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IMPACT OF IRRIGATION ON AGRICULTURE IN DROUGHT-PRONE AREA: A CASE STUDY OF ASHTI TAHASIL, DIST-BEED (M.S.)

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ABSTRACT:

Indian economy is depending on agriculture &Agriculture economy is mostly dependingon climate. Rainfall is considered as an important element of climate. Climate&soil are two key parameters responsible for agriculture development. Keeping these views in mind, present study has attempted to assess rainfalltrends, irrigation facilities & its impacts on agriculture in drought-prone area of Ashti taluka ,district-Beed(M.S.).Balaghat plateau &sina river basin is main sources of irrigation in the region as well as area comes under rain-shadow zone. It has different pattern of irrigation. Canal irrigation sharing 32.87%, well irrigation 64.01%, Tank& other 3.06% to net irrigated area. The advent of irrigation has changed the cropping pattern whereas jowars rank is top one& then Bajra,wheat, etc crops are cultivated in the region. The cropdiversity is marked high in irrigation zone, while very low diversification is noticed those area have not irrigation facilities.

KEYWORDS- Agriculture economy, irrigation, cropping pattern, cultivation.

INTRODUCTION:

Irrigation is the key for development of agriculture. It is essentially an artificial application of water to overcome deficiencies in rainfall for growing crops. The study area is

pre-dominantly agricultural & backbone of its economy. The last decadal percentage of the rainfall occurs very low in the region. Before 2001-2010 the percentage of net irrigated area to shown are is marked 15.30% means the large cultivated area in the study region is mainly depend on rainfall, where as the rainfall is inadequate &unpredictable. Through, since long period the study area is known as one of the backward area for all views. Specially, this area known for sugar cane cutter labor supplier to western Maharashtra as well as milk productionarea of Marathwada.

After the construction of some irrigation projects in the study area, irrigation facilities were provided to cultivated land. It brought out the changes in cropping pattern &responds to the shift seasonal to permanent cultivation .It also promotes more intensive cultivation as well as promote for use of high yield variety, chemical fertilizer, & etc. That's why the increasing productivity &obviously stabilizing in the agriculture.

STUDY REGION

Ashti taluka is one of the most important taluka in Beed district of the Maharashtra state. This area is known for especially sugar cane cutter labor provide to the sugar cane industry of Maharashtra. Region comes under the rain shadow zone .It is located an average above 657.2 meter from the sea level.Average rainfall of period 2001 to2015 in AshtiTehsil varied from 400 mm to879 mm .Major part of Ashti Tehsils situated in the Sina basin & some part is covered by Balaghat Range.As per ground water exploration data deeper potential aquifers

below 135m bgl have been observed in this area . As per census 2011,the population of the study region is 206666

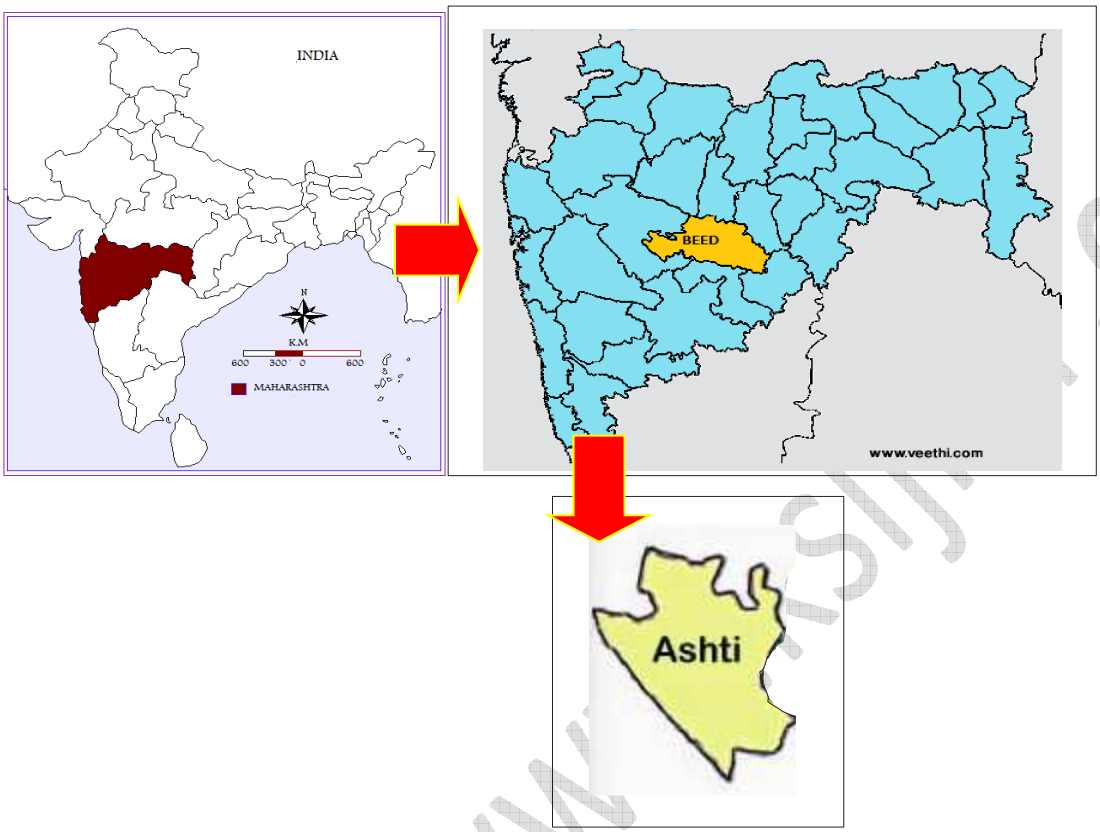
OBJECTIVE:

Tofocus on how irrigation affected on agriculture in Ashti Taluka spatially &temporally,to highlight the basic problems in irrigation To study the patterns of physical & cultural factors for the introducing irrigation &also examine the relationship between irrigation other variable factors.

DATABASE METHODOLOGY:

The present study is based on primary & secondary sources .Data collected through questionnaires', intensive field work with viva- voce technique & also discussion with farmers & agriculture officers etc, secondary data obtained from district census hand book,dist-statistical abstract, socio-economic review.The collected data represented &processed by statistical with cartographic methods. Then JasbirSinghs methods-index of diversifications&crop concentration indices ranking co-efficient methods are used to analyze data

Location Map of Study Area



RESULT &DISCUSSION:-

The AshtiTaluka is characterized by different physical features & it is divided into two physiographic units (i)low lying southern division or the Sina basin (ii)Balaghat Ranges.The effect of terrain exercises through altitude ,rugged relief &slope are determined the region have no better condition for the irrigation .Canal irrigation is developed in the some part of the Sina basin as well as major part of the region is waiting for facilities of irrigation .

Table No. 01 Land use trends in Ahsti Tehsil (In hector)

(1980-81 to 2013-14)

Years	**Forest**	**Area not liable to cultivation**	**Non cultivated land**	**Follow**	**Net area sown**	**Total area**
1980-81	2800	17600	8100	63600	55800	147900
	1.90%	11.36%	5.53%	43.26%	37.95%	100%
2004-05	2700	5900	6100	1000	132700	147900
	1.81%	3.99%	4.10%	0.67%	89.43%	100%
2009-10	2580	5400	6400	1000	132520	147900
	1.74%	3.65%	4.32%	0.67%	89.60%	100%
2013-14	2460	4000	29890	2000	109550	147900
	1.66%	2.70%	20.20%	1.35%	74.07%	100%

Source: socio-economic abstract .Beed district(1980-81,2004-05,2009-10,2013-14)

The data shows minor changes in land use trends only1.90% area of the study region was under forest(1980-81).It is declined up to 1.81% during the year 2004-2005 &lastly 1.66% of land covered by forest during the year - 2013-2014 as per calculation the area of forest is decreasing in the study region. The area of not use in cultivation by farmer continually decreasing up to 2009-10& other hand it is increasing from 2010-11 to 2013-14 due to lac of rainfall in region cultivators have no need to take risk to cultivate the land. The total 43.26% of follow land observed (1980-81) it is declined 1.35% (2013-14).On the other hand 37.95% (1980-81) land net sown area ,where as increased up to 74.07%(213-2014).The all data clarify that the development of irrigation was increased in the region .

Table No.02 Minorirrigation scheme in Ashti Tehsil

(1980-81 to 2013-14)

Area	**Number of irrigation schemes**	**%of total Irrigation**	**Irrigation capacity in hec**	**%of total irrigation**	**Net irrigated area**	**% of irrigated area**
Ashti	329	28.12	2378.5	20.90	745	18.54
Beed	1585	100	95496	100	4396	100

Source: socio-economic abstract .Beed district(1980-81,2004-05,2009-10,2013-14)

Irrigation Projects-The number of minor projects are completed in the region .above table shows that 256 projects completed &1780.3 hector lands was irrigated throughproject up to 2010.

Table No.03 Major Irrigation scheme in Ashti Tehsil

Description	**kada**	**Pimpala-uti**	**Dhirdi**	**Pandhari**	**Kharadewadi**	**Pimpari**
Catch.area (hec)	435.12	1728	1635.5	20.06	11.43	8.96
Anniualuti.	1.691	1.483	2.0916	1.700	2.0164	1.2233
Cost in lac	208.58	185.51	256.28	427.20	460.71	303.34

Source: Report of irrigation dept, Beed

Above table shows that the govt. of Maharashtra constructed 06 projects in the study area .All projects are beneficial to farmers for the cultivationof land & contributing to the economy of the region. The total catchment area of the said projects where as 3839.07 hect. & higher amount of annual water utilization had found at dhirdi (2.0916)

Table No.04 Irrigation by well in Ashti Tehsil (1980-81 to 2013-14)

Area	Total wells in use		Total well inno use	Total wells	Total wells With ele. pump & diesel		Total wells in no use	Total wells
	With pump	With diesel			Ele.	di		
1	2	3	4	5	6	7	8	9
Ashti	**2791**	**4877**	**687**	**8355**	**7609**	**597**	**1050**	**9854**
%	**33.40**	**58.37**	**8.23**	**100.00**	**82.22**	**6.42**	**11.36**	**100.00**
Beed Total	**14741**	**22717**	**1783**	**39241**	**39440**	**1693**	**4889**	**45117**
%	**37.56**	**57.89**	**4.55**	**100.00**	**27.30**	**2.74**	**8.96**	**100.00**

Source: Report of irrigation dept, Beed

When observed the above table 2791 wells with elet.& 4877wellswith diesel pump out of 8355 wells in the study region. Whereas thetotal wells of with ele.& diesel pump 39241 in the ditrict.& out them 1783 wells are not in use in the district. Only with ele, &diesel pump total wells are in the area 9854 out of 45175 as well as1050 wells are not in use in the Ashti thesil. All usable wells had provide the facilities of irrigation to the area up to 2010 but after during the year 2011to 2015 the pattern of irrigation have been changed due to lac of rainfall,

Table No.05 Avaiblity& utilization of ground water in Ashti Tehsil

Area	**Geog, Area(H**	**Popula tion**	**Annual rechar ge**	**Annual utilizat ion**			**No, usable**			**Total irri.cap .**
-	-	-	-	hecto r	well	Iris cap	hecto r	well	Iris cap	-
1	2	3	4	5	6	7	8	9	10	11
Ashti	**1.50**	**206666**	**15708**	**3563**	**2375**	**4750**	**1214 5**	**8096**	**16129 2**	**209420**
Total dist	**1062**	**2161250**	**106710**	**2008 9**	**1339 2**	**2678 4**	**8662 8**	**5775 2**	**11550 4**	**142288 1**

Source: Report of GSDA Beed District

Above table shows that theavailability & utilization of ground water in the study region. Geographically 1.50 Lachector area of AshtiTahsil& 10.62 hector area of the districtcovered by irrigation.Study area has utilized 2375 wells & 8096wells are not useable. Total irrigation capacity of land is 209420 out of 1422881 &15708(14.72%)is annual recharge in the study area .The majority of working force in the area is mainly agriculture & no. of irrigation schemes & projects made helpful for the development of agriculture .

CONCLUDING REMARKS:

This paper is an attempt tostudy of drought prone area as well as to compare In the present irrigation facilities through the data .It examine the relationship between irrigation & agriculture in the Ashti Tehasil area. Irrigation facilities plays most important role in the development of agriculture. Climatically entire study area comes under rain shadow zone& 80 %rainfall concentrated between June to September rather than winter &summer seasons

remains almost dry.The fertile soil along the Sina river basin has shown high intensity of irrigation. Area hasdifferent patterns of irrigation like canal, well & other etc. Among the region, irrigated cropping patterns have observed Jowar, wheat, sugarcane & cotton etc. in the large scale. The intensity of cropping has high in river basin & low in the other part of the hilly area.Irrigation has positive impact on the agricultural productivity of irrigated crops & consumptions of bio-chemical input & mechanization etc.The Sina river basin possess high level of agricultural productivity where as hilly area specially north part of the study region have recorded low levels of agricultural productivity .It notified that agricultural inputs are depend on irrigation facilities in the throughout study area.

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