

## Geographical parameters related to Source of irrigation in the state of Haryana

Jai Singh

Research Scholar, Department of Geography, OPJS University, Churoo-136119, Rajasthan (India)  
e-mail: [jaibana1990@gmail.com](mailto:jaibana1990@gmail.com)

**Abstract:** Irrigation may be done with canals or by lifting the underground water. First is a large-scale project, which cannot be afforded by individuals, besides the canal water cannot reach every point. Therefore, there is a need of lift irrigation, may be it ground water or canal. In Haryana tubewells and canals are major sources like wells and tanks, but are negligible. The sources of irrigation will depend upon various factors, such as surface configuration, rock structure, water table, quality and quantity of ground water, proximity and extent of water potential catchments area, soil profile of land etc. Haryana, main sources of agricultural irrigation are canals and tubewells. The total number of tubewells and pumping sets are 6,12,023 in Agriculture year 2005-06 whereas the number of main canals and branches are 1,510 in the year 2004-05. The net irrigated area by different sources in the state and percentage of area irrigated by different sources to total net irrigated area of state in 2004-05. This table indicates that tubewells are the most important sources of irrigation. Out of the total irrigated area (8954 thousand hectare), 51.25 percent is irrigated by tube wells, 48.30% is irrigated by govt. canals and 0.47 is irrigated by others source by irrigation (Table 4.1). Out of Net Sown Area of state i.e. 3528 thousand hectares, 295.4 thousand hectare area is irrigated by different means of irrigation.

[Jai Singh. **Geographical parameters related to Source of irrigation in the state of Haryana.** *Academ Arena* 2019;11(4):1-6]. ISSN 1553-992X (print); ISSN 2158-771X (online). <http://www.sciencepub.net/academia>. 1. doi:[10.7537/marsaaj110419.01](https://doi.org/10.7537/marsaaj110419.01).

**Keywords:** Geography, Irrigation, Haryana, Yearwise

### Introduction

India is a unique country from agricultural point of view. Its enormous expanse of level plain, rich soils, high percentage of culturable land, wide climate variety with adequate aggregate rainfall combined with sufficient temperature, ample sunshine and long growing season provide solid base to agriculture. Agriculture has double relation with industry. It acts as a supplier of raw material to the industries and as consumer of industrial products. It goes without saying that the prosperity of industrial sector largely depends upon the agricultural prosperity. In fact prosperity of the entire nation depends upon the prosperity of agriculture.

In developing countries like India, agriculture owes an important role in the economic status between world's economy, as economy of India is based on mainly agriculture, India is a agricultural country. Food resources and raw materials for industries and common use depend upon agriculture in terms of employment. Agriculture and its allied activities are important for the progress of our country because it is the base of industrial and commercial activities which provides a source of livelihood to over 77 crore people of this country & providing food grains to feed same. Besides, it provides fodder for an equally large cattle population, is a main source of employment in rural population (Tyagi, 2000).

Though, economic and industrial liberalization results the decline in agricultural based employment

and a trend towards other economic and industrial activities is seen through 20 years back but the importance of agriculture can be seen from its contribution to the national income. The share of agriculture in National income was placed at 49 percent in 1948-49. In 1950-51 its share in the net domestic product was about 56% and during the following 10 yrs, it remained over 50 percent (Om Parkash, 2000, M. Phil. Dissertation). The share of agriculture declined to all times low of 25.50 percent in 2001, it is all due to rapid increase in industrial goods production and service. Beside this trend, the economy of India still is depends on agriculture.

### Materials and Methods:

Ideally, each investigation in agricultural Geography should involve four stage The identification of the problem, the collection of data, the formulation of a hypothesis or hypothesis and the testing of hypothesis and modification of hypothesis to provide an adequate explanation (Coppeck, 1969).

Three main approaches to the geographical study of subsidence agriculture can be suggested, namely, an ecological approach, the land utilization approach and a statistical approach (McMaster, 1962).

A statistical-ecological-physiographic approach is adopted in this investigation as it is not only an attempt to understand and determine the spatial distribution and pattern of the methods of irrigation, in addition it also attempts to detect the effectiveness of

irrigation on property and strength of economy by agriculture.

Any study should have its significant quantification with relevant data and evidences to provide importance and validity to itself, with suggestive nature. This work is based on secondary data collected from various government and non-government organizations. To make an assessment of irrigation development in the state, the related information and data was collected from State of the Environment Report, Environment Department, Haryana. To study The Changing cropping pattern and production, Statistical Abstracts of Economic and Statistical Organization, Planning Department, Government of Haryana were discussed by 10 years span of time of 1966-67 to 2005-06.

To draw out actual impact of irrigation on agriculture multiple correlations between intensity of irrigation, net sown area, cropping pattern, intensity of cropping, and agricultural efficiency is extracted. Tables and maps show all these factors also.

## Results and Discussion:

### Source of irrigation in the state of Haryana

Irrigation may be done with canals or by lifting the underground water. First is a large-scale project, which cannot be afforded by individuals, besides the canal water cannot reach every point. Therefore, there is a need of lift irrigation, may be it ground water or canal. In Haryana tubewells and canals are major sources like wells and tanks, but are negligible. The

sources of irrigation will depends upon various factors, such as surface configuration, rock structure, water table, quality and quantity of ground water, proximity and extent of water potential catchments area, soil profile of land etc. Haryana, main sources of agricultural irrigation are canals and tubewells. The total number of tubewells and pumping sets are 6,12,023 in Agriculture year 2005-06 whereas the number of main canals and branches are 1,510 in the year 2004-05.

The net irrigated area by different sources in the state and percentage of area irrigated by different sources to total net irrigated area of state in 2004-05. This table indicates that tubewells are the most important sources of irrigation. Out of the total irrigated area (8954 thousand hectare), 51.25 percent is irrigated by tube wells, 48.30% is irrigated by govt. canals and 0.47 is irrigated by others source by irrigation (Table 4.1). Out of Net Sown Area of state i.e. 3528 thousand hectares, 295.4 thousand hectare area is irrigated by different means of irrigation.

Table 4.2 reveals the percentage of irrigated area by different sources to the net sown area of state. In Haryana state, net sown area is 3528 thousand hectare in 1968-2018 agricultural year. Out of this 8954 thousand hectares area is irrigated by different sources of irrigation. In other words, out of 3528 thousand hectare area i.e. Net Sown Area, 33.73 percent is irrigated in the state. It is clear that the main source of agricultural irrigation is tubewells in the state.

**Table 4.1: Sources of irrigation in the state of Haryana.**

Sr. No.	Sources	Area (000 hec)	Area (%)
1	Govt. Canals	5426	48.30
2	Tanks	0	0
3	Wells	0	0
4	Tubewells	2514	51.25
5	Other sources	14	0.47
	Total	8954	100.00

**Table 4.2: Percentage of irrigated area to net sown area by different sources in the state of Haryana.**

Sr. No	Sources	Area	Percentage to new sown area
1	Govt. Canals	5426	40.41
2	Tanks	-	-
3	Wells	-	-
4	Tubewells	3514	42.91
	Total	8954	100

The density of tubewells in state was 1.08 per sq. km. in 1968-69 and number of tube wells were 47, 682; 6.91 per sq. km. in 1979-80 and number of tube wells were 3,05,524; 10.35 per sq. km. in 1919-90 and number of tube wells were 4,57,856; 13.20 per sq. km. in 1999-2000 and number of tube wells were 5,83,705;

13.83 per sq. km. in 2000-05 and number of tube wells were 6,11,598; and 21.62 per sq. km. in 2017-18 and number of tube wells were 8,22,377 (Table 4.3).

Canals are another sources of irrigation in state with increasing lengths day by day. Total length of canals were 11,26 mile (18, 11.734) in 1968-69 and

density was 0.04 per sq. km. In 1968-69 the total length of canals is 15,18 mile 1126 mile (1811.734

km) and density is 0.040 km per sq (Table 4.4).

**Table 4.3: Density of Tube Wells in the state of Haryana.**

Year	Number of Tube wells	Tube well Density (Per sq km)
1968-69	47,682	1.08
1979-80	3,05,524	6.91
1989-90	4,57,856	10.35
1999-00	5,83,705	13.20
2004-05	6,11,598	13.83
2017-18	8,22,377	21.62

Table 4.4 shows that Haryana is going forward to the direction of self-independent in agricultural irrigation now can face the problem of monsoon failure. In 1979-80 the total length of canals is 1365 mile (2196.285 km) and density is 0.050 km per sq.; in 1989-90 the total length of canals is 1494 mile (2403.846 km) and density is 0.054 km per sq.; in 1999-00

the total length of canals is 1518 mile (2442.462 km) and density is 0.055 km per sq.; in 2004-05 the total length of canals is 1518 mile (2442.462 km) and density is 0.055 km per sq.; and in 2017-18 the total length of canals is 1672 mile (24.67.511 km) and density is 0.055 km per sq. (Table 4.4).

**Table 4.4: Density of Canals in the state of Haryana.**

Year	Length of main canals and minor canals	Canal Density (Length/sq. km)
1968-69	1126 mile (1811.734 km)	0.040 km.
1979-80	1365 mile (2196.285 km)	0.050 km.
1989-90	1494 mile (2403.846 km)	0.054 km.
1999-00	1518 mile (2442.462 km)	0.055 km.
2004-05	1518 mile (2442.462 km)	0.055 km.
2017-18	1672 mile (24.67.511 km)	0.061 km.

Out of 3528 thousand hectare net sown area 1426 thousand hectares area is irrigated by tubewells and rest of 14 thousand hectare area by other different sources of irrigation. Thus out of 3528 thousand hectares net sown area, 2954 is irrigated. But in 1969-70 out of 3548 thousand net sown area, only 1408 thousand hectare area was irrigated by various irrigation sources as 950 thousand hectare by canals, 17 thousand hectare by tanks, 437 thousand hectare by wells and 4 thousand hectare by other sources of irrigation. Table 4.5. Table 4.5 shows that the dominant sources of irrigation in state were canals and

tubewells in 1969-70.

The net irrigated area was 1408 thousand hectare i.e. 39.7 percent to Net Sown Area only that was not sufficient. Mahendergarh district had lowest facilities of irrigation while Karnal had better irrigation facilities in compare to others.

Table 4.6 shows the district wise trend of Net Sown Area in 1979-80 as Kurukshetra that was constituent of Karnal district in 1969-70 had highest percentage of net irrigated area to Net Sown Area while Ambala had minimum percentage of this.

**Table 4.5: During the year 1969-70, Net Area Irrigated By Different Sources in districts of the state of Haryana.**

Sr. No.	Districts	Canals	T.W.	Others	Total	NSA	%age to NSA
1.	Hisar	482	12	-	494	1175	42.0
2.	Rohtak	170	56	-	226	500	45.2
3.	Gurgaon	27	118	1	146	474	30.8
4.	Karnal	161	209	1	371	634	58.5
5.	Ambala	5	30	4	39	241	16.2
6.	Jind	95	4	-	99	235	42.1
7.	Mahendergarh	10	8	15	33	289	11.4
	Haryana	950	437	21	1408	3548	39.7

**Table 4.6: During the year 1979-80, Net Area Irrigated By Different Sources in the districts of state of Haryana.**

Sr. No.	Districts	Canals	T.W.	Others	Total	NSA	%age to NSA
1.	Hisar	360	37	-	397	545	72.8
2.	Sirsa	223	64	-	287	397	72.3
3.	Bhiwani	79	29	-	108	379	28.5
4.	Gurgaon	5	56	0	61	158	38.6
5.	Faridabad	38	50	1	89	152	58.6
6.	Jind	140	38	-	178	283	62.9
7.	Mahendergarh	2	114	1	117	264	44.3
8.	Ambala	5	69	5	79	247	32.0
9.	Karnal	57	206	7	270	313	86.3
10.	Kurukshetra	92	162	6	260	325	80.0
11.	Rohtak	126	66	7	199	323	61.6
12.	Sonepat	73	50	6	129	171	75.4
	Haryana	1200	941	33	2174	3557	61.1

In 1989-90 the highest percentage of irrigated area to Net Sown Area was in district Kaithal while lowest percentage was in Ambala as Panchkula district was constituent of this in contemporary period and in Panchkula this percentage is very low throughout the

time as shown by table 4.7.

In 1999-2000, Kurukshetra and Panipat had highest value of percentage of net Irrigated area to net shown area while Panchkula had minimum value of this (Table 4.8).

**Table 4.7: During the year 1989-90, Net Area Irrigated By Different Sources in the districts of state of Haryana.**

Sr. No.	Districts	Canals	T.W.	Others	Total	NSA	%age to NSA
1.	Ambala	3	74	2	79	139	56.8
2.	Yamunanagar	3	89	1	93	126	73.8
3.	Kurukshetra	18	129	-	147	154	95.4
4.	Kaithal	108	103	-	211	215	98.1
5.	Karnal	27	125	-	152	156	97.4
6.	Panipat	42	108	-	150	155	96.8
7.	Sonepat	47	52	-	99	106	93.4
8.	Rohtak	197	88	1	286	378	75.7
9.	Fridabad	44	65	-	109	163	66.8
10.	Gurgaon	6	120	-	126	193	65.3
11.	Rewari	6	91	-	97	128	75.8
12.	Mahendergarh	105	55	-	160	396	40.4
13.	Bhiwani	7	76	-	83	156	53.2
14.	Jind	125	60	-	185	225	46.6
15.	Hisar	383	58	-	441	550	80.2
16.	Sirsa	238	-	-	239	353	67.7
	Haryana	1359	1293	4	2657	3593	73.9

**Table 4.8: During the year 1999-2000, Net Area Irrigated By Different Sources in the districts of state of Haryana.**

Sr. No.	Districts	Canals	T.W.	Others	Total	NSA	%age to NSA
1.	Ambala	14	79	2	95	110	86.4
2.	Panchkula	-	11	2	13	31	41.9
3.	Yamunanagar	4	99	-	103	125	82.4
4.	Kurukshetra	30	117	-	147	147	100
5.	Kaithal	96	89	11	196	197	99.5
6.	Karnal	42	165	-	207	208	99.5
7.	Panipat	29	68	-	97	97	100
8.	Sonepat	116	58	-	174	175	99.4
9.	Rohtak	87	23	-	110	142	77.5
10.	Jhajjar	71	40	-	111	146	76.0
11.	Faridabad	27	89	-	116	158	73.4
12.	Gurgaon	16	60	-	76	194	39.2
13.	Rewari	1	83	-	84	120	70
14.	Mahendergarh	12	117	-	119	154	77.3
15.	Bhiwani	124	84	-	208	399	52.1
16.	Jind	132	87	-	220	236	93.2
17.	Hisar	252	19	-	271	323	83.9
18.	Fatehabad	136	72	-	208	220	94.5
19.	Sirsa	261	72	-	333	370	90.0
	Haryana	1441	1432	15	2888	3552	81.3

Table 4.9 clears that at present Kurukshetra and Panipat districts have irrigation facilities on their hundred present Net Sown Area while in Panchkula district 17.4 percent net sown area only receives these facilities only in 2004-05. Even now the main sources of irrigation in the state are tubewells and canals.

Also during the present study, like year 2004-05, Kurukshetra and Panipat districts have irrigation facilities on their hundred present Net Sown Area while in Panchkula district have minimum 19.2 percent net sown area only receives these facilities only in 2017-18. Even now the main sources of irrigation in the state are tube wells and canals (Table 3.10).

#### Corresponding author:

Mr. Jai Singh  
Research Scholar, Department of Geography,  
OPJS University, Churoo-136119, Rajasthan (India)  
[e-mail-jaibana1990@gmail.com](mailto:e-mail-jaibana1990@gmail.com)  
Contact No. 9466621179

#### References:

- Bhalla, G.S. and D.S.Tyagi. *Patterns in Indian Agricultural Development*, ISTD, New Delhi, 1989.
- Bishnoi, S.R. *Effect of Different Qualities of*

*Irrigation water on Crop and Soil*, M. Sc. Thesis (Unpublished), College of Agricultural, HAU, Hisar.

- Clifford, N.J. and Gill Valentine. *Key Methods in Geography*, SAGE Publication, London, Thousand Oaks, New Delhi, 2003.
- Dantwala, M.L. *Indian Agricultural Development since Independence: A collection of Essays*, Oxford and I.B.H. Publishing Co. Pvt. Ltd., New Delhi, 1986.
- Grigg, D.B. *The Agricultural Systems of the world: An Evolutionary Approach*, Cambridge University Press, Cambridge, 1978.
- Hassan, M.I. and Inderjeet. *Canal Irrigation and Land Degradation in Haryana*, Transaction of Institute of Indian Geographies Vol. 22, No. 1, Jan 2000.
- Hooda, R.S. *Sprinkler Irrigation and Agricultural Transformations in Bhiwani District, Haryana*, Geographical Review of India, Vol-52, No. -3, Sept. 1990.
- Hussain, M. *Agricultural Geography*, Inter India Publications, New Delhi, 1986.
- Khullar, D.R. *A Comprehensive Geography of India*, 2004.
- Lodha, R.M. *Dictionary of Geography*, Academic (India) Publishers, New Delhi 2002.
- Manchanda, H.R. *Quality of Groundwater of Haryana*, Agricultural University Press, Hisar,

- 1976.
12. Mathur, R.N., *A study in the ground water Hydrology of the Meerut District of U.P., India*, Banaras Hindu University, Varanasi, India, 1969.
  13. Mohammad, N. *Perspectives in Agricultural Geography, Human Dimensions in Agricultural*, Vol. 1 to 5, concept publishing Company, New Delhi, 1981.
  14. Monkhouse, F.J. and Wilkinson, H.R. *Maps and Diagrams*, Methuen D. Co., London, 1976.
  15. Narayanamoorthy, *A Status of Indian Irrigation*, Man and Development, Vol. XVII, No. – 4, Dec. 1995.
  16. Ojha, B.S. and J.Singh. *Resource Planning Atlas (South and Southwestern, Haryana)* National Book Organization, 1993.
  17. Om Parakash, *Impact of Groundwater level on cropping Pattern of Karnal District*, M.Phil Dissertation (Unpublished), 2006.
  18. Ramchandran, K. and B.V.R. Rao, *Rainfall Abnormality in India*, *Geographical Review of India*, Vol. 54, No. 2, June 1992.
  19. Samdhu, D.S. *Geography of Sugarcane Cultivation in Eastern Haryana*, Vishal Publication, University Campus, Kurukshetra, 1997.

3/20/2019