CHAPTER – VII

SUMMARY, CONCLUSIONS AND SUGGESTIONS
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CHAPTER – VII

SUMMARY, CONCLUSION AND SUGGESTIONS

This chapter is divided in to 3 parts. Part 1 deals with summary, Part 2 deals with conclusions and Part 3 deals with suggestions.

I. PART -I SUMMARY:

Though there are several studies dealing with Nagarjuna Sagar Left Canal for different periods, different purposes but this study deals with intensive agricultural aspects i.e., production, productivity, Income, Surplus and Cost for two selected sample villages in 2 periods 1988-89 and 2008-09. To understand the impact of Nagarjuna Sagar Left Canal on agricultural development is almost 2 decades. We have taken all types of farmers i.e., marginal farmers, small farmers, medium farmer and large farmers.

The production is dealt with per acre as well as total production of the crops that are grown in two seasons in 2 periods. Productivity is estimated in number of quintals of the produce per acre. So far as cost is concerned, it covers with seeds, sowing, plantation, harvesting, labour used (including family labour for whom wages are estimated like any hired labour i.e., imputed value of family labour). Manure and chemical fertilizers cost is estimated both for total land operated and for all the area
cultivated crop wise, season wise. We have also estimated advantages and disadvantages of Nagarjuna Sagar Left Canal. In the sample villages asset creation took place among all types of farmers. Farmers purchased tractors, gold, land, houses constructed and provided good health and education to the family members. This is done for all farmers’ social category wise i.e., OC’s, BC’s, SC’s, and ST’s.

**Objectives of the Study:**

1. To study the impact of NagarjunaSagar Left Canal irrigation on the production, productivity of various crops in Thungapahad and Alagadapa villages in Miryalguda Mandal of Nalgonda District.
2. To study the changing cropping pattern before stabilization and after NagarjunaSagar left canal water stabilization in the study area.
3. To analyse the changes in the economic and social environment of the study area.
4. To assess the advantages and disadvantages faced by farmers in the above period.
5. To analyse the cost of cultivation, income received and surplus derived.
6. To study the structural changes in irrigation of study area.
7. To study the irrigation development through Five Year Plans.
8. To study the asset creation by farmers in study area.
Objectives answered:

1. The production of all the crops increased in 2008-09 over 1988-99. For example total output of paddy has increased by 16,157 quintals (the details are given in table no. 5.2 col.9 of the thesis). The productivity of paddy has increased in Kharif season from 9.03 quintals in 1988-89 to 25.22 quintals per acre in 2008-09 (average productivity). The details are given in table no. 5.13 and 5.3

2. The cropping pattern has changed in 1988-89. More area is allocated to subsistence crops which require less water. In 2008-09 more area is allocated to more water requiring crops as well as commercial crops. In this period along with paddy, vegetables, fruits have grown to a great extent.

3. Due to the release of water by Nagarjunasagar Left Canal the farmers have changed their attitude. They were sending their children for tending the cattle before 1988-89. But due to increase in income they are sending their children to the private English medium schools. Farmers who were getting their family members treated for their health in the Government hospitals are now getting their family members treated at private corporate hospitals. This is
true for all the category of farmers i.e., marginal, small, medium and large farmers as well as all social caste people. This is given in table no. 6.7.

4. The advantages and disadvantages due to the provision of Nagarjunasagar Left Canal, ORAL enquiry is conducted. 90% of the farmers expressed that due to Nagarjunasagar Left Canal the output increased, incomes increased and their standard of living increased. Only 10% of the farmers revealed that, their health is spoiled, humidity increased, unbalanced temperature is prevailing. Some of the farmers were not paid the compensation announced. The details of this, is given in Chapter VI part II. Many of the marginal and small farmers stated that inequalities have increased in the ownership of land and income earned.

5. The economic and social environment changed. The culture of people changed. The people were shy of participating in meetings now they are representing their owes to the officers who are visiting the village. They are participating in Gramasabhas. The pattern of kitchen, residence mingling with one other changed. They habituated getting their problem solved collectively. The cost of
cultivation, income received and surplus derived has all increased to all farmers. The details of which are given in Chapter 5.

6. The structural changes have taken place in irrigation. The details are given in Chapter I, item VI. In 1988-89 tank irrigation was higher other types of irrigation was lower. In 2008-09 along with Nagarjunasagar Left Canal irrigation, well irrigation also increased substantially.

7. Irrigation development in Andhra Pradesh is given in Chapter I, item IV & V where in the percentage of area irrigated to total cultivated area has increased during the Five Year Plans both in India, Andhra Pradesh and Nalgonda District.

8. All the farmers have resorted to asset creation. The details are given in Chapter VI part II table no. 6.7 where the farmers have purchased gold, land, cattle, tractors and houses constructed.
Hypothesis:

To realize the above objectives the following hypothesis are formulated

1. Positive relationship exists between increase in irrigation facilities and production and productivity, when irrigation facility increases. Production and productivity also increases.

2. Positive relationship exists between farm size and benefits of irrigation. This means that large size farmer reap more advantages by Nagarjunasagar left canal irrigation than medium, small and marginal farmers.

3. Structural changes have taken place in irrigation sector during the study period.

4. Cropping pattern changed during the study period in the sample area.

Hypothesis verified:

1. As irrigation facilities increased production and productivity of all the corps increased, the details are given in Chapter No. 5 in the form of several tables.
2. Positive relationship existed between the various categories of farmers pertaining to production and productivity for various crops. For example, the cost of cultivation, production and productivity were higher to large farmers over marginal farmers. The details of this, is given in Chapter V. As size of land increased, the cost income, production and productivity of all the crops has increased. This is true for both the periods i.e., 1988-89 and 2008-09.

3. The structural changes in irrigation has taken place in the study area in 2008-09. Canal and well irrigation is predominant where as in 1988-89 it is the tank and well irrigation was important. This is given with data in Chapter I item VI.

4. Cropping pattern changed with little extent for example Paddy, Groundnut is grown in both the periods, but its intensity increased in 2008-09 as well as there is increase of production of commercial crops such as vegetables and fruits.

II PART – II Conclusions:

1. Production:

In 2008-09 all the farmers together (in Kharif) produced 18,920 quintals of paddy Col. 3 Table 5.3. The revenue received is Rs.187740000/-
where as in 1988-89 in Kharif Season total value of paddy production is Rs. 859290/- col. 6 Table No. 5.13. The total production has increased by Rs. 17909350/- is the additional production (in Rs.) derived due to the Nagarjuna Sagar Left Canal (after stabilization). This is the impact of Nagarjuna Sagar Left Canal on the production of paddy in kharif season.

**Rabi Paddy:**

In 2008-09 Rabi the total production of paddy is 5120 quintals col.3 Table No. 5.7 and its value is Rs. 6456000/- (please see table no.5.7 col.No.7)

In Rabi 1988-89 total value of paddy is Rs. 1009200/- col.6 Table No. 5.16. The difference is Rs. 5446800/- This may be attributed as impact of Nagarjuna Sagar Left Canal on paddy cultivation.

**Ground Nut Crop:**

The second important crop cultivated is groundnut in 2008-09 other crops cultivated are paddy (please see col.2, table no.5.14) in small area.

In Rabi Ground nut is cultivated in 145 acres in 1988-89 total value received is Rs. 8052000/- (Please see col. 6 of table no. 5.17).
In 2008-09 Rabi groundnut is cultivated in 220 acres and received Rs. 10644000/- and in terms of output, it is 2460 quintals (Please see table no. 5.4). Thus the value of groundnut received is more after Nagarjuna Sagar Left Canal is stabilised i.e., Rs. 10644000/- minus Rs. 8052000/- = Rs. 2592000/- this increase may be attributed to Nagarjuna Sagar Left Canal. Dry crops/ rain fed crops are grown in both the seasons in both the periods because Nagarjuna Sagar Left Canal is not providing water for irrigation sufficiently.

In both seasons in both the periods mixed crops are cultivated such as groundnut, pulses, chillies, cotton etc the details are given in the table. It is clear on the whole Nagarjuna Sagar Left Canal has increased the production of all crops. Here mention may be made that the price of paddy varied from farmer to farmer, production also varied from farmer to farmer because of the quantity sold and place where it is sold.

### Table No. 7.1
**Kharif, Rabi – Total Paddy in 1988-89 in rupees**

<table>
<thead>
<tr>
<th>Crop</th>
<th>Kharif</th>
<th>Rabi</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy in Rs</td>
<td>859290</td>
<td>1009200</td>
<td>1868490</td>
</tr>
<tr>
<td>Paddy in quintals</td>
<td>3333</td>
<td>4550</td>
<td>7883</td>
</tr>
</tbody>
</table>
### Table No. 7.2
**Kharif, Rabi – Total Paddy in 2008-09 in rupees & quintals**

<table>
<thead>
<tr>
<th>Crop</th>
<th>Kharif</th>
<th>Rabi</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy in Rs.</td>
<td>1,87,70,000</td>
<td>64,56,000</td>
<td>2,52,26,000</td>
</tr>
<tr>
<td>Paddy in quintals</td>
<td>18,920</td>
<td>5,120</td>
<td>24,040</td>
</tr>
</tbody>
</table>

### Table – 7.3
**Difference in the production of paddy in Kharif and Rabi in 1988-89 and 2008-09 in Rs.**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy in Rs.</td>
<td>8,59,290</td>
<td>1,87,70,000</td>
<td>10,09,200</td>
<td>64,56,000</td>
<td>-</td>
</tr>
<tr>
<td>Difference in Rs</td>
<td><strong>1,79,10,710</strong></td>
<td></td>
<td><strong>5,44,680</strong></td>
<td></td>
<td><strong>1,84,55,390</strong></td>
</tr>
</tbody>
</table>

### Table No. 7.4
**Difference in the Production of Paddy in Kharif and Rabi in 1988-89 and 2008-09 in quintals**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy in quintals</td>
<td>3333</td>
<td>18920</td>
<td>4550</td>
<td>5120</td>
<td></td>
</tr>
<tr>
<td>Difference in quintals</td>
<td>15,587</td>
<td></td>
<td>570</td>
<td></td>
<td>16,157 quintals</td>
</tr>
</tbody>
</table>

Same method we have followed for other crops also.
Table No. 7.5
Productivity of Paddy crop

<table>
<thead>
<tr>
<th>Crop</th>
<th>Kharif 1988-89</th>
<th>Kharif 2008-09</th>
<th>Difference Quintal / acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy per acre in quintals</td>
<td>9.03</td>
<td>25.22</td>
<td>16.19</td>
</tr>
<tr>
<td>Crop</td>
<td>Rabi 1988-89</td>
<td>Rabi 2008-09</td>
<td>Difference</td>
</tr>
<tr>
<td>Paddy per acre in quintals</td>
<td>17.50</td>
<td>23.00</td>
<td>5.5</td>
</tr>
<tr>
<td>Total</td>
<td>26.53</td>
<td>48.22</td>
<td>21.69</td>
</tr>
</tbody>
</table>

Productivity of paddy has increased as a whole in the year per acre to 22.14 quintals together in Kharif and Rabi of 2008-09 over 1988-89.

When we consider category wise productivity it is in the decreasing order (positive relationship between farmer size and production per quintal) in Kharif 2008-09 the productivity is 22, 24, 25 & 28 quintals per acre for marginal, small, medium and large farmers respectively (Please see table no. 5.3 col.2).

2. Cost of Cultivation:

Cost of cultivation as a whole is increased in 2008-09 over 1988-89. The category of farm wise cost is in the increasing order. This means that, it will be more to large farmers and less to marginal farmers for cost of paddy cultivation per acre.
Table No. 7.6
Statement showing the cost of cultivation per acre per season for all types of farmers (Paddy in Rs.)

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Type of farmers</th>
<th>Kharif</th>
<th>Rabi</th>
<th>Kharif</th>
<th>Rabi</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Marginal farmers</td>
<td>140</td>
<td>150</td>
<td>12300</td>
<td>--</td>
</tr>
<tr>
<td>2</td>
<td>Small farmers</td>
<td>160</td>
<td>180</td>
<td>12750</td>
<td>--</td>
</tr>
<tr>
<td>3</td>
<td>Medium farmers</td>
<td>200</td>
<td>200</td>
<td>13125</td>
<td>13125</td>
</tr>
<tr>
<td>4</td>
<td>Large farmers</td>
<td>220</td>
<td>210</td>
<td>13500</td>
<td>13500</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>720</td>
<td>740</td>
<td>51675</td>
<td>26625</td>
</tr>
</tbody>
</table>

This method we have followed for the cultivation of cost per acre per season.

Table No. 7.7
(Paddy crop) for all farmers for all the area cultivated

   8,59,290 + 10,09,200 = 18,68,490

2. Kharif cost + Rabi cost in 1988-89
   71,620 + 51,700 = 1,23,320

3. Net Income (1-2) 1988-89
   18,68,490 – 1,23,320 = 17,45,170

1. Kharif income + Rabi income in 2008-09
   1,87,70,000 + 64,56,000 = 2,52,26,000

2. Kharif cost + Rabi cost in 2008-09
   73,99,500 + 14,74,500 = 88,74,000

3. Net Income (1-2) 2008-09
   2,52,26,000 – 88,74,000 = 1,63,52,000
Income increased by paddy crop (Impact of irrigation by Nagarjuna Sagar Left Canal)

**Net Income in 2008-09 – Net Income in 1988-89**

Rs. 1,63,52,000 – Rs. 17,45,170 = Rs. 1,46,06,830

(This method is followed for other crops also)

**III PART – III SUGGESTIONS**

Water is precious natural resource which is used for drinking, irrigation, power production etc. The population is increasing all over the world to that extent the demand for water is also increasing. Therefore water has to be used in an efficient manner. The canals have to be repaired from time to time, flow of water in to sea to be arrested. The rain water has to be stored properly. In India in some parts rainfall is heavy and the water goes into sea wastefully. In some parts of India due to inadequate rainfall, drought, famine is occurring and poverty is increasing. As suggested by irrigation experts. Ganga River to be linked to Cauvery so that, this problem is to be attended properly. The Agricultural Scientists have to develop new variety of seeds which require low water. Information Technology has to be applied in the process of agricultural development. New methods of agriculture have to be developed, storage facilities have to be increased. Irrigation infrastructure has to be developed. In the villages
tanks which are in the destroying stage have to be properly maintained to attain sustainable development. The construction of tube wells to be discouraged, Soil testing centres all over India to be established. Remuneration prices have to be given to the farmers. In our study we found that open market price is higher than MSP along with extended irrigation facilities the above suggestions are looked in to and food security can be provided.

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