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Decadal growth of irrigation in Jalpaiguri district

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Abstract

Successful agriculture operation in West Bengal however, is still being dependent on the single most dominant climatic parameters i.e. rainfall. But even that rainfall though copious, is characterized by seasonal concentration, uncertainty and variability. The ground water resource of any territory is significant from two considerations. One of them is utilization in irrigating crops and another is for drinking water. In our analysis the focus of attention is on the compares the irrigation condition and growth within one decade in jalpaiguri district.

Key words: *1.Irrigation, 2.Development, 3.Growth, 4.Jalpaiguri, 5.Rainfall.*

Objectives

Rainfall in the area follows the typical monsoon patterns. It occurs mostly during the four months. Sometime the monsoon being later and ends earlier and is also less certain and less uniform. The present study has undertaken to fulfill the following objectives –

- Discuss the irrigation condition during the period 1997-1998.
- Discuss the irrigation condition during the period 2007-2008.
- Compare the growth of irrigation within one decade.

Database

The information and data collected mainly from four secondary sources, such as 1.F. John Grunning (2008) :Eastern Bengal And Assam District Gazetteers ,Jalpaiguri 2.Bureau of Applied Economics & Statistics ,Government of West Bengal (2008):District Statistical Handbook ,Jalpaiguri. 3 Bureau of Applied Economics & Statistics, Government of West Bengal (2002): District Statistical Handbook, Jalpaiguri.

Methodology applied in the study are totally depends statistical analysis by tables, charts, interpretation, projection. Some basic information are taken from internet and few literature have been studied for prepare the papers.

Study area

The study area comprises districts of Jalpaiguri, west Bengal bounded by the latitude of 26° 16' to 27° 13' North and the longitudes of 87° 59' to 89° 53' East. The region covers an area 6227 sq.km. This is 10.56% of the total geographical area of the state and inhabited by 3869675 persons (2011).The district situated in the northern part of West Bengal has international border with Bhutan and Bangladesh in the north and south respectively and district borders with Assam and the Darjeeling hills in the east, west and northwest.

Introduction

Successful agriculture operation of any region is dependent on water availability of the region. Water may be available to crops in the natural course by rainfall or it may be supplied to the agriculture fields artificially by human efforts. The process of supplying water to crops by artificial means such as canals ,wells,tube-wells,tanks,etc.from the sources of water such as rivers, tanks ,ponds or underground water is called irrigation (Khuller,2007).The geographical conditions, especially the nature of monsoon rainfall in India make irrigation indispensable for sustainable agriculture development. Unfortunately, rainfall in India is uncertain, unreliable, irregular, variable, seasonal and unevenly distributed. The main rain bringing south-west monsoon often fails to keep its date. It may come either before or after the scheduled date of arrival. Normally speaking, the rainfall keeps its date of arrival and withdrawal only in one out of five years. The amount of rainfall may also vary greatly from the normal. Excess rainfall may cause floods but less rainfall forces the farmers to resort to irrigation. Ironically, the variability of rainfall is very high in areas of low rainfall.

The study area experience five dominant seasons but their duration and extent are not similar. Rainfall in the area follows the typical monsoon pattern. It occurs mostly during the four months from May to mid September and is followed by prolong dry seasons. Certain geographical factors have helped in irrigation in different parts of India. The northern plain of India has extremely rich fertile soils deposited by the mighty rivers following from the Himalaya range. The slops of land are so gentle that canals can carry the irrigation water to far off places. The soft and friable nature of the soil makes it easy to dig canals and to sink wells. There is thus, a large quantity of ground water which is taken out for irrigation through wells and tube wells. The area is blessed with a large number of perennial rivers which provide water for irrigation throughout the year. Sources of irrigation are used depending upon the topography, soil, rainfall, availability of surface or ground water, nature of rivers (whether perennial or non perennial) and requirements of crops etc. The main sources used in different parts of the country are 1.Canals 2.Wells and tube wells 3.Tanks and 4.Other (Dongs, Kuhls and Spring etc.). Jalpaiguri is in the foothill region of Himalayas due to this, the district is blessed by many big perennial rivers .Here canal irrigation is well developed with some tank irrigation. Teesta low dam project is one of the canal irrigation of this district.

Discussion

The compare of district level growth of irrigation can be discussed with the irrigation statistics of 1997-1998 and 2007-2008 from District Statistical Handbook. The distribution pattern reflects the potential reserve and difficulties attending to their utilization and also the level of agriculture development attained. Irrigation cover area of the

district is increasing from 1997-1998, now it is 111.75 thousand hectares (2007-2008).The overall growth from 1997-1998 is 49.83 percent.

Year wise area irrigated by different sources and year wise source of irrigation by different sources has been stated in table 1&2. Table shows that area under irrigation is highest in the year of 2004-2005(116.16 thousand hectares). It has recorded lowest in the year 1997-1998 (55.69 thousand hectares). Overall growth of irrigation during the decade is near about 50%. Average growth of one year is more & less 10 thousand hectares. Irrigated area during the period 2003 to 2004 decline (94.28 thousand hectares to 84.69 thousand hectares) but next year it is jump from 84.69 thousand hectares to 116.16 thousand hectares that is 27 percent growth. It has stated that the district is pronounced by many perennial rivers from all direction that sway growth of canal irrigation is high compare to other irrigation system. The district is absent by MDTW and LDTW. Area under River Lift Irrigation system is increasing from 2.28 (1997-1998) to 11.26 (2007-2008) thousand hectares.

Table 2 shows that year wise source of irrigation by different sources in the district of Jalpaiguri. Source of irrigation by different sources is highest during the year of 2004-2005 (18425 no.) and lowest during the year of 1997-2000 (13960 no.). As whole the number of source of irrigation by different sources is increased from 2000 but in case of shallow tube well (STW) number is increased (1274 to 2592) during one decade. That is 50.82 percent of total number. If we see the statistics of Open Dug Well the number is rapidly grow from 271 to 3675 during the period of 2002-2003, that is 92.62 percent growth.

Block wise area irrigated by different sources during the year of 1997-1998, irrigated area is highest in Rajganj block (24567 thousand hectares), followed by jalpaiguri (17351 thousand hectares) and lowest in the block of Metiali (1270 thousand hectares), followed by Nagrakata 1635 thousand hectares. From table we can say that the district is influenced by canal and river lift irrigation (RLI), area irrigated by canal irrigation is highest in the block of Rajganj (22250) and river lift irrigation is highest in the block of Dhupguri (2240).

In 2007-2008 block wise area irrigated by different sources in the district of Jalpaiguri , the area under irrigation is highest in the block of Rajganj (25810 thousand hectares) followed by Jalpaiguri block (18866 thousand hectares). In this year open dug well (ODW) irrigation system is well developed with canal and river lift irrigation (RLI). Canal irrigation is highest in the block of Rajganj (22830 thousand hectares) due to the implementation of Teesta Barrage Project. River lift irrigation is highest in the block of Maynaguri (2060 thousand hectares), followed by Dhupguri block(1520 thousand hectares).

Source of irrigation by different sources in block of Jalpaiguri district during the period of 1997-1998 has been shown in table no.5. From the table, we see that highest number of source of irrigation is recorded in Maynaguri block (2897), followed by Falakata block (2720). Very poor condition of irrigation status is recorded in the Nagrakata (57), followed by Metiali (152) due undulation of relief. As whole in the blocks of Jalpaiguri shallow tube well system of irrigation is well establish. Highest is recorded at Dhupguri block. Other system of irrigation is well developed compare to Tank; Open dug well, River lift irrigation in the district.

Source of irrigation by different sources in block of Jalpaiguri district during the period of 2007-2008 has been shown in table no.6. From the table, we see that highest number of source of irrigation is recorded in Jalpaiguri block (2674), followed by Maynaguri(2589), Dhupguri(2542), Falakata block (2588). All of these blocks are influenced by Gajoldoba Teesta Low Dam Project.Very poor condition of irrigation status is recorded in the Nagrakata (57), followed by Metiali (288), Madarihat-Birpara(395), Kalchini(309) due undulation of relief and un fertile land. As whole in the blocks of Jalpaiguri Open Dug well (ODW) system of irrigation is well establish. Highest is recorded at Rajganj block(930), followed by River Lift Irrigation.Other system of irrigation is well developed compare to Tank; Open dug well, River lift irrigation in the district.

Conclusion and recommendation

The district is under developed in irrigation. In 2007-2008 total area under irrigation is only 17.85 percent of geographical area. Population is increasing, now population is 3,869,675 (2011) with 621 person /square km. There is little scope for extending of agricultural land and the impending necessity of meeting the ever increasing demand for food and the increasing demand from domestic, power , industrial, environment management, navigation and other factors, there will be increase of the utilization of the water resources of the district in near future.

The main features of the data and information can be summarized as follows:

1. During the period 1997 to 2007 the growth of canal irrigation and shallow tube well irrigation is good, but not satisfactory because of the area under canal irrigation is only 11.16 percent of total geographical area. It has stated that the district is cover by many perennial rivers, such as Teesta, Torsa, Jaldhaka, Sankosh, Raidak . The growth of River Lift Irrigation, Other system of irrigation is medium but Tank irrigation, High Capacity Deep Tube Well and Open Dug well irrigation growth is very low. Use of underground water and water use of river can change the condition, because the district has high potential water resource for irrigation compare to the other parts of the state.
2. Total number Source of irrigation from 1997 to 2007 has been increased 25.37%, this is not satisfactory, and it should be developed by proper management. Open Dug Well (ODW) irrigation system is well developed compare to other irrigation system; it has developed 92.76 percent within one decade. Number of Shallow Tube well (STW) and river lift irrigation (RLI) developed moderately but High capacity Deep Tube well (HDTW) number is decreasing. Tank irrigation has no change, whereas the district received adequate rainfall (2932 mm/year). By implementation of 100 days employment scheme of central government Tank irrigation can be developed.
3. Block wise growth of irrigated area is developed in Rajganj block and Jalpaiguri due to the Canal irrigation system of Teesta low dam project. Other blocks such as Maynaguri, Dupguri, Mal, Kumargram, Falakata, Madarihat- Birpara are still not developed. Metiali, Kalchini, Alipurduar I and II irrigation, Nagrakata status is poor due some unknown factors.

Source of irrigation number is good in the blocks of Rajganj,Jalpaiguri, Maynaguri, Dhupguri, Falakata, Alipurduar I&II compare to other blocks of Jalpaiguri districts because of the development of River Lift Irrigation, Open Dug Well, Shallow Tube Well irrigation. Mal, Kumargram, Madarihat-Birpara have moderate growth but very poor condition recorded in Metiali, Nagrakata, Kalchini block.

Table I

Year wise area irrigated by different sources in the district of Jalpaiguri

Year	Canal	Tanks	HDTW	STW	RLI	ODW	Others	Total
1997-1998	46.19	1.90	0.67	2.55	2.28	0.55	1.55	55.69
1998-1999	48.45	2.20	1.16	2.55	8.22	0.55	6.50	69.63
1999-2000	52.37	2.20	1.16	2.55	8.22	0.55	6.50	73.55

2000-2001	57.71	1.90	2.55	3.12	11.58	0.54	6.82	84.22
2001-2002	57.76	2.25	2.29	3.14	9.92	0.54	8.80	84.70
2002-2003	58.38	2.25	2.12	3.59	9.04	3.67	15.23	94.28
2003-2004	48.65	2.09	2.00	4.01	9.04	3.67	15.23	84.69
2004-2005	80.96	2.12	2.31	4.35	8.86	3.44	14.12	116.16
2005-2006	62.53	2.10	1.76	8.84	11.14	3.68	14.07	104.12
2006-2007	69.53	2.12	1.14	10.37	11.26	3.68	13.65	111.75

Source – District Statistical Hand book 2002 and 2008

Table II

Year wise source of irrigation by different sources in the district of Jalpaiguri

Year	HDTW	STW	RLI	ODW	Tank	Others	Total
1997-1998	58	1274	152	271	18	12187	13960
1998-1999	58	1274	152	271	18	12187	13960
1999-2000	58	1274	152	271	18	12187	13960
2000-2001	58	1564	193	271	18	15597	16291
2001-2002	58	1557	144	271	18	16308	18356
2002-2003	53	1796	278	3675	18	12345	18165

2003-2004	50	1845	278	3675	18	12345	18211
2004-2005	62	2047	278	3675	18	12345	18425
2005-2006	44	2211	385	3675	18	11945	18278
2006-2007	44	2592	391	3675	18	11547	18267

Source – District Statistical Hand book 2002 and 2008

Table III

Area irrigated by different sources in the blocks of jalpaiguri for the year 1997-1998

Sl.No.	Name of the blocks	Canal	Tank	RLI	DTW	STW	ODW	Others	Total
1	Rajganj	22250	150	560	205	122	80	1200	24567
2	Jalpaiguri	14000	250	960	800	352	84	905	17351
3	Maynaguri	1600	300	1680	400	620	108	1075	5783
4	Dhupguri	3020	300	2240	320	266	-	1064	7708
5	Mal	2200	100	760	40	1000	-	300	3666
6	Metiali	1000	100	20	-	-	-	150	1270
7	Nagrakata	1400	100	80	-	-	-	55	1635
8	Kumargram	1000	125	260	40	120	42	564	2151
9	Falakata	3000	200	1600	164	132	28	345	6610
10	Madarihat -Birpara	3540	300	1020	160	252	32	730	5068
11	Kalchini	1350	50	160	-	-	-	292	1763
12	Alipurduar 01	2000	300	1020	160	252	32	1152	3985
13	Alipurduar02	1400	175	100	40	-	-	203	3151

Source – District Statistical Hand book 2002

Table IV

Area irrigated by different sources in the blocks of jalpaiguri for the year 2007-2008

Sl.No.	Name of the blocks	Canal	Tank	RLI	DTW	STW	ODW	Others	Total
1	Rajganj	22830	130	420	80	320	930	1100	25810
2	Jalpaiguri	14000	280	780	260	2036	260	1250	18866
3	Maynaguri	1600	350	2060	300	2148	180	1675	8313
4	Dhupguri	3020	320	1520	220	2244	190	1560	9074
5	Mal	2240	120	1160	40	824	250	570	5204
6	Metiali	1000	25	540	-	-	160	480	2205
7	Nagrakata	1400	20	240	-	-	55	500	2215
8	Kumargram	1000	125	520	40	320	280	1400	3685
9	Falakata	3000	250	980	80	1196	340	1439	7285
10	Madarihat -Birpara	3540	50	720	-	136	300	1200	5946
11	Kalchini	1350	50	340	-	-	180	480	2400
12	Alipurduar 01	2000	225	880	80	436	200	1400	5221
13	Alipurduar 02	1400	175	1100	40	708	350	600	4373

Source: District Statistical Hand Book 2008

Table V

Source of irrigation by different sources in the blocks of Jalpaiguri for the year 1997-1998

Sl.No.	Name of the Block	RLI	DTW	STW	ODW	Tank	Other	Total

1	Rajganj	9	5	61	40	1	1103	1219
2	Jalpaiguri	14	20	176	42	2	2379	2673
3	Maynaguri	36	10	310	54	3	2484	2897
4	Dhupguri	22	8	319	48	2	2298	2697
5	Mal	10	01	133	-	1	650	795
6	Metiali	1	-	-	-	1	150	152
7	Nagrakata	1	-	-	-	1	55	57
8	Kumargram	4	1	60	21	1	465	552
9	Falakata	16	4	74	19	1	2606	2720
10	Madarihat-Birpara	5	4	30	17	1	339	398
11	Kalchini	2	-	-	-	1	292	295
12	Alipurduar1	10	4	66	14	2	1627	1723
13	Alipurduar2	14	1	126	16	1	1860	2018

Source – District Statistical Hand book 2002

Table 6

Source of irrigation by different sources in the blocks of Jalpaiguri for the year 2007-2008

Sl.No.	Name of the Block	RLI	DTW	STW	ODW	Tank	Other	Total
1	Rajganj	7	4	80	930	1	255	1277
2	Jalpaiguri	15	13	509	260	2	1875	2674
3	Maynaguri	71	8	537	180	3	1790	2589
4	Dhupguri	56	8	561	190	2	1725	2542
5	Mal	46	1	206	250	1	725	1229
6	Metiali	27	-	-	160	1	40	228
7	Nagrakata	10	-	-	55	1	45	111

8	Kumargram	20	1	80	280	1	400	782
9	Falakata	37	4	299	340	1	1907	2588
10	Madarihat-Birpara	30	-	34	300	1	30	395
11	Kalchini	13	-	-	180	1	115	309
12	Alipurduar1	28	4	109	200	2	1330	1673
13	Alipurduar2	31	1	177	350	1	1310	1870

Source – District Statistical Hand book 2008

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Abbreviation: DTW=Deep Tube well, STW=Shallow Tube well, HDTW=High Capacity Deep Tube Well, MDTW=Middle Capacity Deep tube Well, LDTW=Middle Capacity Deep Tube Well, RLI=River Lift Irrigation, ODW=Open Dug Well Other source=Dhngs, Khuls, Spring etc.