respectively.
This is the ratio of internal or shareholders fund and external capital. It is
indicated Datta, Kumbhi, Warana and Rajarm sugar factories very high debt
equity ratio. Gahinghalj sugar factory mines debt equity ratio shows it means
this factory not borrowing capacity. Greater debt equity ratio indicates that
the creditor’s investment in the business is more than the owners.(Ref. T.N.
5.47)
51. On the basis Table no.5.59 it is noted that distillery is one of the important income source centre in sample sugar factories. By producing ethanol and ENA plant sugar factories can earn considerable amount of income when market demand. Because of Distillery and Ethanol plant Datta Distillery doing very well at present in these sample sugar factories in relation to average profit making and Warana is second unit. The profit and total Capacity of distillery ratio is calculated in percentage is also as follow. Datta-451.16/270*100=167.09 percent, Kumbhi-270.22/90*100=300.00 percent, Gadinghalaj-154.82/75*100=206.72 percent, and Warana-307.73/435*100=70.72 percent. Because of this calculation with capacity utilization to distillery profit is found Kumbhi highest capacity utilization in its small plant and lowest total capacity utilization is found in Warana. For better financial and economical performance Datta distilleries and its ethanol plant and Warana distilleries and its ethanol and ENA plants should efficiently use their capacity utilization. And also it will reduce cost of production and increase income from distilleries by-products.

52. The table no.5.58 indicates average net by-product income including distillery profit in percentage. The average net by-product income including distillery profit in all sample sugar factories 7.07 percent. The average net by-product income including distillery profit of Datta-8.64 percent, Kumbhi-6.74 percent, Gadinghalaj-6.45 percent, Warana-6.66 and Rajaram-6.85 percent. The highest net by-product income including distillery profit was found in Datta-8.64 percent and lowest in Gadinghalaj-6.45 percent. For better financial and economical performance all sugar factories and its distillery units increased net by-product income including distillery profit about 10 percent.

7.2 Suggestions:

1. It is suggested that sugar factories cannot survive only on the basis of sugarcane to sugar. To reduce the cost of production of sugars by utilization the by-products of the sugar factory in a more profitable manner.

2. It is suggested that to produce more products from sugarcane instead of just one product i.e. sugar, which means integral utilization of sugarcane and their derivatives.
3. It is suggested that by introducing energy conservation measures in the sugar factories to reduce steam consumption and thereby reduce the consumption of bagasses as fuel, resulting in surplus bagasse for diversion to the other by-products industries.

4. Higher percentage of molasses is more sugar percentage is going in molasses. It is direct loss of sugar. Therefore final molasses purity should be as low as possible. The molasses purity below 30% is considered as satisfactory.

5. It is suggested that low rate of press mud on cane crushed maintain through the proper cleaning of sugarcane, removing cane binding material before process, using mud setting modern pots and technology in the sugar factory.

6. It is suggested that using press mud to produce bio-gas which is clean and cheap fuel. It contains 65-75 percent methane. It can be produced using the press mud in a bio-gas plant through a process is called “Digestion” Thus press mud helps in obtaining both fuel and manure from the same quantity of press mud. It is a non-convention energy source. The Central and State Government encouraging this programmes.

7. It is suggested that increased working days of distilleries through availability of molasses in a sufficient quantity. And also the sample sugar factory increased molasses through increased quantity of sugarcane crushed, more capacity utilization of sugar factory, available quality sugarcane and increased sugar production.

8. Need to achieve maximum utilization of plant capacity By-products department depends on its sugar factory, hence firstly sample sugar factory must use its capacity 100% and above. Because of By-products department sufficient molasses available for the production of alcohol. Then the by-product department tries to achieve maximum utilization its plants. The underutilization of plant capacity had increased the cost of alcohol, ethanol, ENA and other by-products in distillery. Therefore the sample sugar mills should implement the sugarcane development programs continuously so as to have adequate and regular supply of sugarcane and also to adopt preventive measure for avoiding the mechanical and electrical faults. Underutilization of plant capacity which leads to higher
cost of alcohol production. Therefore the by-products departments should concentrate more on efficient utilization of plant capacity.

9. The Central Government and State Government remove the further difficulties such as procedural hurdles such as non-issuance of export permit for interstate transport of ethanol, delays in issuing no-objection certificate (NOC), higher taxes and levies across different State have impacted the EBP. Rules and regulation, including a high excise tax of Rs.750 per ton on molasses, which works out to 25 to 30 percent and valorem, industrial alcohol the central excise duty is 12.36 percent and valorem, and interstate (octroi) applicable to potable alcohol for industrial use are to equally applicable to potable alcohol for industrial use are equally applicable to ethanol for blending with gasoline there by several constraining its availability and utilization for EBP.

10. In the sample sugar factories three (Kumbhi, Gadhinglaj, and Rajaram) unit is a small plant hence these factory increased plant capacity and get the benefit of the Government of India is offering subsidized loans (through Sugarcane Development Fund) to sugar mills for setting up on an ethanol production unit. The loans provide again this scheme up to a maximum of 40 percent of the project cost.

11. It is suggested that small sugar plant have made expansion in the capacity of factory and by-product unit, modernization their technology and machinery and set up facilities to better utilization of their by-products bagasse and molasses, generate power and produce ethanol respectively. All these activities implemented through Sugar Development Fund in making sugar factories and its by-products department more viable and improving sugarcane varieties in several areas which give better yield and recovery as well as make the mills more efficient.

12. It is suggested that alternate agro waste such as bagasses, sugarcane trash, coconut coir etc. also can be used in combination with press mud (about 20:80 ratio of alternate agro waste to press mud). This can be practiced in distilleries having shortage of press mud so as to meet the material balance.
13. As per the Central Pollution Controls Board guidelines distilleries having bio-composting system are allowed to work only for 270 days. This will allow the distilleries to work for about 330-days.

14. It is suggested that Bio-composting is most suitable for distilleries attached with sugar factory. Strict follow-up and certification of availability of filler material and final product produced is essential.

15. It is suggested that providing subsidy and soft loan bio-composting machinery to the distilleries attached to sample sugar factories from the State and Central Government.

16. For better utilization Pulp and lignosulphonate project of Warana sugar factory well planned for utilized its capacity. Otherwise this plant lease to other industry.

17. At present Datta Co-generation project working only crushing season of sugar factory. But the co-generation plant was designed to operate 330 days per year. It is suggested that co-generation project working above 130 days during the crushing season and 90 days on saved bagasse in the off-season period. The rest of the time it will run on purchased bagasse or coal.

18. For better bagasse sales and stability in sales sample sugar factories adopt professional approach for marketing of bagasse, study the market research and also competitors study.

19. Saving bagasse quantity increased by 4 to 5 percent in the factory and all these bagasse used in cogeneration to produce steam as well as electricity for the factory. Also factory current period the modernized technology may be used for factories which will be useful and beneficial. Due to this modernization the use of steam is decreased up to 37.36 percent

20. For better price of molasses the Central and State Government remove the further difficulties such as procedural hurdles such as non-issues of export permits and ban on inter State transport of molasses and minimise rules by sales and regulations and decreased excise tax and inter State tax.

21. For better price of molasses and stability in sales sample sugar factories adopt professional approach for marketing of molasses, study the market research and also competitors study.

22. The ethanol supply will be stabilised or assured uninterrupted supply can be ensured for blending with petrol.
23. The state owned Indian Oil Marketing companies propose to purchase ethanol at a minimum purchase price (MMP) based on the actual cost of production and import price of the ethanol. In the case of ethanol the MMP should be linked to the prevailing retail diesel price.

24. Given the projection for higher sugarcane production these situation of lower sugarcane prices these condition diversion of sugarcane juice for ethanol production may boost up the situation. The government policies might be changed towards the support of ethanol production.

25. Research and Development for mixing of ethanol in petrol will be carried out and mixing increased up to 10 to 15 percent.

26. Current situation the increase the rate of alcohol (Rectified spirit rate per litre-Rs32 to Rs33) and molasses (molasses price PMT-5000) the production expenditure of ethanol becomes in about Rs.36 to 37 per litre. So that the is difference in between production rate or contracted price and sale rate and hence as per current rate of ethanol the supply of it is impossible to its producers. Therefore the ethanol producers Current year i.e. also Datta and Warana ethanol plant less quantity is produced. Hence Dr.Saumitra Chaudhari Committee recommended that the Central Government should connect the prices of ethanol to petrol. The Government increased the ethanol price up to Rs.36 to Rs.37.

27. The sample sugar factories may expand new lines or contract the old marketer for sale of distillery by- products and after the existing product or develop new uses for the existing products.

28. It is researcher suggested that pulp and lignosulfonate department increased production in the plant by way of increased capacity utilization and reduced cost of production. It is also the study the market condition of pulp and lignosulfonate product.

29. It is suggested that the finished product is entirely free any repulsive odour. The composting department is prepared dry bag able product that is easy to handle and transport.

30. It is suggested to sample co-operative sugar factories and its by-product department that the use of various methods of recruitment is essential for overall development of the factory and its by-products department. Technical and managerial staff should be recruited through scientific
method and non technical and seasonal workers recruited through traditional methods.

31. It is suggested to sample cooperative sugar factories and it by-products department that they should consider Trainings and Development is basic need of the by-products in the dynamic conditions because vast technological changes are coming in the production process. So it is necessary to update the knowledge of employees through Training and Development programmes.

32. Various types of Training and Development programmes should be organized for different technical, supervisory and workers etc. The use and impact of Training and Development programmes should have to be studied carefully for its better result.

33. The purpose of organising Training and Development programmes should be for increasing productivity and to create awareness in the mind of employees about objective and importance of work.

34. All sugar factories should maintain 2:1 current ratio for making prompt payment against current liabilities and sugar factories should try to minimize the current liabilities. All sample sugar factories more attention to current assets and double it to its current liabilities if possible.

35. For better working and efficiency debt equity ratio is 1:1, is required. All the sample sugar factories should minimize debt equity ratio and all sugar factories should increases their own capital.

36. Gadinghalaj: This factory is net worth mines in whole study period because this factory not matsins Current ratio also last two years in study period very low current ratio hence this factory did not meet day to day transitions. Also Debt equity ratio is also is mines shows in whole period it is found this unit financial problem. In the process of decontrol non performing this units or small units not survive, they have closed or such units need to be given on lease or merged with bigger units.
Examining the objective:

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Reference table number.</th>
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<tbody>
<tr>
<td>1.TTo know the growth and development of sugarcane By-products industries and their ancillaries.</td>
<td>1.5, 1.7, 1.9, 1.11, 1.13, 2.1, 2.3, 2.4, 2.7, 2.8, 2.9, 2.10, 2.11, 2.13, 2.14, 2.15, 2.16, 2.17, 2.23, 2.24, 2.25, 2.26, 2.27, 2.28</td>
<td>It indicate growth and development of sugarcane by-product industries.</td>
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<tr>
<td>2.TTo examine the financial position of the co-operative sugar factories and its departments of By-products.</td>
<td>5.36, 2.37, 5.38, 5.39, 5.40, 5.41, 5.42, 5.43, 5.44, 5.45, 5.46</td>
<td>It indicate financial position of sample sugar factories.</td>
</tr>
<tr>
<td>3.TTo study the economics of by-products in sample sugar factories.</td>
<td>5.60, 5.61, 5.62, 5.63, 5.64, 5.65, 5.66</td>
<td>It shows cost of by-product of sample sugar factories</td>
</tr>
<tr>
<td>4.TTo study the functional areas like production, marketing, finance and Human Resource of by-products production in the sample units.</td>
<td>4.1, 4.2, 4.3, 4.4, 4.5, 4.13, 4.15, 4.17, 4.18, 4.20, 4.21, 4.22, 4.29, 4.30, 4.31, 5.1, 5.2, 5.3, 5.4, 5.5, 5.7, 5.8, 5.9, 5.10, 5.11, 5.13, 5.14, 5.15, 5.16, 5.17, 5.18, 5.19, 5.20, 5.21, 5.22, 5.23, 5.24, 5.25, 5.26, 5.27, 5.28, 5.29, 5.30, 5.36, 2.37, 5.38, 5.39, 5.40, 5.41, 5.42, 5.43, 5.44, 5.45, 5.46, 5.32 to 5.35</td>
<td>It shows the functional areas. 1. It shows production performance of sample sugar factories and its by-products department. 2. It indicate marketing position of sample sugar factories by-products. 3. It indicate the financial position of sample sugar factories. 4. It shows manpower utilization of by-product department sample sugar factories.</td>
</tr>
<tr>
<td>5.TTo know the financial liability of the by-products in sample sugar factories</td>
<td>5.36, 2.37, 5.38, 5.39, 5.40, 5.41, 5.42, 5.43, 5.44, 5.45, 5.46</td>
<td>To study the financial liability of the sugar factory and by-products department.</td>
</tr>
<tr>
<td>6.TTo suggest product mix model to sample sugar factories</td>
<td>Chapter no.VI</td>
<td>It shows product mix model for future study.</td>
</tr>
<tr>
<td>7. To draw conclusion and appropriate suggestion, if necessary</td>
<td>Chapter no.VII</td>
<td>conclusion and appropriate suggestion</td>
</tr>
</tbody>
</table>
## Testing of hypothesis:

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Reference Table Number</th>
<th>Hypothesis tested</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Co-operative sugar factories are suffering from the losses due to high cost of production and low productivity in relation to by-product units.</td>
<td>5.60, 5.61, 5.62, 5.63, 5.64, 5.65, 5.66, 4.20, 4.21, 4.22, 4.26</td>
<td>High cost of production–</td>
<td>Null hypothesis is accepted Low productivity- reject this hypothesis</td>
</tr>
<tr>
<td>2. Low level of efficiency is found at various By-product departments.</td>
<td>4.13, 4.14, 4.18, 4.20, 4.21, 4.22, 4.24</td>
<td></td>
<td>Null hypothesis is accepted</td>
</tr>
<tr>
<td>3. The functional areas of management like production, marketing, finance and HR are weak in the by-products sample units.</td>
<td>4.20, 4.21, 4.22, 4.26. 5.1-5.5, 5.7-5.11, 5.13-5.30. 5.46, 5.47 5.32, 5.33, 5.34, 5.35</td>
<td>Functional areas: a)Production: reject this hypothesis b)Marketing:Null hypothesis is accepted c)Finance: Null hypothesis is accepted d) Manapower Utilization: reject this hypothesis</td>
<td></td>
</tr>
<tr>
<td>4. By-Products production mix is not up to the mark in sample units.</td>
<td>6.1</td>
<td></td>
<td>hypothesis is reject.</td>
</tr>
</tbody>
</table>