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## IMPACT OF IRRIGATION FACILITIES ON CHANGING CROPPING PATTERN IN NEWASA TAHSIL, DISTRICT AHMEDNAGAR (M.S.)



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### ABSTRACT

The present work highlights that the irrigation facility is must for agricultural development. Irrigation facilities in the study area mainly include well irrigation and canal irrigation. In present study Newasa tahsil was selected as a study area which came under rain shadow and semi-arid region. The irrigation facility and cropping pattern of Newasa tahsil is compared with the Ahmednagar district. The water resources utilization is observed since 1989-2005. The study focused on irrigated area by surface and well irrigation in Ahmednagar District and Newasa Tahsil and cropping pattern in

Ahmednagar District and Newasa Tahsil.

**KEYWORDS :** Irrigation facility, Irrigated area, Surface and well irrigation, cropping pattern, cultivated area.

### 1.INTRODUCTION:

Irrigation is considered to be one of the most important and basic factors in the process of transformation of agriculture. Irrigation is the basic determinant of agriculture because its inadequacies are the most powerful constraints on the increase of agricultural production, particularly in the dry farming regions. In traditional agriculture, irrigation was recognized only for its protective role of insurance against the vagaries of rainfall and drought. But the adoption of high yielding varieties, chemical fertilization and multiple cropping, controlled irrigation has become the chief factor

in increasing productivity.<sup>1</sup>

With the increased irrigated area is increasing and advances in agriculture science, most of the cropping patterns are giving way to intensive cropping.<sup>2</sup> 'Cropping pattern means the proportion of area under different crops at a particular period of time.' A change in cropping pattern means a change in the production under different crops.<sup>3</sup>

## REVIEW OF LITERATURE

Todkari G.U., Patil B.D., Kambale S.S. and Patil P.N. (2010) analyzed the irrigation pattern in Solapur District. The main objective of the study is to showing the irrigation development in the Solapur district. The data is used for Study from District Statistical Department, Solapur.<sup>4</sup>

Patil R.B, Patil A.B, Shinde S. (2012) this Study examines the agricultural development with the help of impact of water percolation tank on cropping pattern in Rampur Village, Tal.-Jath Dist: Sangli. The aim of the study is to study the impact of water percolation tank on cropping pattern. The study concludes that, In the Rampur village, after the construction of water percolation lank, there were considerable changes in irrigation facilities and cropping pattern<sup>5</sup>.

Another interesting study is A.P. Pandit, A.B. Aher and S.D Kulkarni (2012) examined impact of Water resource utilization and cropping pattern in Shrigonda Tahsil, Ahmednagar district. The data for the study was obtained from District Statistic department, Ahmednagar duration period from 1960-2001<sup>6</sup>.

Dr. Khalid Anwar and Dr.Shagupta Hussain(2015) has Studied on the development of agriculture and changing cropping pattern. The main objective of the study is to gauge the development of the agriculture in the light of irrigation and changing cropping pattern. They conclude that agricultural performance of Uttar Pradesh is too dismal during the past two decades. The state is bestowed with rich natural resources<sup>7</sup>.

## OBJECTIVE

- 1.To Study the Irrigation Facility in the study region.
- 2.To analyze the cropping pattern in the study region.

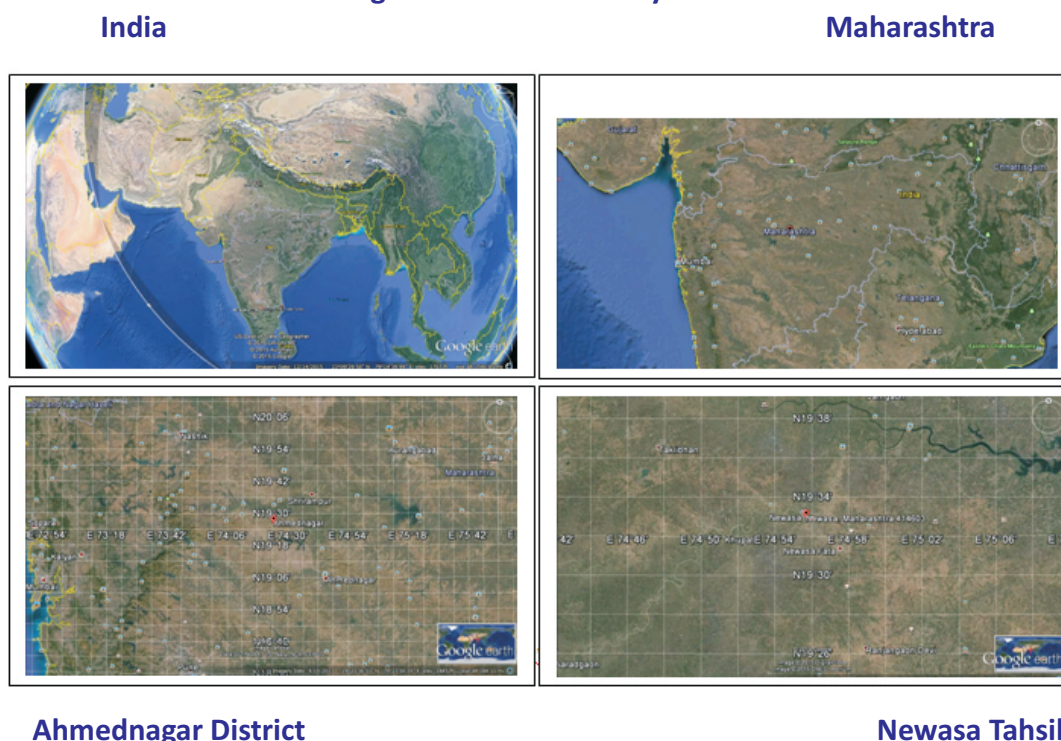
## STUDY AREA

The area under the study is situated at distance of 55 km on North-western side of Ahmednagar district (M.S.). Figure-1and 2 shows the map of the study area. It covers an area of 1343 sq. km (i. e 518.70 miles) and lies at an altitude of 430-437 meters from MSL (Mean Sea Level) and is located in between 190 32' 0" N to 19.5330 N latitude and 74 05' 0"E to 74.933" E longitude. The area under forest is 14.75sq.km. The study area received an average rainfall of about 508 mm and temperature range varies from 26°C to 43.8°C<sup>2.8</sup>

**Fig. 1: Map of the study area**



**Fig. 2: Location of Study Area**



(Source- Google earth)

## DATA COLLECTION AND RESEARCH METHODOLOGY

The Present research work is based on secondary sources of data. The data collected and used for the period 1989-90 to 2004-2005. The secondary data is obtained from socio-economic review (1991-92,1999-2000,2005-06,2006-07), District Statistical Abstract of Ahmednagar district, irrigation Department. The collected data has been processed and tabulated and then suitable graphs have been constructed and interpreted.

## DISCUSSION



The table no.1 reveals that in the year 1989-90 the gross area available for agriculture in Ahmednagar District was 332212 hectares and out of this 270272 hectares area was under irrigation. In Newasa tehsil the gross area available for agriculture was 57285 hectares and 43100 hectares was exist under irrigation. The area under surface irrigation in Ahmednagar district was 34.73 % while 44.74 % area was observed in this category in Newasa tehsil in the same period. The area under well irrigation was 65.27 % in the district whereas 55.26 % well irrigated area was observed in Newasa Tahsil during the year 1989-90.

In 2004-05 the gross area available for agriculture in Ahmednagar District was 430246 hectares and 127661 hectares in Newasa Tahsil.

The surface irrigated area in Ahmednagar District was 22.21 % and 25.12 % area in Newasa Tahsil. The area under well irrigation was 77.79 %, 74.88 in Ahmednagar district and Newasa Tahsil respectively.

Surface water irrigation practices decline and increase the burden on ground water, due to less water availability. Less rain water availability is indicating impact on surface irrigation, because well irrigated area is increased than surface irrigated area in Ahmednagar district and Newasa tehsil also.

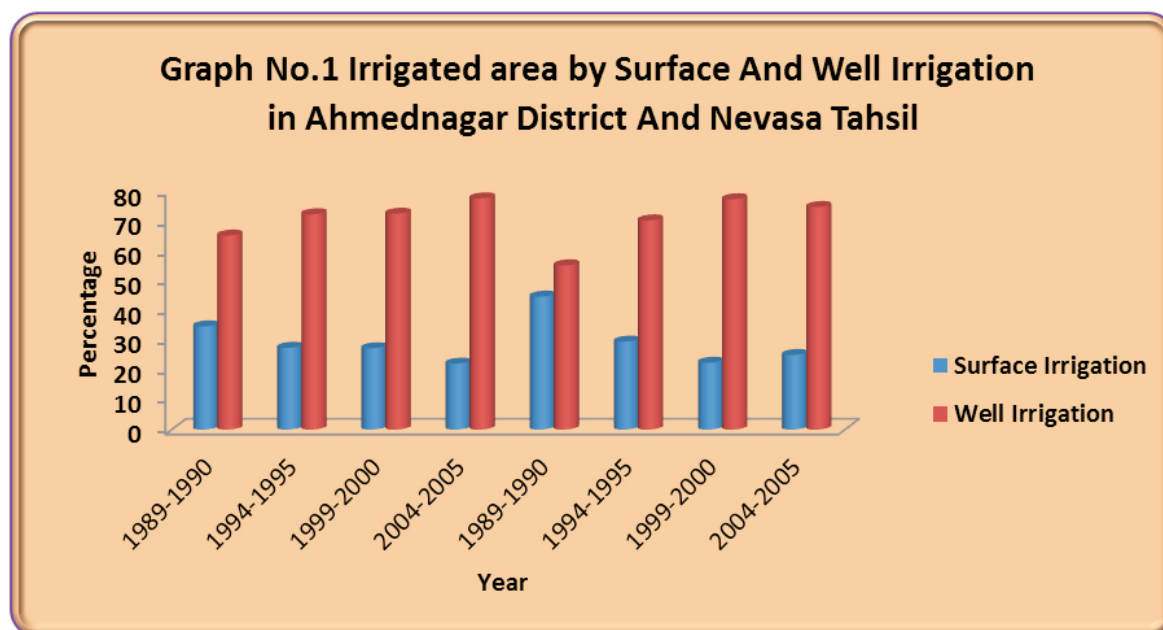
A variety of crops are grown in Ahmednagar District. However, traditionally, Jowar, Wheat, Bajara, Maize, Sugarcane, Groundnut, Gram, Fruit and Vegetables etc. are grown in the district.

**Table No.-1 Area Irrigated by Different Sources**

(Area- In hectares)

Area	Year	Total Gross Area Irrigation	Net Area Irrigation	Irrigated Area		Percentage	
				Surface Irrigation	Well Irrigation	Surface Irrigation	Well Irrigation
<b>Ahmed- Nagar District</b>	1989-1990	332212	270272	93867	176405	34.73	65.27
	1994-1995	336371	285993	78756	207237	27.54	72.46
	1999-2000	379093	346636	94844	251792	27.36	72.64
	2004-2005	432246	431626	95878	335748	22.21	77.79
<b>Newasa Tahsil</b>	1989-1990	57285	43100	19285	23815	44.74	55.26
	1994-1995	49870	42136	12476	29660	29.61	70.39
	1999-2000	51933	49360	11112	38248	22.51	77.49
	2004-2005	129661	129041	32409	96632	25.12	74.88

(Source: Socio-Economics review of Ahmednagar District, 1991-92, 1999-2000, 2005-06, 2006-07)



**Table No- 2. Cropping Pattern in Ahmednagar District  
(Area under different crop in hectors and percentage)**

Sr.No.	Crop	1998-1990		1994-1995		1999-2000		2004-2005	
		Cultivate		Cultivate		Cultivate		Cultivate	
		Area	%	Area	%	Area	%	Area	%
1	Wheat	46255	15.13	77364	07.08	125110	11.05	167845	13.22
2	Jowar	104935	34.33	548395	50.16	467295	41.28	439648	34.64
3	Bajara	51485	16.85	278185	25.44	310880	27.46	362287	28.54
4	Maize	NA	NA	9805	00.90	16837	01.49	115111	09.07
5	Sugarcane	73882	24.17	80224	07.33	81137	07.17	81155	06.39
6	Groundnut	2952	00.97	15378	01.41	20945	01.85	15637	01.24
7	Bengalram	10352	03.39	35376	03.24	56832	05.02	32105	02.53
8	Redgram	NA	NA	23426	02.14	19330	01.71	17935	01.41
9	Fruit and vegetables	15767	05.16	25184	02.30	33605	02.97	37562	02.96
	<b>Total</b>	<b>305628</b>	<b>100</b>	<b>1093337</b>	<b>100</b>	<b>1131971</b>	<b>100</b>	<b>1269285</b>	<b>100</b>

(Footnote: NA – Not Available)

(Source: Computed by author from Socio-Economics review of Ahmednagar District, 1991-92, 1999-2000, 2005-06, 2006-07)

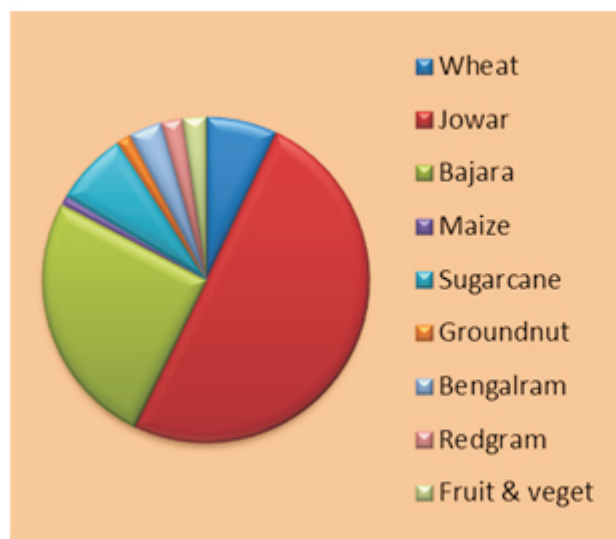
**Table No- 3. Cropping Pattern in Newasa Tahsil**  
(Area under different crop in hectares and percentage)

Sr.No.	Crop	1998-1990		1994-1995		1999-2000		2004-2005	
		Cultivate Area	%	Cultivate Area	%	Cultivate Area	%	Cultivate Area	%
1	Wheat	4471	08.19	10272	09.83	20292	17.88	34523	27.66
2	Jowar	17969	32.91	38848	37.20	37757	33.27	37616	30.13
3	Bajara	13655	25.00	16413	15.71	23386	20.61	5930	04.75
4	Maize	NA	NA	740	00.72	1021	00.90	1756	01.40
5	Sugarcane	16006	29.32	26236	25.12	15740	13.87	32218	25.81
6	Groundnut	270	00.49	2292	02.19	964	00.85	1260	01.00
7	Bengalram	1178	02.16	4925	04.72	8952	07.89	5480	04.39
8	Redgram	NA	NA	2783	02.66	3232	02.85	3325	02.67
9	Fruit and vegetables	1056	01.93	1935	01.85	2129	01.88	2719	02.19
	<b>Total</b>	<b>54605</b>	<b>100</b>	<b>104444</b>	<b>100</b>	<b>113473</b>	<b>100</b>	<b>124827</b>	<b>100</b>

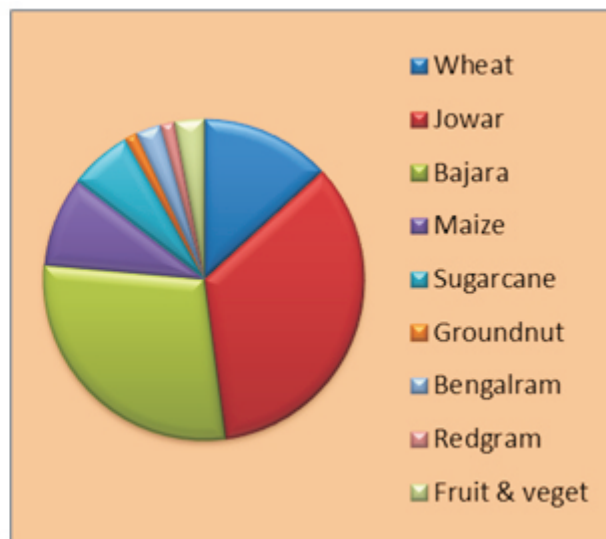
(Footnote: NA – Not Available)

(Source: Computed by author from Socio-Economics review of Ahmednagar District, 1991-92, 1999-2000, 2005-06, 2006-07)

**Cropping pattern in Ahmednagar District**  
(1994-1995)

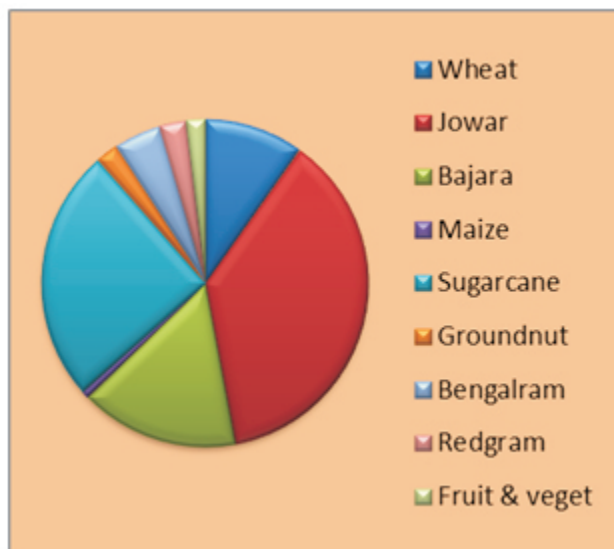


**Cropping pattern in Ahmednagar District**  
(2004-2005)





**Cropping pattern in Newasa Tahsil  
(1994-1995)**



**Cropping pattern in Newasa District  
(2004-2005)**

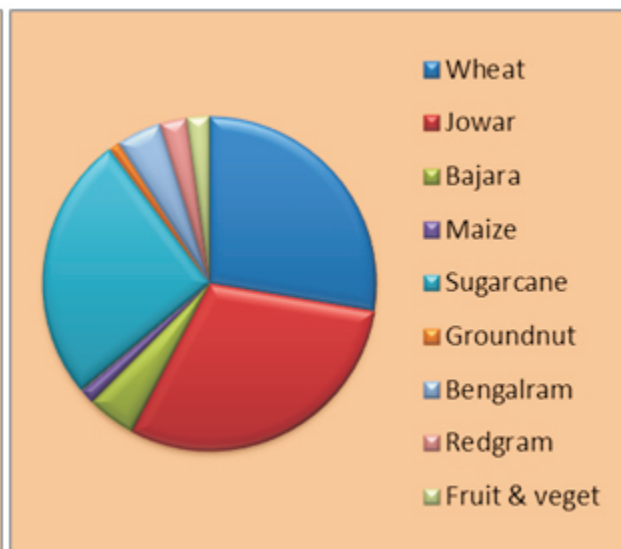


Table No. 2 and 3 reveals that the cropping pattern in Ahmednar District and Newasa Tahsil respectively.

#### a. Cropping Pattern 1994-1995 in Ahmednagar district:

The total cultivated area under different crops was 1093337 hectors, out of the total cultivated area, 548395 hectors area was under Jowar, Which was 50.16 %. And only 0.90 % area was under Maize.

The percentage Shares of Wheat, Bajara, Sugarcane, Groundnut, Bengalram, Redgram and Fruit & vegetables were 7.08 %, 25.44 %, 7.33 %, 1.41 %, 3.24 %, 2.14 % and 2.30 % respectively.

#### b. Cropping Pattern 1994-1995 in Newasa Tahsil:

The total cultivated area under different crops was 104444 hectors, out of the total cultivated area, 38848 hectors area was under Jowar, it means 37.20 % area was under the jowar crop And only 0.72 % area was under Maize.

The percentage Shares of Wheat, Bajara, Sugarcane, Groundnut, Bengalram, Redgram and Fruit & vegetables were 9.83 %, 15.71 %, 25.12 %, 2.19 %, 4.72 %, 2.66 % and 1.85 % respectively.

#### c. Cropping Pattern 2004-2005 in Ahmednagar district:

Gross cropped area increased from 1093337 to 1269285 hectors between 1994-95 to 2004-2005. The cultivated area decreased under jowar, sugarcane, Bengalgram, redgram. The area under Wheat and Bajara was increased.

#### d. Cropping Pattern 2004-2005 in Newasa Tahsil:

Gross cropped area increased from 104444 to 124827 hectors during 1994-95 to 2004-2005. It means gross cropped area was increased with 20383 hectors. Jowar and Bajara area was decreased from 37.20 to 30.13 %, 15.71 to 4.75 % respectively between 1994-95 to 2004-05. But the area of wheat was increased from 9.83 % to 27.66 %. Maize and Fruits & vegetables area was slightly increased

whereas slight decrease was found in area of groundnut and bengalgram.

## CONCLUSION

The area under surface irrigation is decreased in Ahmednagar district as well as in Newasa tehsil during the investigation period. In the year 1989-90 surface irrigation was 34.73 % and it was decreased upto 22.21 % in 2004-05 in Ahmednagar District. In Newasa Tahsil the surface irrigation was 44.74 % in 1989-90 and it was decreased upto 25.12 % in 2004-05.

Well irrigation is remarkably increasing in the District as well as in Newasa tehsil. In the year 1989-90 the well irrigation was 65.27 % and it was increased upto 77.79 % in 2004-05 in Ahmednagar while in Newasa tehsil the well irrigation was 55.26 % in 1989-90 and it was increased upto 74.88% in 2004-05.

Cropping pattern has shown the positive and negative changes during the study period. Jowar cropped area was 50.16% in 1994-95 and it was decreased upto 34.64 % in 2004-05. In Newasa tehsil Jowar cropped area was 37.20 % in 1994-95 and it was decreased upto 15.71% in the year 2004-05.

Area under wheat was increased in both Ahmednagar district and Newasa tehsil in the year 1994-95 the area under wheat was 7.08 % in Ahmednagar district and 9.83 % in Newasa tehsil and it was increased in 2004-05 up to 13.22% in Ahmednagar district and 27.66% in Newasa tehsil. The cropping pattern in Ahmednagar district and Newasa tehsil was influenced by the irrigation facilities. The positive correlation is observed in cropping pattern and irrigation facilities.

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