International Journal of Research in Economics and Social Sciences(IJRESS)
Available online at: http://euroasiapub.org
Vol. 9 Issue 3, March- 2019
ISSN(o): 2249-7382 | Impact Factor: 6.939 |

IRRIGATION TRENDS IN HARYANA (1970-71 TO 2017-18)

DR. RAJ KUMAR MEHLA
Associate Professor, Department Of Geography, Govt. College, Hisar

DR. ANIL YADAV
Associate Professor, Department Of Geography, Govt. College, Hisar

Abstract:

Since the initiation of Green Revolution in India, Haryana has become appears to be large user of water for irrigation purposes. Irrigation provided by the river water and underground plays most prominent role for the production and development of agriculture in the state. Irrigation plays very crucial role in the alteration of agriculture, food insecurity and source of income of the India in universal and of the Haryana state in particular. To meet the need of food, shelter and clothing of ever-increasing population agriculture is most important economic activity. Without mode of irrigation, we cannot even think about this sector of economy. Apart from this, any one not thinks about industrial development, technological advancement and institutional increments without the cleaver management of water resources. To tackle the need of present generation and that of coming generation, water is to be used most judiciously. To achieve all these requirements, it is most urgent to implement best soil-water management. In this we have to adopt micro-irrigation techniques instead of macro irrigation and flood irrigation techniques. Traditional irrigation methods should be replaced with drip irrigation and sprinkler irrigation tactics.

Key Words: Irrigation, Green Revolution, Development, Traditional, Sprinkler Irrigation, Technological, Drip Irrigation, Water Management, Tactics, judiciously.

International Journal of Research in Economics and Social Sciences(IJRESS)
Available online at: http://euroasiapub.org
Vol. 9 Issue 3, March- 2019
ISSN(o): 2249-7382 | Impact Factor: 6.939 |

Study Area:

For the present study Haryana state is the study area. Haryana is one of the most developed states of India. Haryana is a completely landlocked state. It shares its border with Himachal Pradesh and Punjab in the north, Rajasthan in the west and the south and Uttarakhand in the south. Although it is situated at the end of the Aravalli mountains, most of the Haryana state is plain area. It is located between 27°39' to 30°35' N latitudes and between 74°28' and 77°36' E longitude. The relief of Haryana is lies between the height of 700 feet to 3600 feet above the mean sea level. There are four different geographical division in Haryana which are:

- The Yamuna-Ghaggar plain
- The Shivalik Hills (to the northeast)
- The Plains (to the southwest)
- The Aravalli Mountain (in the south)

The study Haryana state has a tropical climate and is similar to other states that situated in the northern plains. Almost entire state experiences semi-arid type of climatology. The study area has wide range of temperature throughout the year. In the summer season temperature normally varies between 40 to 46 degrees Celsius but during winter season 1.5 to 4 degree Celsius. Occasionally inthe winter the temperature reached to the freezing point and in the summer, it touches the 50°C mark on the thermometer. The summer season falls in April, May, June and July months but November, December, January and February experiences winter in Haryana. The study area received almost 80-90 per cent of its rainfall in three months of rainy season (July, august and September). The average annual rain in the state ranges between 300 mm to 700mm. In the north eastern districts of Haryana receives about 700 mm annual rainfall while Southern and Western part of the state able to receive only 300mm rainfall. The average rainfall of the study area is 450 mm. Out of this rainfall 354 mm rainfall received during monsoon season and rest of rainfall occur in winter season by western disturbances. Due to this short span and small amount of rainfall the region requires maximum irrigation facilities for agricultural practices.

International Journal of Research in Economics and Social Sciences(IJRESS)
Available online at: http://euroasiapub.org
Vol. 9 Issue 3, March- 2019
ISSN(o): 2249-7382 | Impact Factor: 6.939 |

Almost all the Haryana covered with sandy and sandy loamy soil which need to arrange extra irrigational facilities for sustaining the agriculture of the study area. Only Yamuna is the only perennial river in Haryana. The Ghaggar, Markanda, Sahibi and Dohan are other rivers of the state. all these rivers are seasonal rivers which are unable to provide water in crucial seasons. In this way it becomes more important to develop and use other mode of irrigation. In the state in this alarming and critical situation only underground water is option not only for irrigation but also to meet out the another needs of the human and animal population of the region.

Objectives: Following are the main objectives of present study.

1. To show the temporal variation in the gross irrigated area in Haryana from 1970-71-2017-18.
2. To show the relationship between Gross Cropped area and Gross Irrigated area in Haryana from 1970-71-2017-18.
3. To show the proportion of source wise and district wise irrigational aspects in the study area in 2017-18.

Data Base and Methodology:

For the present research paper data have been taken from the secondary sources. For this purpose, data from The Statistical Abstract of Haryana of 2001-02, 2010-11 and 2020-21 have been derived. Apart from this data from The Census of India,2011 has been used for irrigation of Haryana. A comparative, descriptive and percentile methodology have been used for the present study.

Trends of Irrigation in Haryana:

Like other parts of India, in Haryana state irrigation facilitiesare not in uniformity. As shown in **Table-1**in 1970-71 canals and wells are the only mode of irrigation in the state. During this period 1532 thousand hectares of the cultivable land have the irrigation facility which was 43 per cent of net sown area of the study area. In the decade of 80s when tube well, irrigation implemented in the state. Due to this in year 1980-81 tube well irrigation play its vital in the agriculture of Haryana. In 1980-81 total area under irrigation was 2134 thousand hectares which account for the 59.2 per cent of total net sown area of that time.

International Journal of Research in Economics and Social Sciences(IJRESS)
Available online at: http://euroasiapub.org
Vol. 9 Issue 3, March- 2019
ISSN(o): 2249-7382 | Impact Factor: 6.939 |

Perhaps this due the favourable planning for farmers, availability of machinery related to tube well, loan facility and increasing demand of food for increasing population.

In 1990-91 wells are totally transformed to tube wells. By virtue of which, proportion of tube well irrigation was touches the mark 48% of the total irrigated area of the state. In this year total 260 thousand hectares of land was under irrigation which was 72.7 per cent of the net sown area of study area. According to **Table-1** and **Figure-1**it is clear that in 2000-01 first time tube well irrigation surpasses the canal irrigation in the region. As shown in the table 1467 thousand hectares of landwere irrigated by tube wells. At the same time area under canal irrigation was 1436 thousand hectares. Irrigation in region reached to the 83.9 per cent of net sown area of Haryana. Till 2000-01 irrigation by the Tanks, Wells and Other Sources almost become zero. Only canal and tube well irrigation accounts for the whole irrigational facility of the state.

Table-1. HARYANA: NET IRRIGATED AREA1970-71 TO 2017-18

Years	Net Area Irrigated in 000 Hectares						
	Canals	Tanks	Wells	Tube-wells	Other Sources	Total	Gross Irrigated Area as % to Net Sown Area
1970-71	952	1	574	0	5	1532	43
1980-81	1161	0.45	26	941	6	2134	59.2
1990-91	1337	1	0.48	1248	14	2600	72.7
2000-01	1436	1	0.43	1467	14	2958	83.9
2010-11	1236	0.35	0.31	1650	1	2887	82.1
2017-18	1232	0.32	0	2156	0	3388	94.9

Source: Statistical Abstract of Haryana, 2017-18

Only in year 2010-11 there is a slight decrease in irrigated area and irrigation intensity as well. At this time 2887 thousand hectare of the gross cropped was having irrigation facility. Proportion of canal and tube well irrigation in 2010-11 was 43 % and 57% of the total irrigated area. Irrigated area to net sown area of the study region reached the level of

International Journal of Research in Economics and Social Sciences(IJRESS)
Available online at: http://euroasiapub.org
Vol. 9 Issue 3, March- 2019
ISSN(o): 2249-7382 | Impact Factor: 6.939 |

82.1 per cent with somewhat decrease. Finally, as shown by **Table-1** and **Figure-1**total irrigated area is 3388 thousand hectares. Area under canal and tube well irrigation was 1232 thousand and 2156 thousand hectares respectively. The proportion these two modes of irrigation was 36.4 % and 63.6 % in the state. By the end of 2018 irrigation facility reached to the level of 94.9 per cent of net sown area of Haryana.

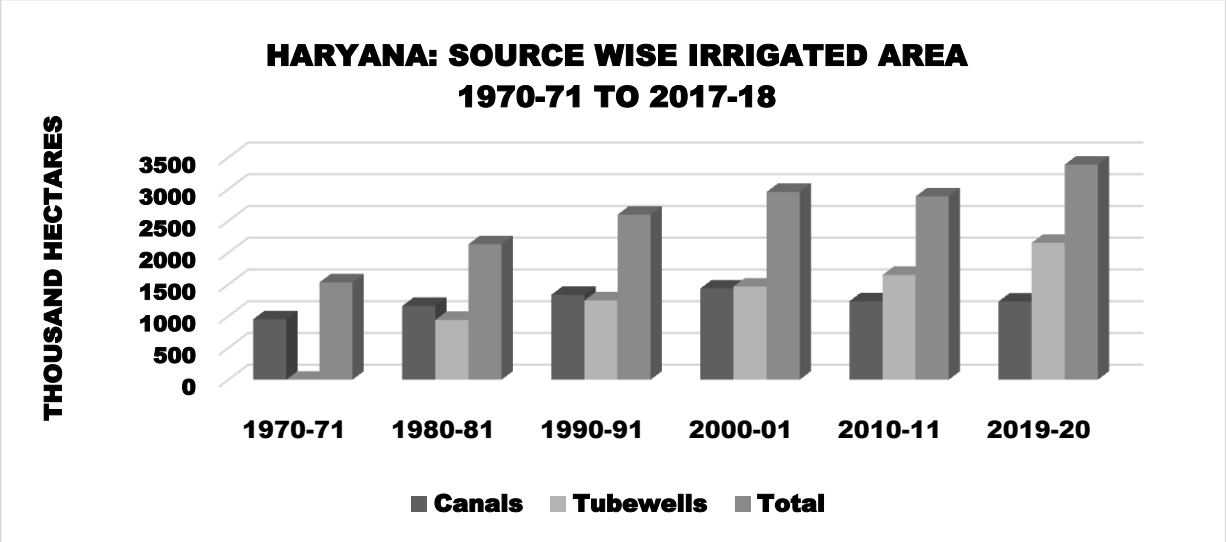

Figure-1

Table-1 **HARYANA: SOURCE WISE IRRIGATED AREA**

Sr. No.	DISTRICT	Net Area Irrigated in 000 Hectares			
		Canals	Tube wells	Total	Gross Irrigated Area as % to Net Sown Area
1	Mewat	14	71	85	77.2
2	Mahendergarh	1	119	120	78.9
3	Bhiwani	58	180	238	81
4	Panchkula	0	19	19	82.6
5	Charakhi Dadri	26	70	96	85.7
6	Hisar	206	106	312	93.1
7	Jhajjar	52	70	122	93.8
8	Panipat	40	157	97	95.2
9	Palwal	21	78	99	95.2

International Journal of Research in Economics and Social Sciences(IJRESS)
Available online at: http://euroasiapub.org
Vol. 9 Issue 3, March- 2019
ISSN(o): 2249-7382 | Impact Factor: 6.939 |

10	Sirsa	268	114	382	97.7
11	Fatehabad	0	32	218	98.6
12	Ambala	3	145	148	99.3
13	Kurukshetra	28	111	139	99.3
14	Y. Nagar	2	109	111	100
15	Kaithal	76	121	197	100
16	Karnal	57	144	201	100
17	Sonipat	24	129	153	100
18	Rohtak	75	79	154	100
19	Faridabad	0	32	32	100
20	Gurugram	0	85	85	100
21	Rewari	0	126	126	100
22	Jind	218	36	254	100

Source: Statistical Abstract of Haryana, 2017-18

International Journal of Research in Economics and Social Sciences(IJRESS)
Available online at: http://euroasiapub.org
Vol. 9 Issue 3, March- 2019
ISSN(o): 2249-7382 | Impact Factor: 6.939 |

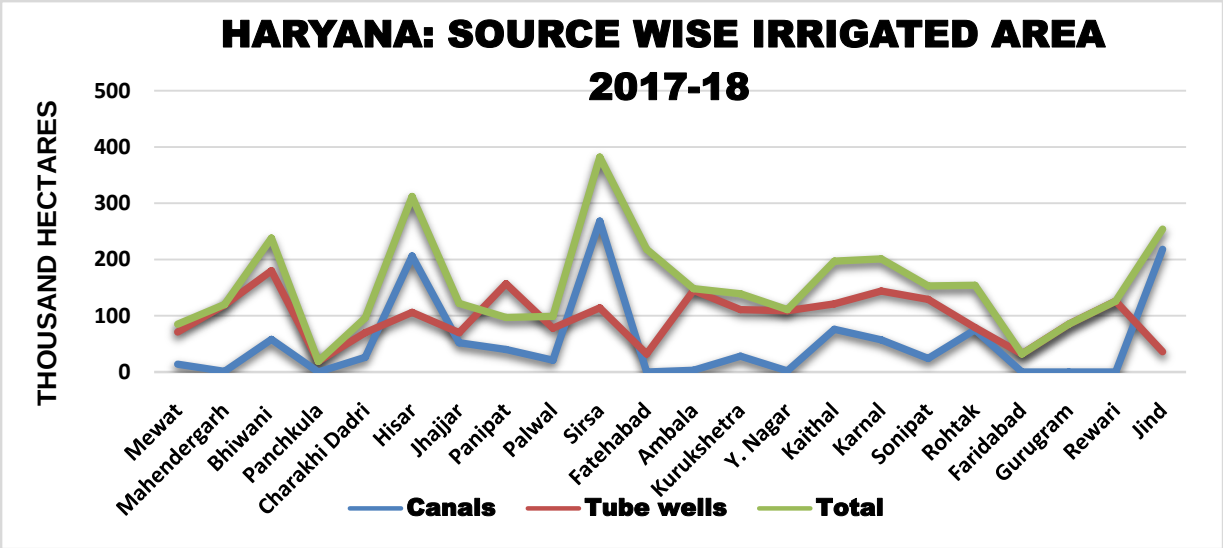

Table-2 and Figure-2 shows the district wise irrigation by different mode of irrigation in Haryana in 2019-20. By analysing the data, we came to the conclusion that Bhiwani, Charakhi Dadri, Rohtak, Jhajjar, Hisar, Jind, Fatehabad and Sirsa districts are more dependent on canal irrigation as compare to the other districts. On the other hand, Panchkula, Faridabad, Gurugram and Rewari district has 100 per cent tube well irrigation. By going through the statistics,the state can be dividedin three categories on the bases ofirrigated area as per cent to net sown area.

1. **Less Than 85% irrigated area as per cent to net sown area:**In this category Panchkula, Mewat, Mahendergarh and Bhiwani district are present. Absence or low level of canals irrigation and saline underground water in some of the areas of the region is the main reason behind low level of irrigation in this part of the state. Apart from this due to slope of the Bhiwani and Mahendergarh district not allowed the canal irrigation. Above all water in the canal not sufficient for irrigation throughout the year in this region
2. **85-95% irrigated area as per cent to net sown area:**In this category Kurukshetra, Jhajjar, Hisar, Charakhi Dadri districts are present. Insufficient water supply in canals of this region, saline underground water and high population pressure on water resources are the main cause of water deficiency for irrigation purposes in this region.

International Journal of Research in Economics and Social Sciences(IJRESS)
Available online at: http://euroasiapub.org
Vol. 9 Issue 3, March- 2019
ISSN(o): 2249-7382 | Impact Factor: 6.939 |

3. **More than 95% irrigated area as per cent to net sown area:** Inthiscategory Ambala, Yamuna Nagar. Kurukshetra, Kaithal, Karnal, Panipat, Sonipat, Rohtak, Faridabad, Palwal, Gurugram, Rewari, Jind, Fatehabad and Sirsa districts are present. This description shows that maximum part of the state receives very good to excellent irrigation facilities. Due to well defined irrigation network proportion irrigated area in this region is very high. Ambala, Yamuna Nagar. Kurukshetra, Karnal, Panipat, Sonipat, Faridabad, and Palwal districts are closer to the only perennial river of Haryana. In Faridabad, Gurugram and Rewari districts presence of good underground water is the reason behind high irrigation.

HARYANA: GROSSIRRIGATEDAREA, GROSS CROPPED AREA AND IRRIGATION INTENSITY 2017-18

Sr. No.	District	Gross Cropped Area	Gross Irrigated Area	Gross Irrigated Area % to Gross Cropped Area	Irrigation Intensity
1	Ambala	207	208	99.5	140.5
2	Panchkula	30	37	81	178.6
3	Y. Nagar	217	217	100	195.5
4	Kurukshetra	275	277	99.3	199.3
5	Kaithal	386	386	100	195.9
6	Karnal	395	395	100	196.5
7	Panipat	192	192	100	197.9
8	Sonipat	303	303	100	198
9	Rohtak	227	227	100	147.4
10	Jhajjar	222	237	93.7	194.3
11	Faridabad	63	63	100	196.9
12	Palwal	185	195	95.1	197

International Journal of Research in Economics and Social Sciences(IJRESS)
Available online at: http://euroasiapub.org
Vol. 9 Issue 3, March- 2019
ISSN(o): 2249-7382 | Impact Factor: 6.939 |

13	Gurugram	110	110	100	129.4
14	Mewat	107	140	76.5	164.7
15	Rewari	208	208	100	165.1
16	Mahendergarh	180	228	78.9	190
17	Bhiwani	344	425	81	178.6
18	Jind	467	467	100	183.9
19	Hisar	566	608	93.1	194.9
20	Fatehabad	427	431	99.1	197.7
21	Sirsa	716	733	97.7	191.9
22	Charakhi Dadri	165	192	86.1	200

Table-3 ***Source: Statistical Abstract of Haryana, 2017-18***

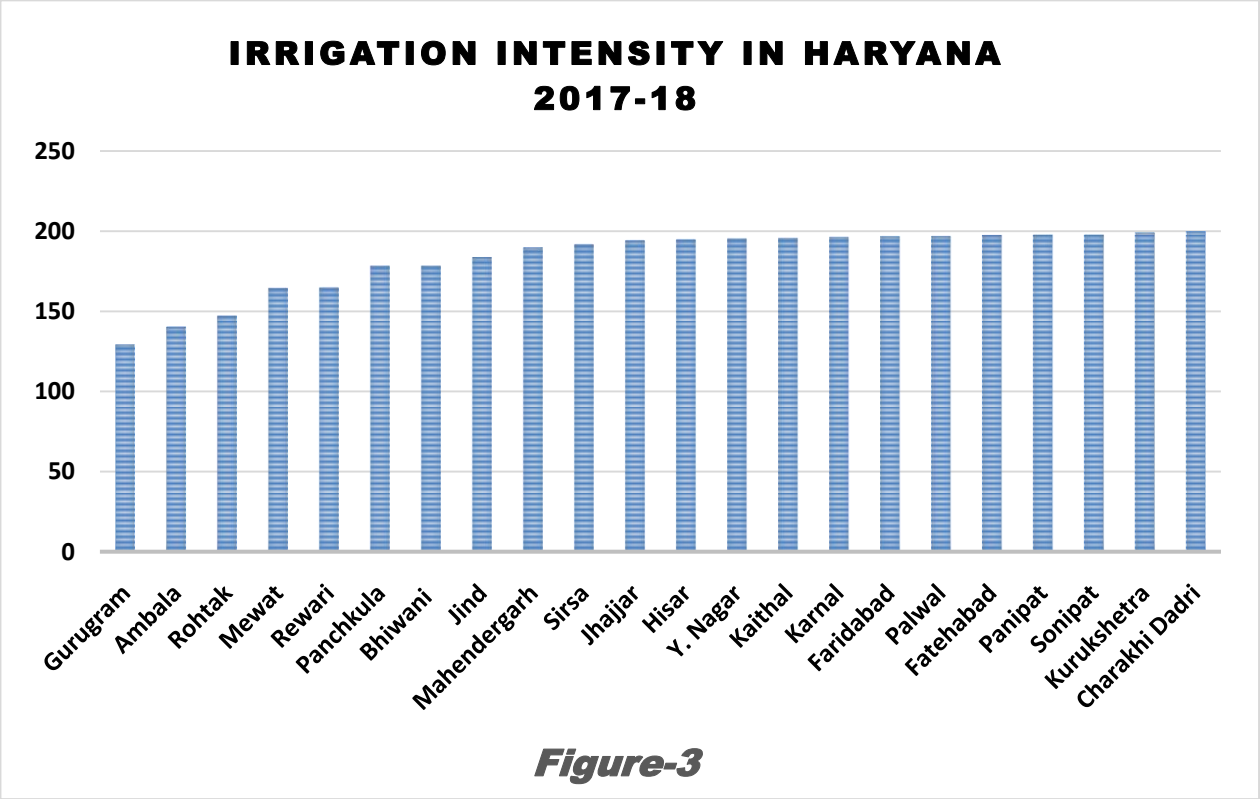

Figure-3

International Journal of Research in Economics and Social Sciences(IJRESS)
Available online at: http://euroasiapub.org
Vol. 9 Issue 3, March- 2019
ISSN(o): 2249-7382 | Impact Factor: 6.939 |

Conclusion:

Haryana state is not different from India in irrigation. The picture almost similar to other agrarian states of the India. No doubt the irrigation intensity increased during few decades in Haryana. We become able,not only to satisfy the food demand of population of Haryana but now we are able to deposit food grains in the central pool also. In this scenario we have to pay a high debt in the form of deficiency of drinkingwater for human and animals. All this is the result of mismanagement of water resources and wrong irrigation practices. So, this is not the time to celebrate our achievement of satisfying our food requirements, but it is time to make and implement some strong, solid and fruitful step towards the conservation of water resources, otherwise our coming generation have to learned living without or with a few water resources. If we will not take strong and early steps towards this issuethere will be a huge question mark on existence of human and animals on the mother earth.

References:

1. Statistical Abstract of Haryana 2001-02
2. Statistical Abstract of Haryana 2011-12
3. Statistical Abstract of Haryana 2017-18.
4. Gautam, A. (2012). Agricultural Geography. Allahabad: Sharda Pustak Bhawan.
5. Hussain, M. (1996). Systematic Agricultural Geography. Jaipur: Rawat Publication.
6. Kaushik, S. P. and Om Parkash (2010). Impact of Groundwater Level on Cropping Pattern: A Case Study of District Karnal. Indian Journal of Regional Science, 42 (1), 107-115.
7. Kumar, V. (2014). Economic benefits and ecological cost of Green Revolution: A case study of Haryana, India. International Journal of Enhanced Research in Education Development (IJERED), 2 (6), 21-31.
8. Neeraj, (2014). Expansion of Rice Cultivation in Haryana from 1966-67 to 2010-11. International Journal of Advanced Research in Management and Social Sciences, 3 (7), 284- 290.

9. Sangwan, B., and Monica. (2017). Spatio-Temporal Trends in the Development of Irrigation in Haryana (1980-81 to 2010-11). Amar: An Inter-Disciplinary Research Journal, 3 (3), 80- 88.
10. Sarkar, A., Sen. S., and Kumar, A. (2009). Rice-Wheat Cropping Cycle in Punjab: A Comparative Analysis of Sustainability Status in Different Irrigation Systems. Environment, Development and Sustainability, 11 (4), 751-763.