CHAPTER VII

SUMMARY OF FINDINGS AND CONCLUSIONS
Industry and agriculture are inter-related and inter-dependent. As such an essential link should be provided between these two by improving agriculture and introducing industries in rural areas in a big way. Agricultural surpluses have played a crucial role in the industrialisation of many economies. As long as the productivity of land is low, giving hardly any surpluses, industrialisation would not gain a real momentum. Increase in the productivity of land in its turn depends on structural and technological changes in agriculture. Further, it may be stated that the creation of industrial infrastructure is a necessity for progressive agriculture and rural development.

In view of the importance given to rural industrialisation in recent years, agro-industries assumes significance. Rural industrialisation is considered as a panacea for many of the socio-economic problems of developing countries like India. Since agro-industries have an inherent tendency towards decentralisation and dispersal, development of a network of these industries would not only lead to rapid industrial growth but also reduce the inequality in the distribution of both income and economic
opportunities in different parts of the country and among different sections of population.

In the context of the above, some attempts have been made to organise agro-industries on co-operative lines. This has led to farmers' participation, organisation of infrastructure, later usage of agricultural credit, marketing facility etc. Use of modern inputs and plant protection measures for agriculture also have taken place where co-operative agro-industries have been set up, e.g., sugar co-operatives. However, the paucity of studies on sugar co-operatives in Andhra Pradesh, particularly with reference to the impact of sugar co-operatives on farming community, is felt to be a yawning gap. Therefore the present study is carried out to bridge this gap.

The study makes an attempt to understand whether the sugar co-operatives in Andhra Pradesh have succeeded in promoting/facilitating the expected benefits viz., to secure increase in production, to provide opportunities for gainful employment and to improve the living standards and equitable distribution of gains.

The present empirical study is carried out to pursue the above aim in the context of the Nandyal Co-operative Sugars Ltd., and from the light of the experiences of the farmers' community representing the three
villages from Nandyal Revenue Division of Kurnool district in the State of Andhra Pradesh.

To limit the scope of the study and to organise a scientific assessment, the following objectives and hypotheses are formulated.

Objectives:

The following objectives have been formulated for the purpose of the present study:

1. To portray the history and development of sugar industry with special reference to sugar co-operatives in India;
2. To examine the socio-economic characteristics of the sugarcane growers and non-sugarcane growers;
3. To analyse the changes in agricultural practices and productivity;
4. To examine the changes in the employment opportunities;
5. To analyse the changes in the income levels;
6. To examine the changes in the standard of living; and
7. To examine the general impact of the sugar co-operative in the development of infrastructure, co-operative spirit and social participation.
Hypotheses:

1. Sugar co-operative encouraged the adoption of modern farm technology among the sugar-cane growers. The adoption of farm mechanisation and modern farm technology is related to farm size;

2. The man-days of employment generated and the size of holding are inversely related;

3. The increase in income through agriculture is positively related to the size of holding; and

4. The overall development led to higher investment in human resource development; and the investment is positively related to the size of holding.

For the purposes of study, a total of 160 farmers representing three different villages were contacted. Of the 160 members, 120 persons are Sugarcane Growers and shareholders of Nandyal Co-operative Sugars Ltd; the remaining 40 are non-sugarcane growers. The experiences of these farmers relating to agricultural practices and infrastructural facilities relating to two time intervals were elicited. The two time intervals refer to the year 1981, i.e., before the adoption of sugarcane cultivation
in the region, and the year 1991, a decade after the adoption of sugarcane cultivation. The analysis was carried out independent variable. The size of land holding appropriate statistical tools were also used in the analysis wherever necessary. The following is the summary of the major findings of the present study.

Sugar has been known to India for about 3000 years. India is the original home of sugarcane and sugar manufacture. Indian sugar industry was given protection in the year 1932 and became self-sufficient within a period of four years. The sugar producing units rose from 33 to 137 in this period. Now there are as many as 364 sugar factories of which 65 are in public sector, 105 in joint stock sector and majority i.e., 194 units are in the co-operative sector. The sugar consumption during 1986-87 was found to be 87.51 lakh tonnes.

SOCIO-ECONOMIC CHARACTERISTICS:

2. The respondents are found to be representing all age groups. The average age is found to be 46.6 years. It is observed that age does not determine the option of adopting sugarcane cultivation.

2.1 The respondents represent all caste groups, i.e., upper castes, Backward Castes, Scheduled Castes
and Scheduled Tribes. However, it is observed that the upper and Backward Castes dominate the sugarcane cultivation scene in their representation. As far as agrarian social structure of the farmers under reference is concerned, it is observed that there is a greater continuity of traditional agrarian social structure, viz., dominance of peasant/upper castes in the control of land. However it is also noticed that there is a sizeable percentage of neo-farmers representing Backward Castes, Scheduled Castes & Scheduled Tribes, as a consequence of land reforms and welfare measures.

2.2 It is found that illiterates dominate among the non-sugarcane growers and literates are in a majority among sugarcane cultivators. It is observed that cultivation of cash crops such as sugarcane and others is favoured more by literates as their educational achievements help them in their dealings with the sugar cooperatives, modernisation of farm technology and search for new market opportunities.

2.3 It is found that the sugarcane growers are well endowed in their earnings. The average income per annum is found to be ₹. 66583. In the contrary the non-sugarcane growers are found to be earning an average income of ₹. 32338 per annum.
2.4 It is found that small farmers constitute 15 per cent among the sugarcane growers; and medium and large farmers constitute 42.50 per cent each respectively. Sugarcane growers control a total of 1160.50 acres and the average holding of the small farmer is 3.53 acres; the medium farmers' average holdings are 7.14 acres and the large farmer average holding is 14.37 acres. 63.16 per cent of the total land controlled by the sugarcane growers is under the control of large farmers. 56.23 per cent of land is irrigated and it is found that small farmers enjoy better irrigation through canal. It is observed that, sugarcane growers devote more than 70 per cent of their land for cash crops.

AGRICULTURAL PRACTICES:

3. The analysis of the changes in the agricultural practices and productivity was made in relation to the area under cultivation by crop; position of farm equipment, farm machinery and hired help; improved agricultural practices; application of chemical fertilizers; and changes in the yield by crop. It was hypothesized that sugar co-operatives encourage the adoption of modern farm technology among sugarcane growers. The adoption of farm mechanisation and modern farm technology is related to farm size (size of holding).
3.1 Sugar cultivation, as a sequel of sugar cooperatives, led to fuller utilisation of land under the control and registered productive changes in the area under each crop in the case of sugarcane growers. The area under paddy cultivation has decreased by 40.2 per cent and this decrease is found to be made up by sugarcane cultivation. With regard to other crops like jowar, groundnut, sunflower and cotton, there is an increase in the area under cultivation.

3.2 The decrease in the area under paddy cultivation is found to be inversely related to the size of holding. The decrease is found to be more (61.9 per cent) in the case of small farmers. The small farmers, because of their small holdings, have to reduce the area under paddy cultivation so as to adopt sugarcane cultivation.

3.3 The general increase in the area under cultivation by crop is found to be positively related to the size of holding.

3.4 It is found that after the advent of sugar factory none of the sugarcane growers depends exclusively on subsistence crops. In addition to sugarcane, 63.3 per cent also raise market crops like groundnut, sunflower, cotton, mirchie and food crops like paddy and jowar;
32.5 per cent of farmers raise sugarcane and food crops. The emphasis on market-oriented cash crops, it is observed, led to more intensive cultivation. This is particularly true in the case of small farmers.

3.5 The sugarcane growing small farmers have shifted to the use of iron ploughs instead of wooden ploughs. The percentage of change is found to be 700 per cent.

3.6 The adoption of mechanisation is found to be positively related to the size of holding. None of the small farmers is found to be using tractors, whereas the percentage of change in adoption of mechanisation by way of tractor use is found to be 100 per cent in the case of large farmers.

3.7 It is observed that there is an increase in the use of hired labour to operate farm machinery by 3.67 per cent and a decrease in the use of family members by 4.17 per cent indicating greater recognition of labour specialisation; these changes are observed to be positively related to the size of holding.

3.8 The adoption of improved agricultural practices is found to be inversely related to the size of holding. The small farmers who were not adopting high yielding varieties, mechanisation etc., earlier have been found to be greatly in favour of the adoption of modern farm
technology and innovations. The adoption of improved agricultural practices is found to be inversely related to the size of holding; and the use of tractor power (mechanisation) for farm operations is found to be positively related to the size of holding.

3.9 It is found that the percentage of change in the use of chemical fertilizers per acre is inversely related to the size of holding. The percentage of change is observed to be 247.86 per cent in the case of small farmers against 50.45 per cent in the case of large farmers.

3.10 The per acre yields are found to be inversely related to the size of holding. Small farmers, it is observed, were successful enough to achieve higher yields per acre in every crop they attempted.

EMPLOYMENT GENERATION:

4. Our data reveals that sugarcane cultivation, market orientation and intensive cultivation, adoption of modern farming practices have led to an increase in the employment opportunities; and this increase in employment opportunities is found to be largely beneficial to small farmers.
4.1 Our data revealed an increase in the generation of mandays of employment among the sugarcane growers. Previously it was 41105 mandays and in the year 1991 it was found to be 50339 mandays of employment. The percentage of change is found to be 22.47 per cent.

4.2 It is found that the mandays of employment generated is inversely related to the size of holding. It is 95.19 mandays per acre in the case of sugarcane growing small farmers and 62.41 and 29.44 mandays per acre respectively with regard to medium and large farmers.

4.3 The percentage of change in mandays of employment generated is found to be 48.52 per cent in the case of small farmers and 21.66 per cent and 17.5 per cent respectively in the case of medium and large farmers.

CHANGES IN INCOME:

5. Our analysis of changes in income levels reveals impressive and positive figures. Our findings demonstrate that there is an equitable distribution of income after the advent of sugar co-operatives.

5.1 Our data shows that prior to the adoption of sugarcane cultivation the average income of the respondents was ₹ 21077 per annum and the average income per acre was found to be ₹ 2179 per annum. Now in the year
1991 the average income of the sugarcane growers was found to be ₹ 64583 per annum and the average income per acre ₹ 6678 per annum. The percentage of change is found to be 206.41 per cent.

5.2 Our data reveals inverse relationship between per acre income and the size of holding. It is found that the average income per acre is ₹ 11818 in the case of sugarcane growing small farmers and ₹ 7042 and ₹ 6051 respectively per acre with regard to medium and large farmers. In view of this finding, our contention that the increase in income through agriculture is positively related to the size of holding is rejected.

5.3 It is found that the percentage of change in income is higher in the case of small farmers which is 284.38 per cent. This is followed by medium farmers (217.66 per cent) and it is the least in the case of large farmers (190.5 per cent).

STANDARD OF LIVING & QUALITY OF LIFE:

6. The standard of living and quality of life were examined with reference to expenditure incurred on such key elements of human resource development as food, education and health, and shelter. Our analysis reveals that there is a clear and impressive improvement in the standard of living and quality of life. And the quantum
of expenditure incurred by sugarcane growers on agriculture, food, education, health, domestic needs and shelter is far higher than that of non-sugarcane growers.

6.1 The total expenditure incurred in the year 1981 was Rs. 1856650 and in the year 1991 it was found to be Rs. 6049150. The expenditure incurred on non-agricultural items in the year 1981 was 33.04 per cent; and in the year 1991 the expenditure on non-agricultural items was found to be 37.8 per cent.

6.2 The average expenditure incurred on items such as food, education, health and domestic needs in the year 1981 was Rs. 3950, 313.17, 248.92 and 146.67 rupees respectively, whereas expenditure incurred on these items in the year 1991 was found to be Rs. 11374.5, 5891.67, 555.83 and 332.5 respectively.

6.3 The percentage of change in the expenditure incurred on items such as food, education, health and domestic needs are found to be 187.96 per cent; 1781.32 per cent, 123.29 per cent and 126.8 per cent respectively.

6.4 It is found that previously 8.33 per cent and 48.33 per cent of the sugarcane growers were living in kutcha and tiled houses respectively. It is found that now an overwhelming majority (95 per cent) are living in pucca houses and only 5 per cent live in tiled houses.
6.5 Our data revealed that the overall development has led to higher investment in human resource development and the size of investment is positively related to the size of holding.

ROLE OF SUGAR CO-OPERATIVE:

7. From our analysis, it is observed that the sugar co-operative has benefited the region in the facilitation of infrastructure development and promoted market orientation and scientific agricultural practices among the farmers.

7.1 It is observed that the sugar co-operative has benefited the rural populace of the region in general and sugarcane producers in particular both directly and indirectly by way of facilitating and fostering infrastructural facilities such as institutionalized credit services, transport facilities, market opportunities, supply of seeds, fertilizers and pesticides and by providing training and extension services to the farmers.

7.2 It is noticed that the sugar co-operative itself has become a focal point both for economic social development by facilitating transition from traditional farming to modern farming, adoption of modern farm technology, market orientation and capital formation and paved way for prosperity.
7.3 It is observed that the sugar co-operative was only partially successful in installing the co-operative spirit and practice and social participation among its producer members.

7.4 It is noticed that the sugarcane producers are frequently sought after for their expertise and advice on modern farming methods by other farmers.

CONCLUSIONS:

The present study is carried out to examine the impact of the Nandyal Co-operative Sugars Ltd. More specifically our attempt was to examine whether or not the sugar co-operative has succeeded in facilitating the increase in productivity, opportunities for gainful employment, improvement in the standard of living and equitable distribution of gains.

To answer these issues the analysis was carried out by examining the data at two time periods i.e., the data pertaining to the year 1981, the year before the advent of the sugar co-operative and adoption of sugarcane cultivation, and the year 1991, a decade after the advent of sugar co-operative and sugarcane cultivation. The major findings are already summarised in the previous section. On the strength of these findings an attempt is made to arrive at a few broad conclusions in response to the issues raised.
Our first conclusion is that with the advent of The Nandyal Co-operative Sugars Ltd., the sugar co-operative has taken pains to facilitate and strengthen the infrastructural facilities like institutionalised credit services etc., and has undertaken motivational training and extension services to encourage farmers to be market-oriented in their cropping pattern and to adopt modern farm technology. Our findings clearly show that farmers who have responded to change and adopted sugarcane cultivation in particular have gained and benefited. These farmers have adopted modern farm technology, have become market-oriented and thus have shifted from traditional farming and subsistence-oriented cropping to modern farming practices and market-oriented cropping pattern. This shift has paved way for intensive cultivation, higher yields per acre and thereby higher incomes, particularly in the case of sugarcane growers.

Thus the advent of sugar co-operatives has made a definite impact in the development of agricultural practices in the region under reference. The promotion of modern farm technology, cash cropping and intensive cultivation by the advent of sugar co-operatives have led to the neutralisation of the advantages of large holdings and made cultivation of even small holdings viable and remunerative.
Our second conclusion is that intensive cultivation on account of market-oriented cropping and modern farm technology has generated additional employment opportunities both within and outside the farm sector. Our findings clearly pointed out that the additional employment generated has been beneficial to the small farmers in terms of employment opportunities. It may be generalised that, even the farmers of small-sized holdings can be benefited gainfully by adopting modern practices, suitable cropping patterns, intensive cultivation and market orientation techniques. This has become possible due to the creation of market opportunities by the sugar co-operative. Thus this process can prove to be an answer for unemployment and rural development in rural India with particular references to backward regions.

Our findings clearly show that consequent on the advent of the sugar factory and subsequent changes in farm practices registered impressive changes in income levels and also appreciable improvement in the standard of living and quality of life. More than in the past, now the farmers are in a position to make higher investments on food, education, health, domestic needs and shelter - the key elements of human resource development, standard of living and quality of life. Our third conclusion is that the promotion of agro-industries like
sugar factory would benefit the region and facilitate the improvement of standard of living and quality of life.

Finally, our findings suggest that the benefits accrued and the gains achieved owing to the impact of the sugar co-operative are not funneled to one section of the farmers community alone. Our findings clearly pointed out that there is an equitable distribution of benefits, more so in the areas of income and employment generation, the key factors in the process of rural development.