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A GEOGRAPHICAL STUDY OF IRRIGATION PATTERN IN PARNER TAHSIL, AHMEDNAGAR (M.H)

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Abstract:

Irrigation is necessary particularly in and uncertain rainfall area. it is essential and arterial application of water to overcome the deficiencies in rainfall for growing crop. The present study has aimed to explain the irrigation pattern of parner tahsil during 2010 to 2020. irrigation is an artificial supply water to land for growing crops and to increase the per hector yield Irrigation plays a vital role in meeting rising demands of food and fodder for growing human diestock population; moreover it is an age old practice of ancient civilization design to reduce moisture deficiency.

Keywords: *Irrigation Pattern, Surface Water Irrigation, Ground Water Irrigation, Others Sources of Irrigation, Bore well Irrigation, Well Irrigation,*

INTRODUCTION:

Approaches of irrigation in a region or country will depend up on several factors such as, surface configuration, rock structure, water table, quality and quantity of ground water, proximity and extent of water potential catchment area and soil profile of the land. These factors vary considerably from place to place in a given region. Ahmednagar district (parner Tehsil) receives inadequate rainfall and its distribution is uneven. Thus it becomes essential to redistribute rain water, which has pound, canals, tanks etc. to compensate for the inadequate rain during the growing season. Therefore, an integrated development of water and land resources of a district is of fundamental of its agricultural economy. In ancient times, irrigation was through wells and inundation structure. Today, land is irrigated by a variety of ways, such as canals and raising sub-soil water since canal water cannot be taken to every point, need for lift irrigation arises. In a way, tube wells are the pulsing hearts and irrigation channels the arteries, which carry life and nourishment to arable fields.

This research paper proposes to examine to growth of irrigated area under different sources of irrigation, along with a consideration of methods of irrigation applied and limitation of irrigation, changes therein and intensity of irrigation in the district. The emphasis here is on highlighting the spatial distribution pattern of the above Ahmednagar District.

HYPOTHESIS:

- 1) Temporal changes in irrigation pattern

OBJECTIVES:

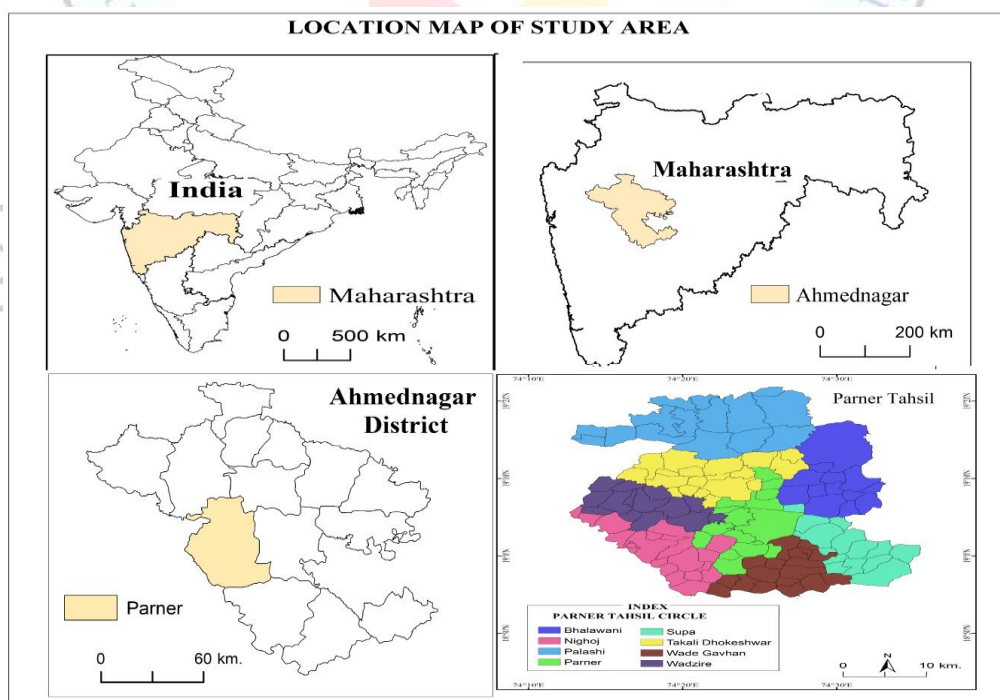
- 1) The Irrigation pattern in Parner Tahsil.
- 2) To find the Sources of Irrigation in Parner Tahsil.
- 3) To changes in irrigation pattern study area

STUDY AREA:

The parner tehsil of Ahmednagar district has been selected for the study to present work. The tehsil is confined by 18°49'40" N. to 19°21'13"N. Latitudes and 74°10'22"E to 74°38'34" E. longitudes geographically. it located on "Deccan Plateau" and climatological, it lies in the "Rain shadow zone "of Maharashtra state. Therefore tehsil Characterized with low rainfall and it is identified as "drought prone area in Ahmednagar district.

There are 131 villages constitutes into Eight revenues circles in parner tehsil Takali Dhokeshwar circle 19 villages, parnercircle 15 villages, wadigavan circle 19 village, Wadzire circle 15 villages, Supa circle 14 villages, Nighoj circle 21 village, palashi circle 15 village and Bhalawani circle 13 village. Parner tehsil geographical area of 1,930.28Sq.Km.the total population of the tehsil was 246535 people according to 2011 census.

FIG 1: LOCATION MAP OF STUDY AREA



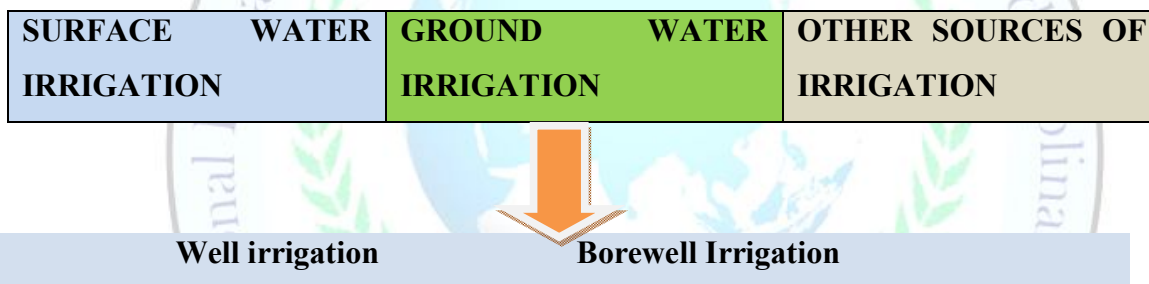
DATA BASE AND METHODOLOGY:

The present study is based on fieldwork (Compiled by the Author) and secondary data collected from census Reports of government of India, district census handbook (2001 and 2011) Socio-economic review and district statistical abstract. The Geographical study of Irrigation pattern 2010 to 2020. The collected data has been processed and analyzed by using different quantitative, statistical technique. The tabulated data has been presented by graph and maps Using GIS. To make the comparative analysis study of Irrigation pattern in parner tehsil has also been computed. It can give better understanding regarding the Irrigation pattern in parner tehsil in Ahmednagar district following statistical formula used for change detection in different elements of our study.

$$\text{Change} = \frac{\text{Current Year} - \text{Base Year}}{\text{Base Year}}$$

ANALYSIS AND RESULT:

SOURCES OF IRRIGATION



GROUNDWATER IRRIGATION:

Groundwater is the water present beneath Earth’s surface in rock and soil pore spaces and in the fractures of rock formations. A unit of Rock or an unconsolidated deposit is called an aquifer when it can yield amusable quantity of water. The depth at which soil pore spaces or fractures and voids in rock become completely saturated with water is called the water table. Groundwater is recharged form the Surface; it may discharge from the surface naturally at springs and seep, and conform oases or wetlands. Groundwater is also often withdrawn for Agriculture, Municipal and industrial use by construction and operating extraction well. The study of the distribution and movement of groundwater is hydrogeology, also call groundwater hydrology.

WELL IRRIGATION:

A Well is a hole dug in the ground to obtain the subsoild water. an ordinary well is about 3-5 meters deep but deeper well up-to 15 meters are also dug. This method of Irrigation has been used in India from time immemorial. Various methods are used to lift the ground water from the well for

other purposes. Some of the widely used methods are the Persian wheel, reht, charas or mot, and dinghy (lever).

Well Irrigation is popular in areas where sufficient sweet Ground water is available. These areas include a large part of the Great Northern plain, the Godavari, the Krishna and the Cauvery, Parts of the Narmada and the Tapi Valleys and the weathered layers of the Deccan Trap and Crystalline Rocks and the Sedimentary Zones of the peninsula. However, the greater part of the Peninsular India is not suitable for well irrigation due to rocky Structure, uneven Surface and Lack of underground water suitable for well Irrigation.

BOREWELL IRRIGATION:

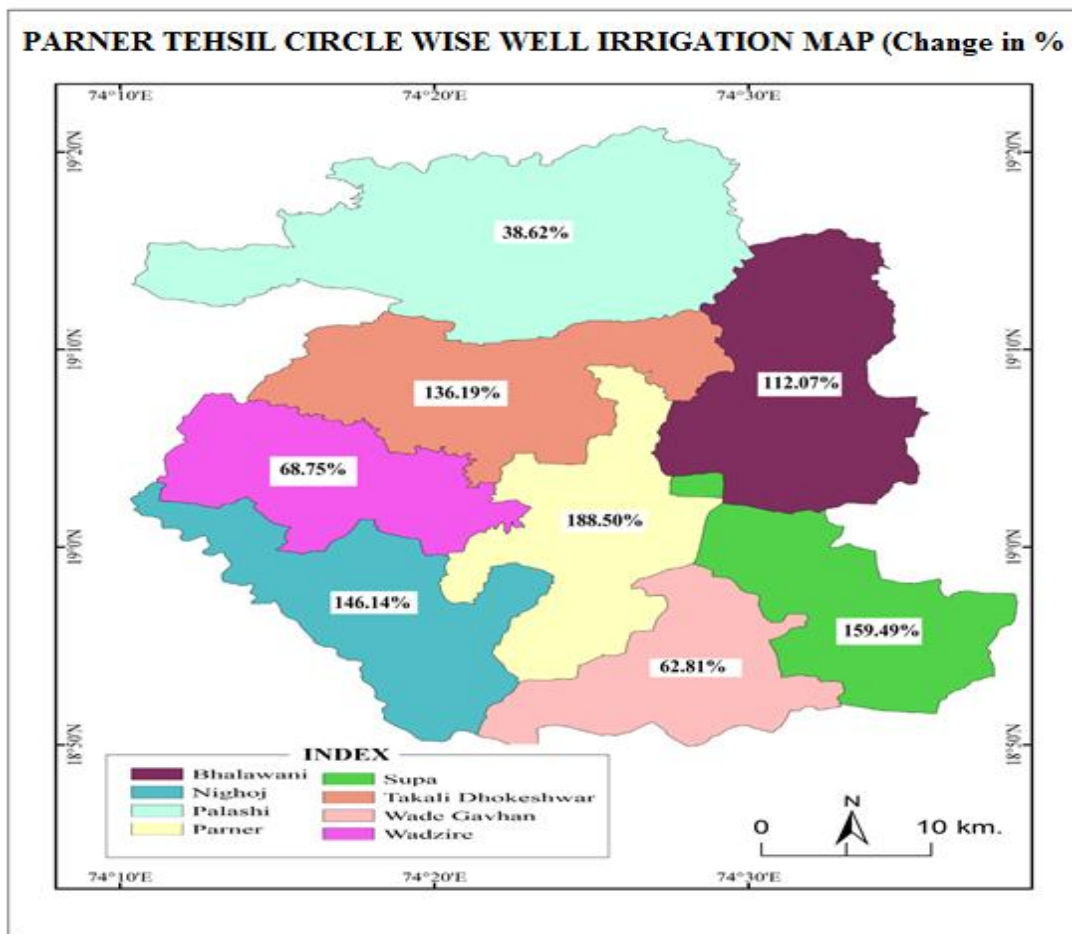
Ahmednagar District being and our farmers depend mainly on groundwater for irrigation. With increasing population, lesser land holdings and urbanisation, deeper borewells are dug for groundwater abstraction. Borewells are very similar. Both are basically vertical drilled wells, bored into an underground aquifer in the earth's surface, to extract water for various purposes. The difference in the two lies in the type of casing used the depth of this casing and the type of soil where they are drilled. Casing to support the external surfaces of the borehole against collapse may be needed at certain depths, and usually is made up of PVC pipes. Electrical pumps are usually used to pump out the water the borewells, though the government is now giving subsidy for solar pumps. This convenience of pumps may increase the depletion of the groundwater at an increased pace. Central Ground Water Board (CGWB) has come with reports on the groundwater status in the country. Uncontrolled use of bore well technology leads to exploitation of groundwater at higher rates than the rate of water recharge, which may cause drastic depletion of groundwater.

TABLE 1: WELL IRRIGATION PATTERN OF PARNER TEHSIL

S.R	CIRCLE	2010	PERCENT	2020	PERCENT	CHANGE	CHANGE PERCENT
1	Bhalawani	530	12.22	1124	12.79	1.1207	112.07
2	Nighoj	739	17.04	1844	20.99	1.4614	146.14
3	Palashi	800	18.45	1109	12.62	0.3862	38.62
4	Parner	200	04.61	577	06.56	1.885	188.50
5	Supa	279	06.44	724	08.24	1.594	159.49
6	Takali Dhokeshwar	630	14.54	1488	16.93	1.361	136.19
7	Wade Ghavan	519	11.96	845	09.61	0.6281	62.81
8	Wadzire	639	14.74	1074	12.22	0.6875	68.75
Total		4336	100	8785	100	91239	912.39

Source: (Compiled by the Author)

Fig 2: WELL IRRIGATION PATTERN OF PARNER TEHSIL



Well irrigation is very useful and traditional practice in parner tehsil from the ancient time this method was widely used. The well irrigation pattern in parner tehsil in year 2010 is 4336 well irrigation it is increased in year 2020. 8785 well irrigation in parner tehsil. Bhalawani circle increase in year. 2020. (12.79%) as compare to other all circle the all circle day by day increase in well irrigation in parner tehsil.

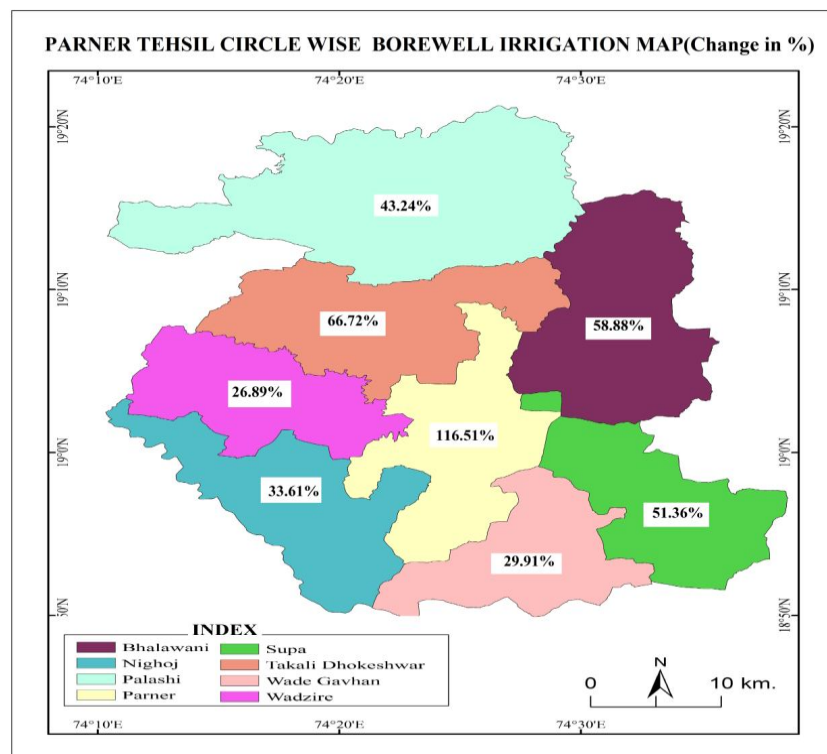
TABLE 2: BORWELL IRRIGATION PATTERN OF PARNER TEHSIL

S.R	CIRCLE	2010	PERCENT	2020	PERCENT	CHANGE	CHANGE PERCENT
1	Bhalawani	945	18.49	1501	19.58	0.5888	58.88
2	Nighoj	842	16.47	1125	14.67	0.3361	33.61
3	Palashi	622	12.17	891	11.62	0.4324	43.24
4	Parner	339	06.63	734	09.57	1.1651	116.51
5	Supa	658	12.87	996	12.99	0.5136	51.36
6	TakaliDhokeshwar	559	10.93	932	12.16	0.6672	66.72

7	Wade ghavan	498	09.74	647	08.44	0.2991	29.91
8	Wadzire	647	12.66	821	10.71	0.2689	26.89
	Total	5110	100	7664	100	42712	427.12

Source: (Compiled by the Author)

Fig 3: BORWELL IRRIGATION PATTERN OF PARNER TEHSIL



Bore Well irrigation is very useful and traditional practice in Parner Tahsil from the ancient time this method was widely used. The Borewell irrigation pattern in parner tehsil in year 2010 is 5110 Borewell irrigation it is increased in year 2020. 7664 Borewell irrigation increase in parner tehsil. Bhalawani circle more increase in year. 2020. (19.58%) as compare to other all circle the all circle day by day increase in Bore well irrigation in Parner Tahsil.

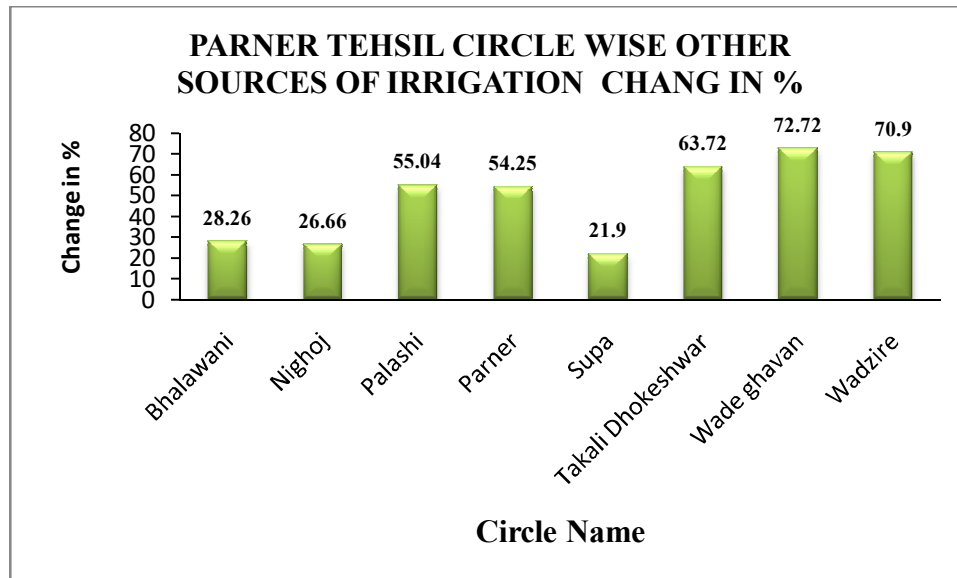
TABLE 3: OTHER SOURCES OF IRRIGATION PATTERN OF PARNER TEHSIL

S.R	Circle	2010	Percent	2020	Percent	Change	Change %
1	Bhalawani	92	09.30	118	08.08	0.2826	28.26
2	Nighoj	195	19.71	247	16.92	0.2666	26.66
3	Palashi	109	11.02	169	11.58	0.5504	55.04
4	Parner	188	19.00	290	19.87	0.5425	54.25
5	Supa	105	10.61	128	08.77	0.2190	21.90
6	Takali Dhokeshwar	102	10.31	167	11.44	0.6372	63.72

7	Wade ghavan	88	08.89	152	10.41	0.7272	72.72
8	Wadzire	110	11.12	188	12.88	0.7090	70.90
	Total	989	100	1459	100	39345	393.45

Source: (Compiled by the Author)

Fig 4:.OTHER SOURCES OF IRRIGATION PATTERN OF PARNER TEHSIL



Other sources of irrigation pattern are very useful and traditional practice in parner tehsil from the ancient time this method was widely used. The other sources irrigation pattern in Parner Tahsil in year 2010 is 989 other sources found and 2020 year irrigation it is increased in parner tehsil 1459 other irrigation increase in.wade ghavan circle 72.72% more increase in year. 2020. As compare to other all circleThe all circle day by day increase in other sources irrigation in Parner Tahsil.

CONCLUSION:

The study on the changes taking place in the irrigation sector in Parner Tahsil during the period of 10 years from 2010 to 2020 has been studied through this research paper.

The following conclusions have been drawn from the study of irrigation sources according to the circle in Parner Tahsil.

- In the study area well irrigation is the highest change in Parner circle is 188.50% followed by Supa 159.49% Nighoj 146.14% Takli dhokeshwar 136.19% Bhalawani 112.07% and Wadzire 68.75% and wade ghavan has 62.81% Well irrigation is found to have occurred in 2020 as compared to 2010
- Studying Borewell Irrigation in Parner Tehsil, the highest percentage of bore is found in Parner circle at 116.51 per cent. 36% Palashi 43.24% Nighoj 33.61% Wade Ghavan 29.91% Wadzire 26.89% We find increase in borewell irrigation

- Other water sources in Parner Tehsil have increased by 72.72% in Wade Ghavan villages according to the circle. 04% Parner 54. 25% Bhalawani saw an increase of 28.26%, Nighoj saw an increase of 26.66% and Supa saw an increase of 21.90%.
- When the overall well irrigation of Parner Tehsil was studied, 912 in 2020 as compared to 2010. An increase of 39% has been observed while a study of borewells has shown an increase of 427. 12% and a study of other sources of irrigation has shown an increase of 393. 45%.

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