



“Impact of Irrigation Scheme on Agricultural Development - A study of Krishna Sugar Factory Irrigation Scheme Rethare Bk. Satara District , Maharashtra State”

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Abstract:

India is the most extensively irrigated country in the world. The problem of Indian agriculture is mainly the water supply. Water is indispensable to agricultural production. In areas where rainfall is well distributed throughout the year, there is no problem. But in uncertain rainfall areas irrigation is quite essential for cultivation. For the sugarcane cultivation there is requirement of regular supply of water. Because of this Krishna Sugar Factory established a Krishna Irrigation Scheme in 1967. The objective of this paper is to study the role of Irrigation Scheme in agricultural development. Basically the entire study is based on secondary data. The Krishna Irrigation Scheme is developed in the Karad, Walwa,

INTRODUCTION :--

Indian economy is primarily an agriculture oriented economy. Agriculture has been the primary occupation of the people in our country. It has been the chief source of national income. It has been the source of supply of raw materials to our leading manufacturing industries. So agriculture can be called the backbone of the Indian economy. The problem of Indian agriculture is mainly the problem of water supply. Land will not yield satisfactory crops unless it is given a plentiful supply of water. Soil of India is comparatively dry. The period of rainfall is only four months but the crops require water throughout the year. Multiple cropping can be made possible by irrigation. It can bring more land under cultivation. Irrigation confers indirect benefits through increased agricultural production. Indian agriculture is a 'gamble of monsoon'. Uneven agricultural production in India is highly responsive to uncertainty of rainfall.

Maharashtra Sugar Industry is one of the most notable and large-scale sugar manufacturing sectors in India. The pace of growth of sugar manufacturing has been massive over the past few years. The latest statistics of sugar production in Maharashtra indicates that this state is doing better than the other states in the country.

The sugar industry in Maharashtra is highly popular in the cooperative sector, as farmers own a portion in the sugar factories. Maharashtra Sugar Industries has seen a spectacular growth owing to the different conducive in the state. Sugarcane is one of the most important cash crop of Maharashtra. Sugarcane is a long duration crops requiring continuous supply of water.

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OBJECTIVE :-

The objective of this paper is to study the Krishna Sugar Factory Irrigation Scheme and to study the impact of this irrigation scheme in the agricultural development.

STUDY REGION :-

The study area is located in Karad tehsil of Satara district (Maharashtra). Y. M. Krishna Cooperative Sugar Factory is the one of the famous sugar factory of western Maharashtra. This factory lies between 17°10'10" north latitude and 74°14'1" east longitude. The altitude of the area is 574 mts. above mean sea level. The catchments area of Krishna Sugar Factory is in Karad, Walwa and Khanapur tehsil. In the study region Krishna and Koyana are important rivers. The river valleys are occupied by typical black soil. Basalt is the main stone in this region. The geological formation of this region is only the Deccan trap. Agriculture is the most important occupation of people in this region. The annual temperature of this region is minimum 21°C and maximum 31°C. The annual average rainfall is 650 to 750 mm.

DATABASE AND METHODOLOGY :-

Basically the entire study is based on secondary data. This data is collected from the irrigation office of Krishna Sugar Factory. Simple statistical techniques have been used for the analysis and interpretation of data.

KRISHNA SUGAR FACTORY IRRIGATION SCHEME :-

Y. M. Krishna Cooperative Sugar Factory is established in 1955 at Rethare Bk. in the Satara district. This area produces sugarcane crop. Sugarcane starts growing in a mean temperature of about 20°C, the annual temperature of this region is minimum 21°C and maximum 31°C. Deep rich loamy soils and black soil are ideal for the sugarcane production, the region is covered by black soil. An abundant supply of cheap labour is essential and it requires a long rainy season of about 8 months duration in summer with about 150 cm. rainfall. In areas having less than this amount, it is raised under irrigation.

In the catchment area of Sugar Factory all climatic condition are well for manufacturing the sugarcane without the permanent water supply. The sugarcane crop needs a fairly large quantity of water during the periods when there is no rain. The sugarcane cultivation requires a large quantity of water and because of uncertain rainfall Krishna Sugar Factory established a Krishna Sugar Factory Irrigation Scheme in 1967.

Krishna Sugar Factory Irrigation Scheme is widely spread particularly in the Krishna and Koyana river basin. The total area of this factory is developed in Karad, Walwa and Khanapur tehsil, but the irrigation scheme is developed only in Karad and Walwa tehsil. The farmers of this region used to make full use of river water for growing sugarcane. The area was irrigated by lift irrigation scheme. Krishna Sugar Factory lift irrigation was operated on river banks with Jack-well. The management has first constructed the Jack-well at five places. The demand of water supply increased in this region therefore the management constructed another ten schemes in this area. Today the management has developed the 15 irrigation sub schemes for the water supply. In this irrigation scheme water from Krishna and Koyana rivers is allowed to reach the field through small channels.

In this irrigation scheme high power electric motors are used for tapping the water. The motor installed in the Kalwade irrigation scheme is of highest HP. It is 1300 HP (325×4) motor. Chachegaon pump house has installed the motor of 150 HP (75×2). It is the lowest HP motor in this irrigation scheme. The total catchments area of sugar factory is 70000 hectare. In this total area the irrigated scheme covered some 13500 hectare area only. Remaining all the area is irrigated by the private well and lift irrigation, and commercial irrigation scheme. The scheme has covered 81 villages of this region. The total area irrigated by this scheme is as follows.

Sr. No	Year	Total irrigated area(in hectare)	Irrigated by old scheme	Irrigated by new scheme
1	1980-81	4916	3982	934
2	1985-86	10662	7186	3476
3	1990-91	8684	7096	1588
4	1995-96	8378	8207	271
5	2000-01	6874	6618	256
6	2005-06	9318	6983	2335
7	2007-08	7432	6524	908

Thus in this area the irrigation scheme provides water supply for the sugarcane cultivation. After 1980-81 the irrigated land increased. But recently the irrigated land is decreased because the farmers of this area have dug wells and bore wells in their farms. The ground water level is increased by this irrigation scheme.

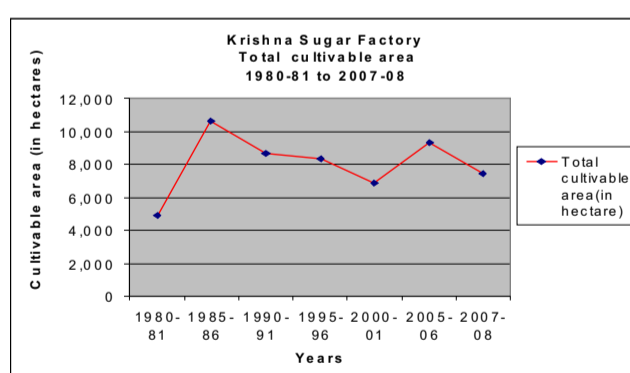
FINDING :-

1. The irrigation scheme is developed for the agricultural production. The factory not only gives the irrigation facility to the farmer but also give the fertilizer, HYV seeds. Because of this the total cultivable area is increased. Due to this scheme dry land is converted into irrigated land.

The total cultivable area developed by Krishna irrigation Scheme

Sr.No	Year	Total cultivable area (in hectare)
1	1980-81	4,916
2	1985-86	10,662
3	1990-91	8,684
4	1995-96	8,378
5	2000-01	6,874
6	2005-06	9,318
7	2007-08	7,432

Source: Compiled by researcher from the irrigation office of Y.M.Krishna Sugar Factory



Source: Compiled by researcher from the irrigation office of Y.M.Krishna Sugar Factory



In 1980-81 the cultivable area is only 4,916 hectares. The area increased over the years. In 2000-01 the cultivable area was 6,874 hectares. In the year 2007-08 the cultivable area went to 7,432 hectares. The cultivable area is decrease in this region because after 1995 farmers are digging the well in their farms.

2. The sugar factory is established in 1955. After this the crushing of sugarcane increased day by day. After the starting of this irrigation scheme the crushing of sugarcane has increased remarkably.

The total crushing of sugarcane from the 1960-61 to 2007-08

Sr.No	Year	Total crushing of sugarcane (in Metric Tonne)
1	1960-61	34,379
2	1965-66	2,81,578
3	1970-71	3,42,779
4	1975-76	7,30,728
5	1980-81	8,20,611
6	1985-86	8,88,933
7	1990-91	9,73,501
8	1995-96	13,71,901
9	2000-01	11,61,388
10	2005-06	8,53,516
11	2007-08	11,57,501

Source: Compiled by researcher from the irrigation office of Y.M.Krishna Sugar Factory

Due to the starting of this irrigation scheme the crushing of sugarcane has also increased in this area. In 1960-61 the crushing was only 34,379 metric tonne in this area. Next five year the crushing increased rapidly because all the facilities were provided by the factory. After 1965 the crushing increased quickly. In 2007-08 the crushing went to 11, 57,501 metric tonnes.

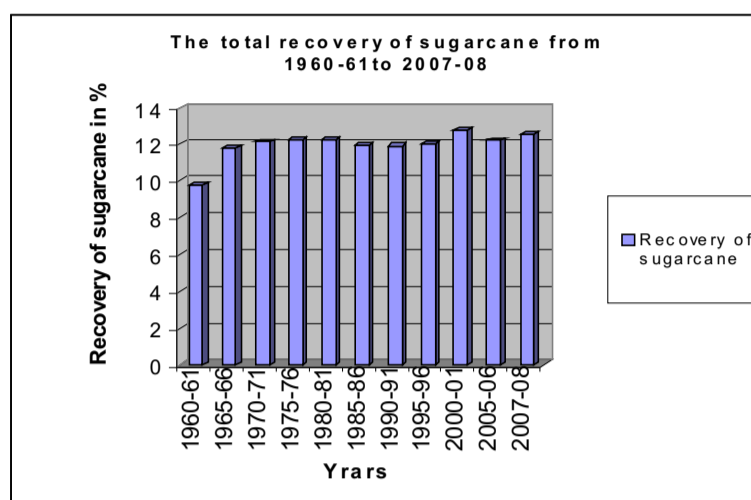
3. The factory gives the new technology and fertilizers to the farmers for the cultivation of sugarcane. The cane is more difficult to transport than sugar. The factory provides the excellent transport facilities, so the recovery has increased.

The recovery of sugarcane from 1960-61 to 2007-08

Sr.No	Year	Recovery of sugarcane (in percentage)
1	1960-61	9.76
2	1965-66	11.81
3	1970-71	12.13
4	1975-76	12.30
5	1980-81	12.25
6	1985-86	11.90
7	1990-91	11.89
8	1995-96	11.97
9	2000-01	12.76
10	2005-06	12.23
11	2007-08	12.58

Source: Compiled by researcher from the irrigation office of Y.M.Krishna Sugar Factory





Thus the sugarcane recovery has increased continuously from 1960-61. Today the recovery of sugarcane is 12.58%. The recovery is depending on the sugarcane being crushed within 24 hours of its separation from the roots. It proves that the factory gives good transport facilities.

4. From the starting of sugar factory manufactured of sugar is also increased.

Sr.No	Year	Production of sugar (in tons)
1	1960-61	33,271
2	1965-66	3,33,111
3	1970-71	4,14,472
4	1975-76	9,11,575
5	1980-81	10,14,610
6	1985-86	10,62,290
7	1990-91	11,66,235
8	1995-96	16,50,060
9	2000-01	14,33,113
10	2005-06	11,33,320
11	2007-08	14,61,400

Source: Compiled by researcher from the irrigation office of Y.M.Krishna Sugar Factory

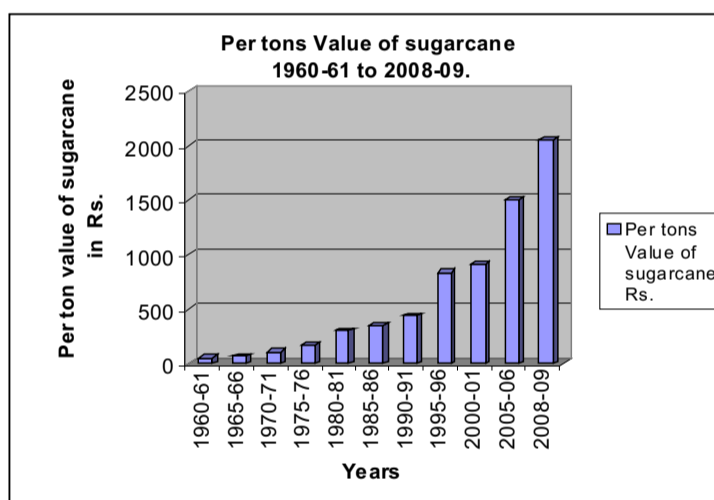
The factory manufactured 33271 tonnes of sugar in 1960-61. The manufacture of sugar has been fluctuating from year to year. In 2007-08 the production went up to 14,61,400 tonnes sugar. Last month factory is get the first rank of sugar production in Satara district.

5. The sugar industry is a cash crop industry or it is a commercial industry. When farmers produce the sugarcane, they get the cash payment. In this area cultivators have increased day by day. On account of irrigation and the cultivation of sugarcane the farmers in this area has become economically strong and self-dependent.

The per ton value of sugarcane

Sr.No	Year	Per ton Value of sugarcane Rs.
1	1960-61	50
2	1965-66	67
3	1970-71	105
4	1975-76	173
5	1980-81	301
6	1985-86	350
7	1990-91	440
8	1995-96	840
9	2000-01	916
10	2005-06	1500
11	2007-08	1060

Source: Compiled by researcher from the irrigation office of Y.M.Krishna Sugar Factory



In sugarcane cultivation the farmers get large income, which has increased quickly in this area. The factory gives the more and more facilities to the farmers. The per ton income of the farmers is also increased.

Due to all the facilities sugar industries has made a spectacular growth, but the industries is facing many problems. Because of this irrigation development some problems have also increased.

Irrigation may also bring about certain adverse effects on the soil. When water is applied liberally and drainage is impeded, there is a gradual rise of water table which promotes capillary rise of moisture and its evaporation on the surface soil. Soluble salts from the lower layers are brought up with the moisture and left on the surface leading to alkalinity of the cultivated land. Thus alkalinity of the land is caused by injudicious irrigation. This problem is found in this area also. There is total 475 hectares saline land. Out of this, 173 hectares area is in Karad tehsil and 322 hectares area is in Walwa tehsil.

The factory is trying to solve this problem. It has made an instrument named subsoiler. This is a special plough designed for the saline soil. It makes a simple vertical cut in the subsoil, up to a depth of 18 to 24 inches and facilitates the downward movement of water and subsoil drainage.

The cultivation of alkali resistant crops is important in the saline soil. The seeds of Tag and Dhencha are provided to the farmers for the cultivation. The effectiveness is due to the production of carbon dioxide in the soil which dissolves the calcium in the soil and aids in exchanging it with sodium and

producing calcium clay in the place of the sodium clay. The sugar factory provides a gypsum and sulphur for reclaiming alkaline soil.

The factory is financing for the underground drainage system of the saline soil. Underground drains laid in temperate region helps to remove the surplus water in the top layers of the soil.

The irrigation facilities improved the production of sugarcane, the recovery of sugarcane and also increased the area of cultivation. Last year the Krishna Sugar factory got an International Award for modern technology and production. In the success of the factory irrigation scheme is the one of the most important factors. The Y.M. Krishna Factory has made remarkable progress in the technical field like wormiculture fertilizer project, quality species of sugarcane and availability of fertilizers at lower rate. Ethelon project, Alcohol project, power plant, these projects have greatly benefited the farmers. This scheme is play an important role in the agriculture development in this area.

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