

AN ANALYSIS OF AGRICULTURE WITH WATER SOURCES IN KARUR DISTRICT

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ABSTRACT

India is pre-eminently an agricultural country. Seventy five percent of her people residing in rural areas are indirectly dependent on agriculture which contributed about 31% percent to GDP as per world development report in the year 1993. Though its contribution to GDP has declined from 45 % percent in 1970 31% percent by 2001. It still forms the hub of India's economy. The programs and performance of the industrial sector is heavily dependent on supply of agriculture raw material and of course food products. Agriculture is by far the most important of the words economic activities. It uses about one third of the total land surface and employs about 45 % percent of the working population of the world. The cropping pattern varies due to the demographic, social and economic factors also. Since the study area is one of the intensive farming areas of the Indian Sub continent it is essential to understand the cropping pattern in study area. The cropping pattern of Karur district is analyzed for three points of time namely 1999-2000, 2005-2006 and 2010-2011. Karur District is centrally located in Tamilnadu state, it is bounded on the north by Namakkal district on the east by Tiruchirappalli, south by Sivagangai, and district, west by Didigul district. Data collection is the important secondary data are collected from various departments. The data regarding area under various crops in the study area are collected from the Joint Director of Agriculture, Karur. Primary data should be in preparing Questionnaire method, to collect the information's about farmer's health problems and their socio economic status.

To analyse the differentiation in various crop cultivation in during the periods (1999-2000, 2010-2011) and Various Source of irrigation Karur district. Irrigation plays an important role in Agriculture. The analysis of rainfall distribution has shown that the rainfall is adequate and highly consistent. Millets a low water requiring crop is a food crop in drier area. During the year 1999-2000 millets 39.8 % percentage accounted for above 44090, when it has increased in 2005-2006, 41.5 % percentage total gross sown area in study area. During the year 2010-2011 millets production has declined. Sugar cane is a major cash crop for the agro based sugar processing industry. The study area during the years 1999-2000 to 2005-2006 and 2010-2011 it could be stated that the cropped area under sugar cane cultivation has decreased in the study area.

Gingelly an oil seed and cash crop with a high market value is gaining significance in the recent years. The low yield per hectare has 28.2 in 5725 hectares during the year 2010-2011.

Key Words: *Agriculture, Crop, Monsoon and Irrigation.*

Introduction

India is pre-eminently an agricultural country. Seventy five percent of her people residing in rural areas are indirectly dependent on agriculture which contributed about 31% percent to GDP as per world development report in the year 1993. Though its contribution to GDP has declined from 45 % percent in 1970 to 31% percent by 2001. It still forms the hub of India's economy. The programs and performance of the industrial sector is heavily dependent on supply of agriculture raw material and of course food products.

Agriculture is by far the most important of the words under economic activities. It uses about one third of the total land surface and employs about 45 % percent of the working population of the world.

Agriculture is the common and wide spread of the ways in which in which man gets living since geography are primarily concerned with man's varied impact on the earth's surface a considerable proportion of geographical research should be devoted to the study of Agricultural Geography (COPPOCK, 1969).

The Cropping pattern of any area is governed by a number of factors such as physical, social and economic. It relates to the area occupied by different crops in a particular unit. The paper of cropping pattern will enable us to identify the differences in cropping pattern in the study area. The Agricultural commission constituted in 1960 by the Government of India, determined the cropping pattern, according to the relative acreage of various crops in a spatial unit. Kanwar, (1968); SHARMA (1971); HUSSAIN, (1967) and GUPTA (1973) have defined the cropping pattern as the proportions of area under different crops at a point time.

Hence an attempt is made to identify the cropping pattern on the basis of the proportions of area occupied by individual crops to the total cultivated area of the Karur district. The cropping pattern varies due to the demographic, social and economic factors also. Since the study area is one of the intensive farming areas of the Indian Sub continent, it is essential to understand the cropping pattern in study area. The cropping pattern of Karur district is analyzed for three periods of time namely 1999-2000, 2005-2006 and 2010-2011 which has explained in the Table I and II. Irrigation plays an important role in Indian Agriculture. It is one of the most important factors for assured crop production. The analysis of rainfall distribution in the study area has shown that the distribution of rainfall is inadequate and highly inconsistent. These, unfavorable rainfall characteristics of irrigation in the study area. This is helpful to understand the nature of irrigation in Karur district. The percentage of irrigated area to the total cultivated area is calculated for different sources of irrigation by canal, tank and well in Karur district for the periods of 2001-2011.

Hence an attempt is made to study the characteristics of irrigation in the study area.

This is much useful and helpful in understanding the crop patterns in study area. The irrigated area to the total cultivated area is calculated for different sources of irrigation namely canal, tank, well and tube well irrigation in Karur District for the periods 1999-2000, 2005-2006, 2010-2011.

Study Area:

Karur District is centrally located in Tamilnadu state. It is bounded on the north by Namakkal and Tiruchirappalli districts. On the east by Tiruchirappalli, Pudukottai districts. On the south by Sivagangai, Madurai and Dindigul districts, and the west by Dindigul and Erode districts. Karur which was once a part of Coimbatore district was merged with Tiruchirappalli district during 1910 then a separate Karur district was formed on 30th September 1995.

Karur district is located at Altitude is 122 meter [400] from the mean of sea level, Total area of 2895.57 sq. km. Karur is centrally located in land Distribute lying between 10°.63 to 11.14 north latitude and 77°.90 to 78°.61 east longitudes.

Rivers Cauvery, Amaravathy join together, Thirumukkudalur in Karur district. Amaravathy river which is an important tributary of Cauvery is passing through the Karur district. It is a non perennial river which originates from the western slopes of the Western Ghats near Munnar in Kerala and joins Cauvery. The river enters the district after benefiting Erode district. Karur channel carries water from the river through the town to the agriculture lands down below. Noyyal is a tributary of river Cauvery flow the North West boundary of Karur district.

Data Collection:

Data collection is the important component in the model development progress for this purpose secondary data are collected from various departments. Particulars are collected from the Joint Director of

Statistics Department, and Collector's office, Karur. The data regarding area under various crops in the study area are collected from the Joint Director of Agriculture, Karur. Primary data collected by preparing a Questionnaire method. In this, the information's about farmers' health problems and their socio- economic status.

Scope & Objectives:

- To analyze the differentiation in various crop cultivation in during the periods (1999-2000,2010-2011)
- Various Source of irrigation in Karur district.

Need for the Study:

Empirical observation has proved that Karur district has experienced deterioration in agriculture productivity and declining health factors in farmers. The impact of the dyeing and textile industries have been in existence in the study area for a long time, the problem of environment pollution from these dyeing units was taken in up seriously only in recent years. The increasing load of toxic effluents has caused severe damage to ground water, soil and land use, and the major determinants of agriculture production. Mixing of dyeing factories polluted water through the Amaravathy and Cauvery canals. So, polluted water spoils the agriculture land, and drinking water of wells and river waters. So in these facts crop cultivation may reduce and supply of irrigated water gets lower amount of water. Hence the problem has analyzed and discussed.

ANALYSIS:

From the table-1 the following analysis has made to find out the problems.

Table-I Showing the details of source of irrigation in Karur District

SOURCE OF IRRIGATION IN KARUR DISTRICT- (1999-2011)			
SOURCE OF IRRIGATION	1999-2000	2005-2006	2010-2011
Canal irrigation	23	23	23
Grass Area irrigation (Ha)	25417	16464	14957
Net area irrigated (Ha)	23982	16114	14852
Irrigation intensity (/)	1.06	1.02	1.04
Tank irrigation (NO'S with >40 Ha Ayacut)	18	18	18
Grass Area irrigation (Ha)	2080	675	51
Net area irrigated	580	601	51
Irrigation intensity (/)	1	1.1	1
Tube wells (no)	445	1676	2511
Grass Area irrigation (Ha)	694	5478	6652
Net area irrigated (Ha)	682	5187	6591
Irrigation intensity (/)	1.02	1.06	1.03
Gross area irrigated(HA)	29700	33717	33484
Net Area irrigated (Ha)	28487	33660	33484
Ordinary wells -grass Area irrigated (Ha)	691	301	698
Net area irrigated (Ha)	679	289	486
Irrigation intensity (/)	1.02	1.04	1.44

Source: **Data collected from various Departments**

Source of irrigation:

Irrigation plays an important role in Indian Agriculture. It is one of the most important factors for assured crop production. The analysis of rainfall distribution in the study area has shown that the

distribution of rainfall is in adequate and highly in consistent. These un favorable rainfall characteristics of irrigation in the study area. This will helpful in under standing the nature of irrigation in Karur district. The percentage of irrigated area to the total cultivated area is calculated for different sources of irrigation canal, tank and well in the study area for the periods of 2001-2011.

The area under **canal irrigation** to the total cultivated area is analyzed in the study area for the periods 1999-2000, for the purpose of irrigation it is classified in to high during the year 1999-2000. The gross area Irrigated acres in 25417 acres 2005-2006. The total gross area irrigated in acre has decreased 16464 during the year 2010-2011. *The gross area irrigated in 8953 hectares of area has declined.*

Net area Irrigated in during the year 1999-2000 has 23982 hectares in the year 2005-2006 it is decreased to 16114 hectares. The 2010-2011 it is further declined year and the particulars shows 14852 hectares as net area. *In the decade decennial minus of irrigation in area is found in this study.*

The area comes under **tank irrigation** to the total cultivated area is analyzed for the study area for the periods 1999-2000 and 2010-2011. For the purpose of investigation it has explained through. The gross area irrigated in tank has supplied higher in irrigated hectares in 1999-2000, (2080) It has declined in the year 2005-2006, in the number of tanks hectares (675). Slowly it has declined in the year 2010-2011; the gross Area irrigated in no of tanks has 51 hectares.

Net area irrigated through tank irrigation 1999-2000 has 580 In the year 2005-2006, it is 601, in this type of irrigation decreased during the year 2010- 2011. Net area in hectares has 51. *It shows the lowest region for supplying tank irrigation Irrigated intensity shows the year has in is 1999-2000, in 2005-2006, 2010-2011 has in intensity.*

The water supplies through **irrigated in Tube wells** in the year 1999-2000, the number of tube well 445, the grass area irrigated in hectares 694 hectares. In the year 2005-2006 no of tube wells has 1676; gross area irrigated in hectares 5478, 2010-2011 the increased no of tube wells 2511. Supply of gross area irrigated 6652 hectares.

Net area irrigated in tube wells has 682 hectares in 1999-2000 it has highly increased in 5187 hectares in the year 2005-2006. It has rapidly increased in the 6591 in the year 2010-2011. *It shows the tube well irrigation Agriculture activities on mainly encouraged in this type of irrigation.*

Table-II Statement showing the Details of Crop Production and Percentage to Total Cultivation Area

Name of the crops	1999-2000	%	2005-2006	%	2010-2011	%	Average in production
Paddy	17279	34.6	17832	35.7	14808	29.6	15649
Millets	44090	39.8	45907	41.5	20582	18.6	42201
Cumbu	12803	62.9	5114	25.1	2409	11.8	9700
Ragi	0	0	0	0	8	8	10
Pulses	1895	24.3	3093	39.7		35.9	3700
Black gram	7337	92.7	452	5.6	158	1.9	1042
Horse gram	5468	39.4	4582	33	3800	27.4	2939
Other Pulses	5249	58.4	2124	23.4		18.4	4056
Cotton	1281	88.8	81	5.6	79	5.4	697
Sugarcane	11068	47.6	6322	27.2	5837	25.1	6299
Oil seeds	13159	39.4	10138	29.5	10955	31.9	9308
Gingelly	8438	41.6	6109	30.1	5725	28.2	7474
Sunflower	1890	23.8	3839	48.3	2212	21.8	4129
Castor	274	36.7	216	28.9	255	34.2	231
Total oilseed	23761	41.8	19405	34.1	13594	23.1	21141

Source: Secondary data from various departments

Paddy is a significant food crop in the study area. During the year 1999-2000, paddy has cultivated when the year 1999-2000, hectares in. 17279, 34.6% percentage. It has increased in production during the period of 2005-2006 17832 hectares 35.7%. But the production declined during the year 2010-2011 has

14808 hectares. *In the light of the above observation of paddy cropped area it could be stated that in the study area, the area under paddy cultivation has decreased.*

Millets a low water requiring crop is a food crop in drier area. During the year 1999-2000 millets 39.8 % percentage accounted for above 44090, when it has increased in 2005-2006, 41.5 % percentage total gross sown area in study area. *During the year 2010-2011 millets production has declined in the production of hectares 20582 and yield is 18.2% percentage.*

Cumbu is a low water requiring crop. Cumbu is cultivated as it is preferred by the Low income people, as a food crop. During the year 1999-2000 cumbu accounted for about 12803 hectares in 62.9% cumbu occupied about 3775 hectares in the year 2006 has production declined. In the light of the analysis of cumbu cropped area for the years 2010-2011 it could be stated that in the study area dry crop cumbu cultivation is significant in the panchayat unions with low irrigation potential. *Further cropped area of cumbu has shown a decrease considerably in whole district.* Cumbu a less profitable crop is generally sown after the harvest of paddy a second crop. Further when there is shortage of water instead of leaving the land as fallow the farmer grow cumbu a less capital intensive and low water requiring crop as a food substitute for the family.

Pulses are much preferred as a second crop after the harvest of paddy. It is also inter crop with ground nut, coconut and banana. Pulses a less capital intensive crop with a ready market and an assured profit has found a significant place in the study area. The distribution of pulses cropped area in hectares 1895 in the year 1999-2000. The total cultivation of the year 2005-2006 has cultivated in 3093(39.7%) hectares 2800(35.9%). In the light analysis of pulses cropped area in Karur district it could be stated that pulses is one of the major crops in the study area. Pulses cultivation is significant in the better irrigated east and central parts of the study area. *Pulses a low capital intensive crop but with an assured market and a high market value is grown as a second crop after the harvest of paddy.* Other pulses named as Black gram, Horse gram other pulses in under in this pulse.

Cotton is an important cash crop for the agro based textile industries. Cotton cultivated in about 88.8% in 1218 hectares during the period of 1999-2000 slowly production has declined in about 5.6% in 81 hectares in the period of 2005-2006. During the year 2010-2011 cotton was cultivated in about 5.4% in 79 hectares. *The analysis of cotton cropped area in the study area reveals slowly cotton production decreased in Karur District.*

Sugar cane is a major cash crop for the agro based sugar processing industry. The location sugar mills are E.I.D Parry sugar mills Pugalur at Karur District. In the study area sugarcane cultivation accounted 47.6% of the gross sown area during 1999-2000. Sugarcane accounted for about 27.2% of the total cultivated area of the district during the year 2005-2006 making a decrease over the previous period. Sugarcane cultivation for about 25% of the total cultivated area of the district during the year 2010-2011 is 25.1% in 5837 hectares. Based on the analysis of the distribution of sugarcane cropped area in the study area during the years 1999-2000 to 2005-2006 and 2010-2011 it could be stated that the cropped area under sugar cane cultivation has decreased in the study area. *The decrease in sugar cane cultivation may be due to the proper irrigation facilities not available failure monsoon [water problem] labour deficiency labour coolie maintenance fees these factors all are reason for decreasing crop cultivation*

Groundnut is a major oil seed and cash crop grown in the study area during year 1999-2000 groundnut occupied about 38.4% in 13159 hectares Groundnut occupied about 29.5 % in 10138 hectares in the study area during 2005-2006 it has decreased previous year groundnut cultivation was carried out in about 28.2 % in 5725 hectares. The production has yield per hectares decreased during the year 2010-2011 In light of the analysis of ground nut cropped area in the study area it is inferred that in the dry tracts with well irrigation groundnut cultivation is significant groundnut through a capital intensive crop is much preferred in the dry tracts as it is more profitable under the dry environmental conditions Further the farmers inter crop pulses with groundnut. On the one hand this brings an additional source of income to the farmers and on the other hand the stem of the pulse crops are ploughed block in the land. *This practice is useful for stabilizing, the soil fertility in a natural way.*

Gingelly an oil seed and cash crop with a high market value is gaining significance in the recent years. During the year 1999-2000 gingelly accounted for about 41.6% percentage of the gross sown area in the study area. Gingelly cropped area has decreased to about 30.1% percentage in 6109 hectares during 2005-2006. The low yield per hectare has 28.2 in 5725 hectares during the year 2010-2011.

In the light of the observation of gingelly cropped area it could be concluded that the cropped area it could be concluded that the cropped area of gingelly exhibits a fluctuating trend. Gingelly is cultivated both under irrigated and rain fed conditions Gingelly is also grown in fallows in irrigated area. *However, the environmental conditions of the study area are very much suited for gingelly cultivation.*

Sun flower is a major oil seed and cash crop grown in the Karur district. During the year 1999-2000 sun flowers occupied about 23.8% percentage in 1890 hectares of gross sown area. The distribution of sun flower cropped area is shown in the given figure. Sun flower occupied about 48.3% percentage in the 3839 hectares, it has highest value compare than previous years. Slowly it has decreased during the year of 2010-2011 in the hectares. *In the light of the analysis of sunflower cropped area in the study area it is referred that in the dry with well irrigation sun flower cultivation is signification.*

Castor an oil seed and cash crop with high market value is gaining significance in the recent year. During the year 1999-2000 castor account for about 36.7% presented 1890 hectares of gross sown area. It has decreased when the duration of year 2005-2006 in percentage 28.9% percentage in 216 hectares castor cultivation has carried out in about 34.2 in 255 yield per hectares. The production has increased because a labour intensive crop which brings back a higher profit to the farmers is gaining significance. The area under castor cultivation has experienced an increasing trend. *Castor require lower amounts of water and labor. This is helpful stabilize his economic to conditions.*

SUMMARY AND CONCLUSION:

- A. The gross area irrigated in 8953 hectares of area has declined.
- B. In the decade decennial minus of irrigation in area is found in this study.
- C. It shows the lowest region for supplying tank irrigation Irrigated intensity shows the year has in is 1999-2000, in 2005-2006, 2010-2011 has in intensity.
- D. It shows the tube well irrigation Agriculture activities on mainly encouraged in this type of irrigation.
- E. During the year 2010-2011 millets production has declined in the production of hectares 20582 and yield is 18.2% percentage.
- F. During the year 2010-2011 millets production has declined in the production of hectares 20582 and yield is 18.2% percentage.
- G. Further cropped area of cumbu has shown a decrease considerably in whole district.
- E. Pulses a low capital intensive crop but with an assured market and a high market value is grown as a second crop after the harvest of paddy.
- F. The analysis of cotton cropped area in the study area reveals slowly cotton production decreased in Karur District.
- G. The decrease in sugar cane cultivation may be due to the proper irrigation facilities not available failure of monsoon [water problem] labour deficiency labour coolie maintenance fees these factors all are reason for decreasing crop cultivation.
- H. This practice of cropping groundnut is in useful for stabilizing, the soil fertility in a natural way.
- I. However, the environmental conditions of the study area are very much suited for gingelly cultivation.
- J. In the light of the analysis of sunflower cropped area in the study area it is referred that in the dry with well irrigation sun flower cultivation is signification.
- K. Castor requires lower amounts of water and labor. This is helpful stabilize his economic to conditions.

Suggestions:

- a. Rain Water harvest as well as groundwater level maintenance has to be given first priority for the future because the tube well irrigation is in an increasing trend.
- b. To reduce the output of groundwater the existing lake, tank, river, canals has to be deepened and its storage capacity has to be increased in turn which will improve the groundwater level at all times.
- c. Steps have to be taken to restrict untreated waste water amalgamation and absorption in the river fresh waters by the policy makers.

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