



In this research work an attempt is made to examine the relationship between irrigation and some aspects of agriculture such as landuse, cropping pattern and crop productivity in Wai taluka. The objectives are to describe the spatio-temporal development of irrigation in relation to physioco-socio environment and to examine the impact of irrigation on the use of modern inputs, landuse and cropping pattern in general. To be more specific it was intended to examine certain changes in crop productivity during the period under investigation. From the preceding analysis the following findings have emerged.

1. The physiography of the region has governed the development and methods of irrigation. As such eastern part is suitable for the development of well irrigation; the canal irrigation is feasible only in the lower Krishna Valley, whereas private canal suits to western hilly parts of the region.
2. The erratic nature of rainfall both in space and time, clearly underlines the need of irrigation in both kharif and rabi season.
3. The canal irrigation has recently developed by constructing the irrigation dam across the Krishna river near village Dhom in Wai taluka, which has influenced the agricultural development to some extent. Canal irrigation is developed along the lower Krishna valley, whereas the development of groundwater, another important source, is partly restricted due to seasonal fluctuations in watertable.

4. The spatial variations in the environmental conditions have led to the regional imbalances in the development of irrigation facilities. As such, it is evident from Chapter 2nd that canal irrigation (including private canal) shares about 55 percent of total irrigated area on the Krishna river bank and local source of irrigation in the western parts of the region. Well irrigation is dominant (45 percent) in the east. Percolation tanks have become a new phenomena in the eastern rainshadow area. These have indirectly helped in increasing the watertable of wells.

5. The period under investigation has witnessed an increase of about 2781.89 hectares of additional irrigated land providing irrigation to about 22.36 percent of cultivated area. The region, however, bears greater potentiality of irrigation which requires tapping of water by the construction of artificial reservoirs in the western hilly part and a percolation tanks in the eastern part. The pre-dominance of flood and border irrigation is observed in the region. The sprinkler and drip irrigation methods of water use are also being adopted by some farmers.

6. Although the entire cropping pattern seems to be governed by agro-climatic conditions, irrigation has played a important role by changing the nature and extent of cropping pattern. Jowar and bajara the drought resistant crops occupy the eastern drier part, while rice cultivation is common in western heavy rainfall area. The lower Krishna valley facilitated by assured irrigation,

and fertile soils are suitable for growing several crops viz. sugarcane, turmeric, ginger, wheat etc. Consequently the expansion of irrigation has resulted in increase of area under sugarcane, wheat, rice, jowar etc. However, area under bajara and groundnut have decreased. In view of the overall changes there is shift from foodgrain to sugarcane and from inferior cereals to superior one.

✓ 7. The increased irrigation facilities have given rise to use of inputs in agriculture. The use of modern inputs has increased in the region. Particularly in canal irrigated area (Table 4.1). The wooden ploughs are replaced by iron ploughs and oil engines by electric pumps. As well as the adoption of tractors has increased in the region. Traditional implements are still being used in some parts, particularly in the western part of the region. The inputs like HYV seeds, pesticides and fertilizers are used in the canal irrigated areas.

8. The imbalances in case of individual crops, overall productivity of crops reveals that 25 villages with 46.17 percent area mostly located in the Lower Krishna river valley possess high level of productivity, on the contrary about 27.7 percent of total area has recorded a low level of productivity. These are the 'weaker' areas characterised by relatively inadequate irrigation facilities in the eastern part and unfavourable topography, and poor soils. This area of Wai taluka need the attention of agricultural scientist, regional planner

and other agencies connected with integrated agricultural development programme.

SUGGESTIONS :

In the context of the findings stated above some suggestions for improving irrigation facilities and agriculture have been made as under :-

1. The area under private canal irrigation can be increased by constructing more bandharas and improving the existing ones in such a way that the rain-water coming down the hill can be efficiently stored and used.
2. In canal irrigated areas cracks in the canals may be properly repaired to stop the seepage and percolation of water (Plate 1 & 3). Secondly, the grass and bushes grown on both sides of the canal may be cut down periodically to prevent the cattle to graze there and damage the plaster of the sides of the canal (Plate 2-B). There is grass grown even at the bottom of the canal (Plate 2-A), when the canals are dry, the cattle run down the sides and damage the canal walls. It is, therefore, suggested to keep the canals and the border of canals clean of the grass and the plants. The irrigation department may send out inspection teams periodically to stop misuse of the canal water and supervise maintenance of canals.
3. Water losses through seepage especially in canal irrigated areas by distributaries and arteries are common. Therefore,

lining of canals is essential. The extension of lined irrigation channels upto the farm edges would also be useful.

4. In canal irrigated area the farmers make use of excessive water for crops. If they are properly instructed in the use of water by the authorities in agriculture, their consumption of water can be moderated and water can be made available to more areas.
5. Besides most of the farmers make use of traditional methods of irrigation, such as flood, border method in which water is wasted. They should be trained to use scientific methods of irrigation (sprinkle, drip etc.) to save water.
6. It is very necessary to recharge the ground watertable for dug wells. This can be done by contour bunding, nala bunding, building percolation tanks and also by afforestation.
7. As there are no perennial streams in the eastern part of the region, there is a need for assured water to feed the crops. This can be provided by lifting the water from Dhom canals. It will be helpful to the drought affected areas in the west.
8. The cropping pattern in irrigated area has to be altered, keeping in view the availability of water. For example,

traditional crops such as sugarcane, turmeric, ginger, wheat etc. are grown here. These crops required large amount of water. In Wai taluka soil and climatic conditions shows that horticulture can be practised more profitably (Plate 5 A-B). The farmers should, therefore, be encouraged to grow fruit such as pomegranates and also trees like teak, nilgiri and spices (dalchini) also(Plate 4-A & 6).

9. In unirrigated area dry farming techniques need be adopted. The other aspect which need attention, is a suitable system of inter-cropping and mixed cropping which are essential for stabilizing agricultural production.
10. Farmers are ignorant of proper amount of fertilizers and also the time when fertilizers should be used. If there is shortage of water for irrigation, the fertilizers applied damages the crops. To avoid this farmers should be properly instructed through agencies of the Agricultural Department, Panchayat Samitis etc. This could be made possible through public meetings at village level.

If these suggestions are carried out there is hope of making water available for additional area and also increasing the sources of water. It will also help in diminishing the regional imbalances in the irrigation facilities. Further, it will also help in developing the agriculture of Wai taluka.