

2.1 INTRODUCTION :

In the previous chapter an attempt is made to analyse the physiographic factors such as topography, climate, soils, which directly and indirectly influence irrigation and agricultural practices. The present chapter aims at highlighting the sourcewise progress of irrigation facilities from 1970-71 onwards. The intensity of irrigation and changes therein are also examined. Assured supply of water to crops enhances the per hectare yield. It is basic input. The use of other inputs viz. HYV, fertilizers etc. depends on the availability of water. Without irrigation, modern inputs cannot be introduced. Further it affects the economy of the farmers. " The development of agriculture in the region is tagged with the development of irrigation," (Sharma and Jain, 1980).

The area brought under irrigation with the help of various sources is depicted in Fig.2.1. In Wai taluka gross irrigated area in 1970-71 was 18.24 percent (10,270 hect.), while the net irrigated was about 8.9 percent (6,775 hect.) of the net sown area. In 1985-86 the gross irrigated area was 25.55 percent and the net irrigated area was 21.61 percent of the net sown area. The well irrigation is confined to upland areas of the region (Fig.2.2-A). Over 45 percent of the net irrigated area is shared by this source in the region, while 55 percent of the net area is irrigated by canals. Canal

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TRENDS OF IRRIGATION

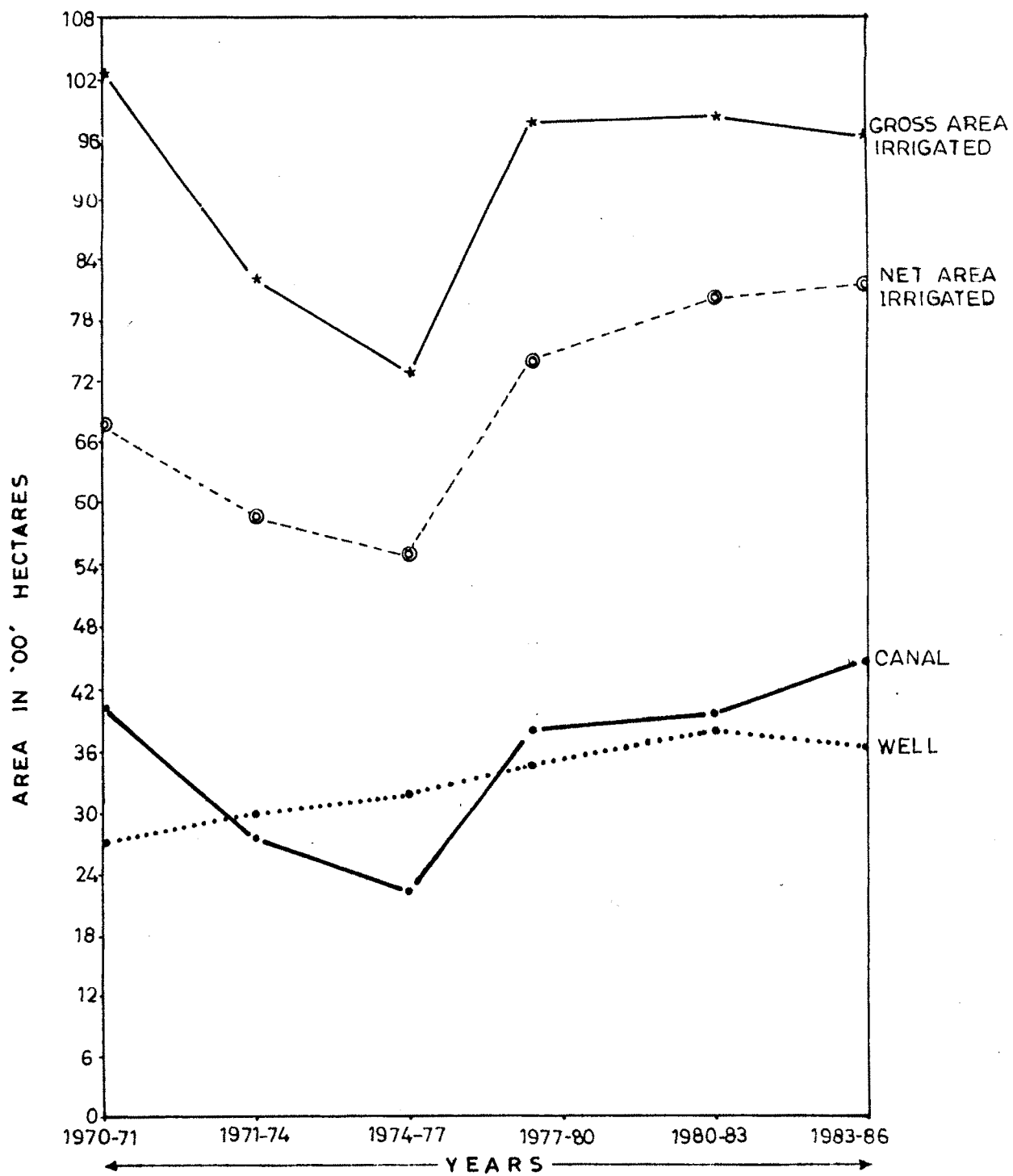


FIG. 2.1

irrigation is observed only along the Krishna Valley particularly in the villages of Sultanpur, Ozarde, Bhuinj, Pachawad, Pasarni, Bhogaon, Menavali, Udatare, Virmade etc. Due to the unfavourable environmental conditions the tank irrigation and lift irrigation are less developed in the region. The net irrigated area has increased by 12.71 percent (8,133 hect.) of the net sown area in the region.

2.2 MAJOR SOURCES OF IRRIGATION :

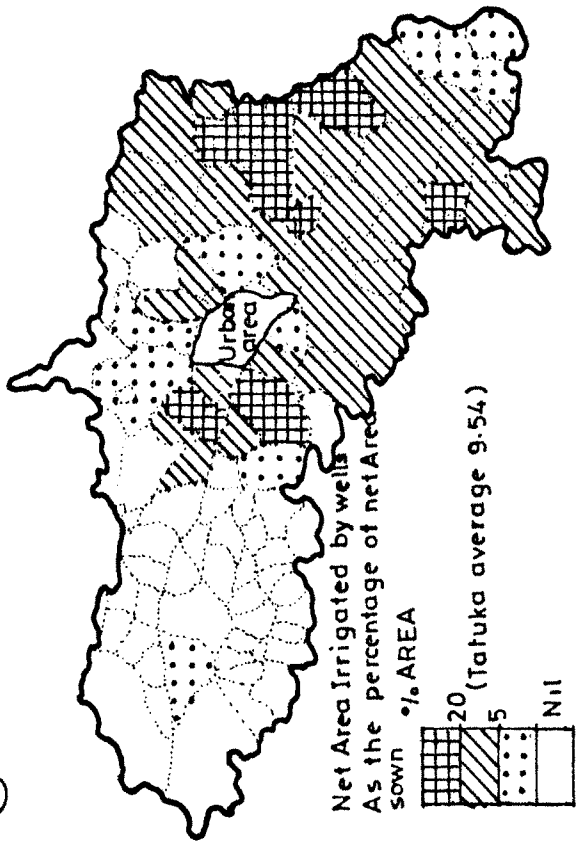
Presently the region has two important sources of irrigation viz. well and canal. The canal irrigation is developed in the low land areas of the region. It is confined to river course, where the soil profile is suitable, whereas preponderance of well irrigation is noted in the eastern upland areas of the region. In the western hilly parts of the region private canal is developed. In this system water from mountain streams is diverted from upper slope to lower slope and from terrace to terrace in the field by artificial channels. The sources of irrigation are as follows.

1) Well irrigation :

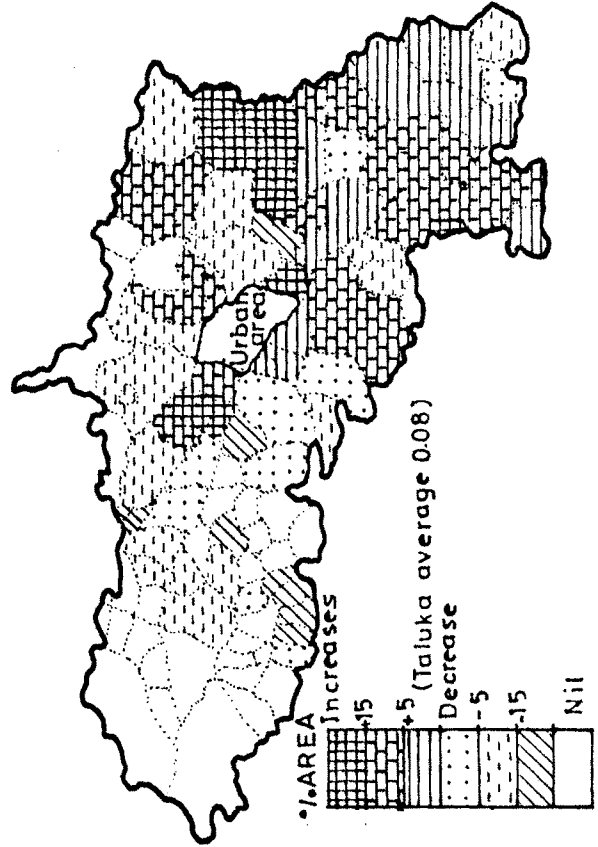
Well irrigation is the traditional method of irrigation. It plays an important role in the farming activities of the region. It is developed in the areas where canal irrigation is not developed especially in the north-eastern part of the region. " Well irrigation is an important indigenous source of irrigation

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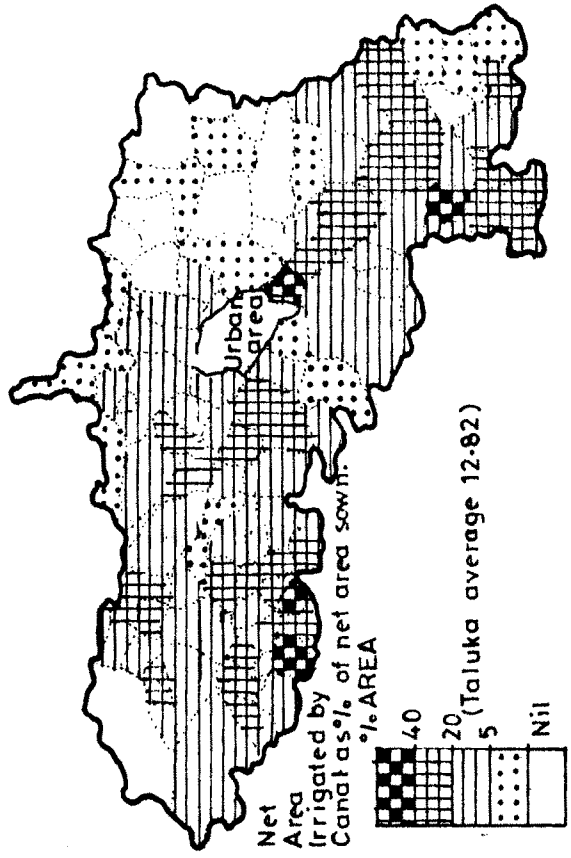
(A) WELL IRRIGATION (1985 - 86)



(B) CHANGE IN WELL IRRIGATION (1970-71-1985-86)



(A) CANAL IRRIGATION (1985-86)



(B) CHANGE IN CANAL IRRIGATION (1970-71-1985-86)

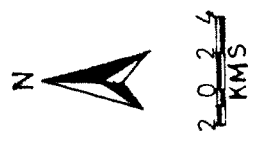
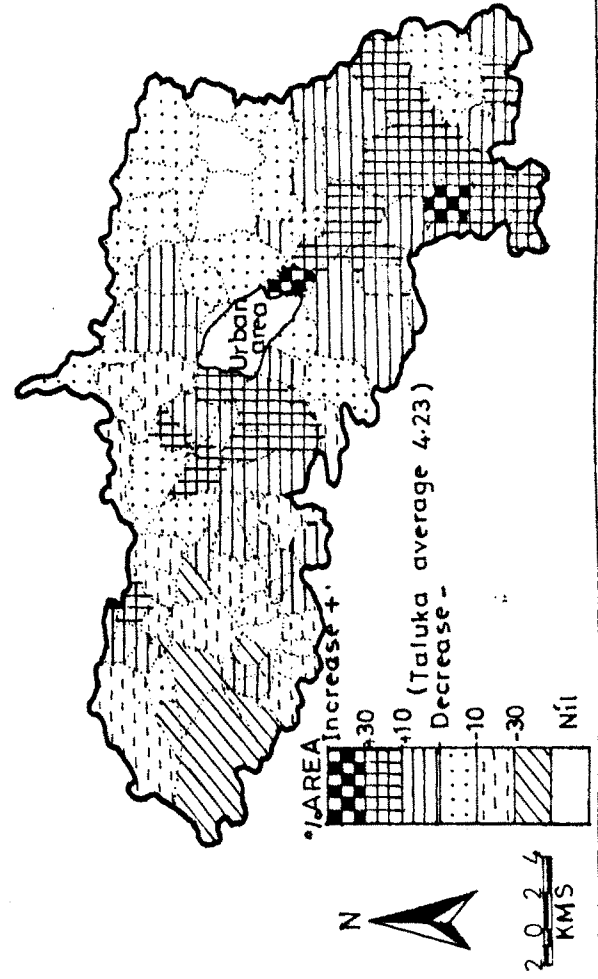


FIG. 2-2(A&B)

FIG. 2-3(A&B)

in many countries and is widely used in those areas where irrigation by canal is not possible," (Singh and Dhillon, 1984). During the period under investigation the area under well irrigation has increased from (2,756 hect.) 9.46 percent to (3,625 hect.) 9.54 percent of the net sown area. Well irrigation shares about 41.00 percent of the net irrigated area in 1970-71 and about 45 percent in 1985-86. " Well irrigation is not advisable where the depth of sub-soil water is over 10 metre, as beyond that depth the cost of lifting water is excessively high as compared to the value of the crops raised," (Singh, 1976). From this point of view, well irrigation is uneconomic venture, especially in the eastern parts of the region. But farmers have to rely on this source as no source is reliable in this part of the region.

i) Regional distribution (1985-86) :

Well irrigation is more significant in the eastern parts of the region (Fig.2.2-A). In the western hilly area it is negligible. High proportion of area (over 20 percent of total irrigated area) irrigated by wells is noted in the villages of Surur, Vahagaon, Kawathe, Pande and Shirgaon, Pachawad, Pasarni, Bhogaon and Pandewadi. Moderate area (5 to 20 percent) under this source is noted in the villages, of Ozarde, Bhuinj, Kenjal, Chandak, Gulumb, Vele, Lohare, Parkhandi. It is also noted in the villages of Bavadhan, Asale, Kadegaon, Virmade, Udatare, Chindhavali etc. Low percentage (under 5%) of total irrigated area is watered by

wells in the hilly region, particularly in the villages Bopardi, Dhavadi, Kusgaon and in the southeastern part of the region especially in the villages of Lagadwadi, Belamachi and Kikali. It is also noted in the village Shendurjane.

ii) Change in well irrigation (1970-71 to 1985-86) :

Fig.2.2-B reveals the change in the well irrigated area during the last fifteen years. During this period area under well irrigation has increased by only 0.08 percent of the net area sown, which is very insignificant. However, the significant positive change (over 15%) in the well irrigated area is observed in the eastern parts of the region, particularly in the villages of Mohodekarwadi, Vahagaon, Surur, Sultanpur, Amuratwadi, Nikamwadi and Pande. Moderate positive change (5 to 15 percent) is noted in the lower Krishna river valley. It is also found in the villages of Lohare, Parkhandi, Gulumb, Pande, Shirgaon, Menavali and Pandewadi. Negligible increase (below 5%) in well irrigated area is observed in the south eastern part of the region and in the villages of Ozarde, Chandak, Songirwadi and Kalambhe.

The considerable negative change in well irrigated (over 15%) area is noted in the western part of the region, in the villages of Eksar, Nahalewadi, Dahyat, Borgaon Kh. and Bk., Dhavali and Duichiwadi. It is also noted in the village Khanapur. The moderate negative change (5 to 15 percent) is observed in the villages of Vasole, Bhivadi, Akoshi, Khavali, Asare, Abhepuri, Dhavadi and Kholowadi (Fig.2.2-B).

2) Canal irrigation :

Of all the sources of irrigation, canal irrigation has a vital importance in agriculture as it is more reliable source. The canal irrigation is recently developed in the region by constructing the irrigation dam across the Krishna river in the western part of the region near village Dhom (Fig.2.4). The private canal system by diverting local stream water in the field for irrigation purpose is another feature. It is noted in the western hilly areas of the region. Out of total net sown area in the region (2,728.26 hect.) 7.25 percent is irrigated by private canals and (2,096.67 hect.) 5.57 percent area is irrigated by government canals. Canal irrigation is a major source of irrigation facilitating about 55 percent of the total irrigated area in the study region. However, at village level much variations in it are noted.

1) Regional distribution (1985-86) :

Fig.2.2-A reveals the spatial distribution of canal irrigation in the region. The villages Pachawad, Sultanpur, Vaigaon, Borgaon Kh. and Dhavali rank first in canal irrigated area (over 40%). The land of Pachawad, Sultanpur villages comes under Government Canal Systems and the area of Vaigaon, Borgaon Kh. and Dhavali villages comes under Private Canal System. About 20 to 40 percent of canal irrigation is observed in the villages of Ozarde, Chindhavali, Degaon, Udatare, Kalambe, Virmade, Kalangwadi. It is also found in the villages Pasarni, Eksar, Bhogaon, Varkhadwadi, Khavali, Asare, Panas, Oholi,

Vashivali, Golegaon, Chikhali etc. 5 to 10 percent canal irrigation is confined to the villages, Asale, Kadegaon, Vyajwadi, Bavadhan, Dhavadi, Abhepuri, Jor etc. Very low percentage (under 5 percent) is found in the northern and the north-eastern parts of the region.

ii) Changes in canal irrigation (1970-71 to 1985-86) :

The positive change has occurred due to the government canal irrigation in the region. The area under canal irrigation has increased by 4.23 percent of the net sown area during the last fifteen years. The significant positive change (above 30 percent) in the canal irrigation is noted in the villages of Pachawad, Sultanpur and Dhavali. The moderate positive change (10 to 30 percent) is confined to the central part of the region and in the south-eastern border of Krishna river (Fig.2.2-B). Low positive change (below 10 percent) in the distribution of the canal irrigation is observed in the villages of Bavadhan, Vyajawadi, Jamb, Nikamwadi, Kholawadi, Shirgaon, Anavadi, Bopogaon, Khanapur and Vyahali.

The negative change in this source is confined to the western part of the region, where private canals are dominant. Topographically this is hilly area. Due to the rapid decrease in the rainfall the area under private canal has decreased. The negative change is also observed in the northern and north-eastern hilly area of the region. The significant negative change (over 30 percent) in the canal irrigation is noted in the

villages of Jor, Bhivadi, Gove, Kironde, Kondhavale which are located in the far western part of the region. The moderate negative change (10 to 30 percent) is observed in the villages of Dhavadi, Yeruli, Asare, Renavale, Jambhali, Golewadi, Vaigaon etc. In general the negative change is significantly noted in the western part of the region where private canal is a major source of irrigation.

2.3 (A) OVERALL INTENSITY OF IRRIGATION (1985-86) :






The term intensity of irrigation here refers to percentage of net irrigated area to net area sown. The intensity of irrigation in the region is characterised by its large scale regional imbalances (Fig.2.5-A) which are mostly related to environmental as well as socio-economic circumstances.

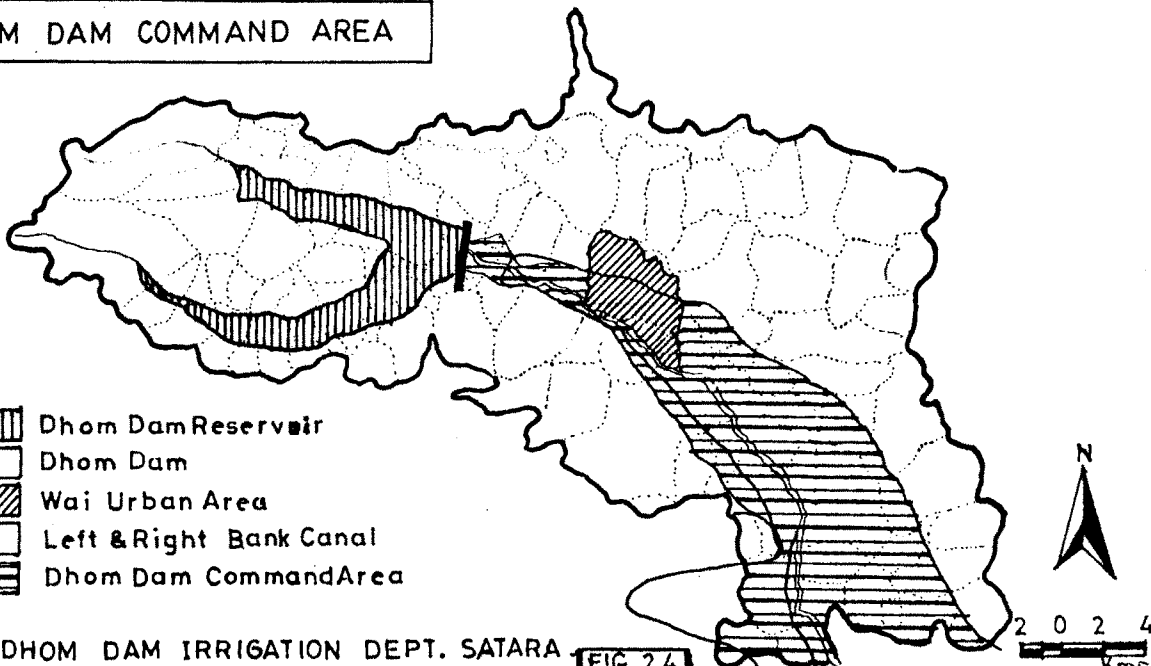
i) High intensity of irrigation :

The intensity of irrigation is very high (above 30%) in the south-eastern and central part of the region where canal irrigation has developed considerably in the villages of Ozarde, Bhujinj, Panchawad, Chindhavali, Virmade, Udatare, Kalamble, as well as in the villages of Bhogaon, Eksar, Pasarni etc. It is also high in the villages of Surur, Vele, Kawathe, Shirgaon and Degaon where well irrigation is significant. The high intensity of irrigation is noted in some villages which are located in western part of the region where private canal is developed.

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DHOM DAM COMMAND AREA

-  Dhom Dam Reservoir
-  Dhom Dam
-  Wai Urban Area
-  Left & Right Bank Canal
-  Dhom Dam Command Area







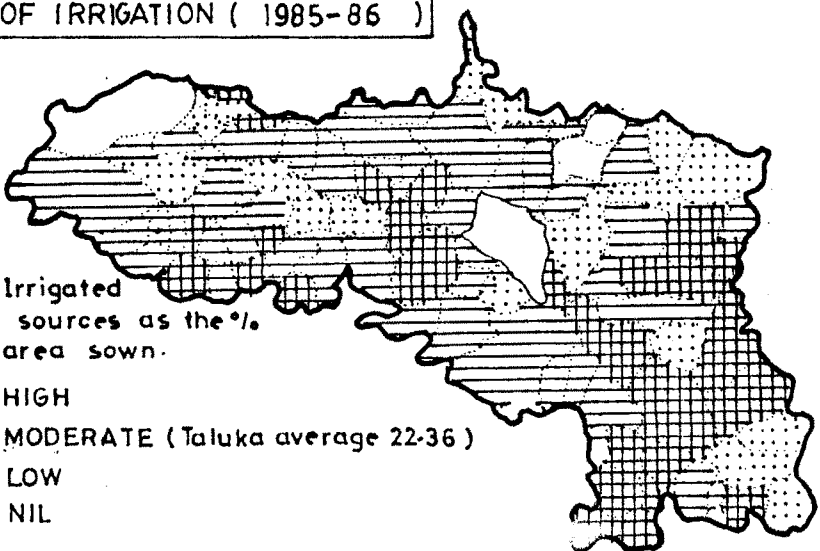
SOURCE - DHOM DAM IRRIGATION DEPT. SATARA

FIG. 2.4







(A) INTENSITY OF IRRIGATION (1985-86)

Net Area Irrigated
From all sources as the %
The net area sown.

-  HIGH
-  30 MODERATE (Taluka average 22-36)
-  10 LOW
-  NIL



(B) CHANGE IN IRRIGATED AREA (1970-71-1985-86)

-  30 + Increase
 -  10
 -  - Decrease
 -  -10
 -  -30
 -  NIL
- (Taluka average 4.08)

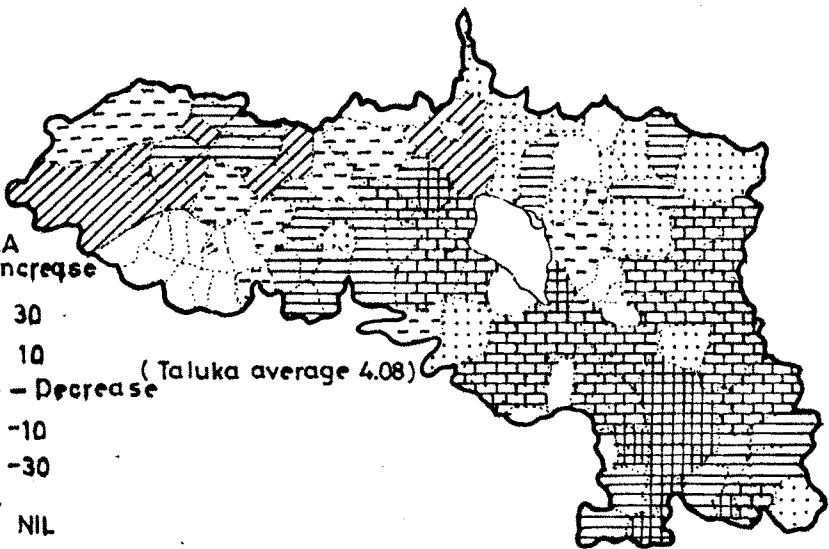


FIG. 2.5 A&B

ii) The moderate intensity of irrigation :

Moderate (10 to 30 percent) intensity of irrigation is concentrated in the adjacent villages of high intensity of irrigation viz. Jamb, Kikali, Asale, Kadegaon, Khanapur, Kenjal, Lohare, Parkhandi, Sidhanathawadi, Menavali, Kanur, Bavadhan where well irrigation is developed (Fig.2.2-A). It is also observed in the western parts of the region, due to the development of private canal system. This region is of high rainfall intensity. Private canals provide water to the agriculture for the kharif crops especially for rice.

iii) Low intensity of irrigation :

Low intensity (below 10 percent) is found in the hilly areas of the region particularly in the villages namely, Vele, Kholawadi, Belmachi, Lagadwadi, Anavadi, Mohodekarwadi, Gulumb etc. It is also notable in the villages of Baleghar, Mandhardeo, Yeruli, Kironde, Kondhavale, Bhivadi, Boriv, Nagewadi etc. (Fig. 2.5-A). In these villages rugged topography and low intensity of rainfall are the important constraints in the development of irrigation.

2.3 (B) CHANGES IN THE INTENSITY OF IRRIGATION

(1970-71 to 1985-86) :

Fig.2.5-B highlights the change in intensity of irrigation for the period under investigation. During this period area under irrigation has increased from 18.28 percent to 22.36 percent of

the net sown area. "The changing trends in the intensity of irrigation portray man's dynamic attempts to overcome the environmental limitations in the transformation of physical attributes of the areas into agricultural resources" (Singh, 1976). In view of this efforts have been made to develop the canal and well irrigation particularly in the eastern and the south-eastern parts of the region. The intensity of irrigation has increased significantly in the southern parts of the Krishna river valley.

The positive change (over 30%) in overall intensity of irrigation is observed in the south-eastern parts of the region particularly in the villages of Bhuij, Pachawad, Amuratwadi, Chindhavali, Khadaki and Udatore. These villages are located in the command area of Dhom irrigation project. It is also noted in the villages of Bhogaon and Pandewadi. The moderate increase (10 to 30 percent) is found in the south-eastern part adjacent to the high intensity irrigated area (Fig.2.5-B). Under 10 percent positive change in the intensity of irrigation is observed in the villages of Jamb, Kikali, Logadwadi, Gulumb, Belamachi, Kadegaon, Kusgaon, Eksar, Gherakelanj and Oholi.

The negative change in irrigation is confined to the western and north-eastern hilly region of Wai taluka. Over 30 percent and 10 to 30 percent decrease in the intensity of irrigation is significant in the western parts of the region. Under 10% negative change is observed in the north-eastern parts of the region (Fig.2.5-B).

R E F E R E N C E S

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