Volume 3, Issue 6, June 2017 ISSN NO: 2454 - 9827

North Asian International Research Journal Consortium

North Asian International Research Journal of Social Science & Humanities

NAIRJC JOURNAL PUBLICATION

North Asian International Research Journal Consortium

Welcome to NAIRJC

ISSN NO: 2454 - 9827

North Asian International Research Journal Social Science and Humanities is a research journal, published monthly in English, Hindi, Urdu all research papers submitted to the journal will be double-blind peer reviewed referred by members of the editorial board. Readers will include investigator in Universities, Research Institutes Government and Industry with research interest in the general subjects

Editorial Board

Address: -North Asian International Research Journal Consortium (NAIRJC) 221 Gangoo, Pulwama, Jammu and Kashmir, India - 192301, Cell: 09086405302, 09906662570, Ph. No: 01933-212815,
Email: nairjc5@gmail.com , nairjc@nairjc.com , info@nairjc.com Website: www.nairjc.com

IMPACT OF TILPARA BARRAGE ON CROPPING PATTERN IN AJAY-MAYURAKSHI INTER RIVERINE TRACT OF BIRBHUM DISTRICT

DR. KOYEL MUKHERJEE

ABSTRACT:

Tilpara barrage at suri is constructed over Mayurakshi river that has its source on Trikut in Jharkhand. The present study reveals the "Impact of Tilpara Barrage on cropping pattern in Ajay- Mayurakshi inter riverine tract of Birbhum District''. It has been made an attempt in to analyze impact of Tilpara barrage on cropping pattern in study area with special reference of case studies in sample villages. This study is based on secondary and primary data collected from diatrict gazetteer, district census hand book, questionnaire and personal interview methods. The Physical, climatologically, socio-economic, technological, organizational factors, and farmer's attitude, etc. determinants closely influenced on the cropping pattern in study region, but in the study area canal irrigation is an important determinant affected on the cropping pattern.

Key words: ***canal irrigated area, cropping pattern, area under different crops***

INTRODUCTION:

Cropping pattern refers to the proportion of area under various crops at any given point of time in a unit area (Bhatia, S.S. 1965, pp 39-56). There are mainly three types of cropping patterns—inter-cropping, mixed-cropping and crop rotation. The cropping pattern of a region is closely influenced by the geo-climatic, socio-economic, historical and political factors. Actually it is dynamic concept because no cropping pattern can be said to be ideal for all times to a particular region. It changes the space and time with a view to meet requirements and is governed largely by the physical as well as cultural and technological factors. The change in cropping pattern in particular span of time clearly indicates the changes that have taken place in the agricultural development.

LITERATURE SURVEY:

1. Bandara (2006) represented the impact of Sharda canal on the agriculture including crop production, cropping pattern etc. He emphasized on training of farmers on cropping techniques through the farmers field schools exposed them to crop husbandry and significant increase in the yield of rice.
2. Dhawan (1993) observed the impact of Sharda canal irrigation on agriculture in U.P. specifically the cropping pattern, crop productivity etc. according to him it has increased the productivity and generated new scope for employment.

OBJECTIVES OF THE STUDY:

The objectives of the study is to identify the impact of Tilpara barrage on:

(1) Stability in the total output with same crops always compensating for the failure of other crops of this region.
(2) Larger variety of crops which will enable the food security and economic development.
(3) Agricultural development of this region.

DATA BASE:

The data have been collected from two sources i.e. secondary and Primary .The secondary data on irrigation, has been collected from the records of the respective offices e.g. Mayurakshi canal circle, principal agricultural of Suri, from district census hand book, Birbhum1981. Primary data obtained from field survey are related to the distribution of different crops according to canal irrigated area, area under different crops to gross cropped area etc. have been collected from field investigation.

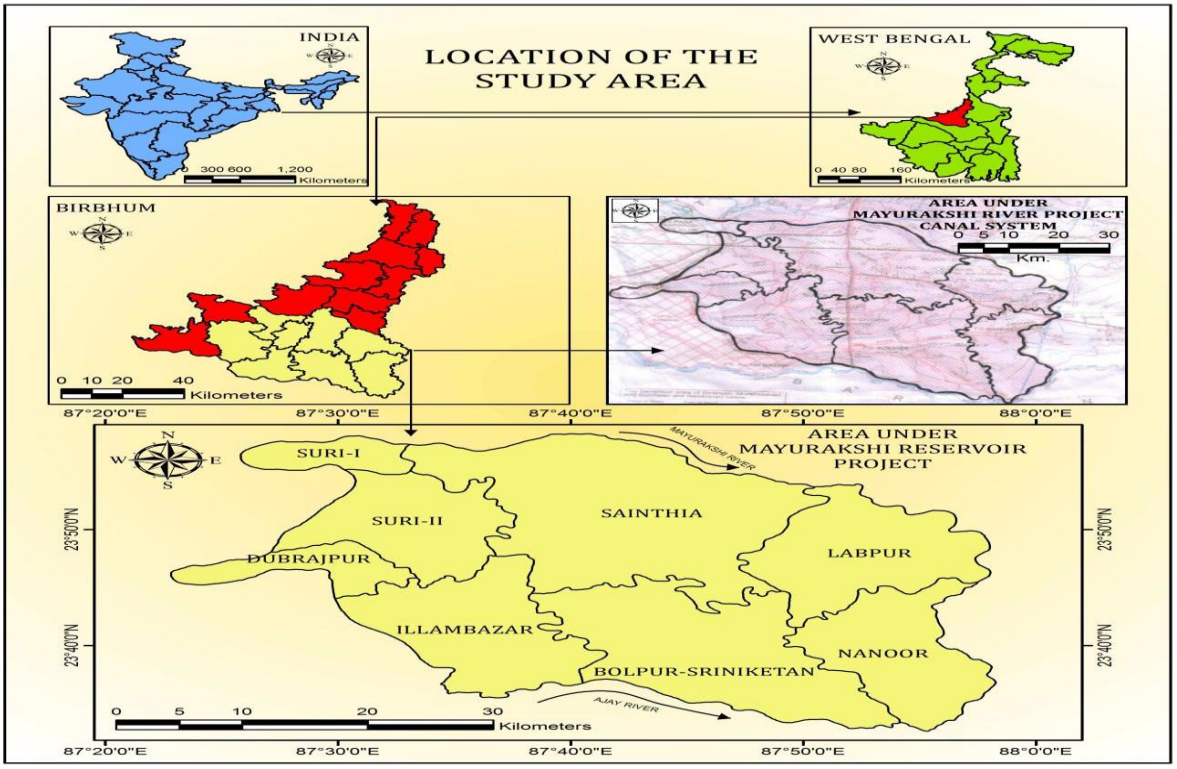
METHODOLOGY:

The step of methodology is concerned with the collection of data and information about the Tilpara canal system from Mayurakshi canal circle (Birbhum), has been collected. Agricultural farms (in acre) have been selected from five villages in Ajay-Mayurakshi inter riverine tract of Birbhum district and land owners of 250 farms have been interviewed and data regarding their cropping pattern including paddy, mustard, potato, pulses, wheat, sesame, vegetables etc. have been collected. Later these data have processed. Percentage of Canal irrigated area wise distribution of area under different crops have been arranged. For data processing statistical technique has been

computed and microsoft excel software have been used for simple tabulation and calculation. Arc GIS 10 software has been used for making choropleth maps.

LOCATION OF THE STUDY AREA:

The study area is located between 23◦40’00’’N to 23◦50’00’’N latitudes and 87◦20’00’’E to 88◦00’00’’E longitudes of Birbhum district. In this region five villages namely Sattore mouza in Bolpur block, Koma mouza in Suri II block, Hatora mouza in Sainthia block, Ramkrishnapur mouza in Nanoor block and Gopedighi mouza in Labpur block represent the entire study area.



Source- India map, West Bengal map and Birbhum map compiled by raster from google.com and vectorised by GIS software. Birbhum map of ‘area under Mayurakshi reservoir project‘was provided by Mayurakshi Canal Circle, Suri. Location of the study area between Ajay-Mayurakshi inter riverine tract of Birbhum district map was compiled by Author with the help of political map of Birbhum district.

OVERALL CROPPING PATTERN OF THE STUDY REGION UNDER INDIVIDUAL CROPS:-

In the present chapter the overall cropping pattern of the study region is outlined followed by the discussion on the area under individual crops.

Aman paddy—Aman paddy is the important paddy crop cultivated throughout the study region. Its cultivation is very much dependent on the irrigation and the farmers use other technological factors after being assured about canal irrigation. The present study shows that the farms which have relatively larger proportion and spatial extent of canal irrigated area also have considerable size of land which is devoted under the cultivation of Aman paddy crop and vice-versa. This fact holds good in all the four sample villages except Koma.

Table: 1 Distribution of area under Aman paddy crop according to canal irrigated area

Sattore		Koma		Hatora		Ramkrishnapur		Gopedighi	
Canal irrigated area (%)	Area under Aman paddy (acre)	Canal irrigated area (%)	Area under Aman paddy (acre)	Canal irrigated area (%)	Area under Aman paddy (acre)	Canal irrigated area(acre)	Area under Aman paddy (acre)	Canal irrigated area(acre)	Area under Aman paddy (acre)
55.00-61.66	2.60	60.00-73.33	3.99	<66.66	2.00	0.80-4.60	1.53	0.80-4.73	2.72
61.66-68.32	3.44	73.33-86.66	4.80	66.66-73.33	2.80	4.60-8.40	3.43	4.73-8.66	5.34
68.32-75.00	2.65	86.66-100.00	2.72	>73.33	4.00	8.40-12.00	6.00	8.66-12.66	5.80

Source: Table compiled from data obtained from field survey

Aus paddy—The study indicates that in Sattore and Koma villages the farms with larger size of canal irrigated area have smaller size of area under Aus paddy and vice-versa whereas in other three villages like Hatora, Ramkrishnapur and Gopedighi, the opposite pictures has been portrayed. That means the canal irrigation provides larger benefit in these three villages than the previous two villages in respect of Aus paddy cultivation.

Following table (Table-2) will prove it.

Table-2: Distribution of area under Aus paddy crop according to canal irrigated area

Sattore		Koma		Hatora		Ramkrishnapur		Gopedighi	
Canal irrigated area(%)	Area under Aus paddy (acre)	Canal irrigated area(%)	Area under Aus paddy (acre)	Canal irrigated area(%)	Area under Aus paddy (acre)	Canal irrigated area(acre)	Area under Aus paddy (acre)	Canal irrigated area(acre)	Area under Aus paddy (acre)
55.00-61.66	2.22	60.00-73.33	4.00	<66.66	1.60	0.80-4.60	1.40	0.80-4.73	-
61.66-68.32	3.35	73.33-86.66	3.72	66.66-73.33	2.80	4.6-8.4	2.24	4.73-8.66	0.68
68.32-75.00	1.96	86.66-100.00	2.55	>73.33	3.20	8.4-12	5.30	8.66-12.66	4.62

Source: Table compiled from data obtained from field survey

Sugarcane—Sugarcane crop is the annual crop which is not cultivated widely over the entire region; following table (Table-3) further, illustrate it.

Table: 3 Distribution of area under sugarcane crop according to canal irrigated area

Sattore		Koma		Hatora		Ramkrishnapur		Gopedighi	
Canal irrigated area(%)	Area under sugarcane (acre)	Canal irrigated area(%)	Area under sugarcane (acre)	Canal irrigated area(%)	Area under sugarcane (acre)	Canal irrigated area(acre)	Area under sugarcane (acre)	Canal irrigated area(acre)	Area under sugarcane (acre)
55.00-61.66	1.50	60.00-73.33	-	<66.66	1.33	0.80-4.60	-	0.80-4.73	-
61.66-68.32	2.00	73.33-86.66	-	66.66-73.33	1.30	4.60-8.40	-	4.73-8.66	-
68.32-75	1.08	86.66-100.00	-	>73.33	2.00	8.40-12.00	-	8.66-12.66	-

Source: Table compiled from data obtained from field survey

Potato—Potato is widely cultivated in the region. The study indicates that potato is not cultivated at all in Ramkrishnapur village. Out of four potato cultivated villages where the farms with larger canal irrigated area have smaller spatial extent of potato cultivated area and vice-versa except in Gopedighi. This can be observed from the following table (Table-4).

Table-4: Distribution of area under potato crop according to canal irrigated area

Sattore		Koma		Hatora		Ramkrishnapur		Gopedighi	
Canal irrigated area(%)	Area under potato (acre)	Canal irrigated area(%)	Area under potato (acre)	Canal irrigated area(%)	Area under potato (acre)	Canal irrigated area(acre)	Area under potato (acre)	Canal irrigated area(acre)	Area under potato (acre)
55.00-61.66	4.40	60.00-73.33	8.08	<66.66	8.00	0.80-4.60	-	0.80-4.73	0.08
61.66-68.32	2.80	73.33-86.66	11.20	66.66-73.33	8.40	4.60-8.40	-	4.73-8.66	1.85
68.32-75.00	2.40	86.66-100.00	6.80	>73.33	6.80	8.40-12.00	-	8.66-12.66	4.80

Source: Table compiled from data obtained from field survey

Wheat—wheat is second category of staple food in these regions. Following table (Table -5) will show this aspect.

Table-5: Distribution of area under wheat crop according to canal irrigated area

Sattore		Koma		Hatora		Ramkrishnapur		Gopedighi	
Canal irrigated area (%)	Area under wheat (acre)	Canal irrigated area (%)	Area under wheat (acre)	Canal irrigated area (%)	Area under wheat (acre)	Canal irrigated area(acre)	Area under wheat (acre)	Canal irrigated area(acre)	Area under wheat (acre)
55.00-61.66	2.74	60.00-73.33	1.20	<66.66	12.80	0.80-4.60	-	0.80-4.73	-
61.66-68.32	3.21	73.33-86.66	1.60	66.66-73.33	14.00	4.60-8.40	-	4.73-8.66	1.60
68.32-75.00	2.90	86.66-100.00	1.28	>73.33	22.40	8.40-12.00	-	8.66-12.66	4.20

Source: Table compiled from data obtained from field survey

Mustard

Mustard crop is not cultivated in Hatora village and out of four sample villages in Koma, Ramkrishnapur and Gopedighi villages in the farms with the large size of canal irrigated area have considerable proportion of area cultivated under the mustard crop. Following table (Table-6) further, illustrate it.

Table: 6 Distribution of area under mustard crop according to canal irrigated area

Sattore		Koma		Hatora		Ramkrishnapur		Gopedighi	
Canal irrigated area (%)	Area under mustard (acre)	Canal irrigated area (%)	Area under mustard (acre)	Canal irrigated area (%)	Area under mustard (acre)	Canal irrigated area(acre)	Area under mustard (acre)	Canal irrigated area(acre)	Area under mustard (acre)
55.00-61.66	5.80	60.00-73.33	1.20	<66.66	-	0.80-4.60	3.28	0.80-4.73	-
61.66-68.32	6.58	73.33-86.66	1.50	66.66-73.33	-	4.60-8.40	3.28	4.73-8.66	5.35
68.32-75.00	5.60	86.66-100.00	1.28	>73.33	-	8.40-12.00	6.80	8.66-12.66	10.61

Source: Table compiled from data obtained from field survey

Boro paddy—

In the present study Boro paddy is not cultivated in Ramkrishnapur village. And out of four sample villages in Sattore, Koma and Hatora villages in the farms with considerable spatial extent of canal irrigated area have smaller amount of area devoted under cultivation of Boro paddy crop. Following table (Table-7) shows this fact.

Table: 7 Distribution of area under Boro paddy crop according to canal irrigated area

Sattore		Koma		Hatora		Ramkrishnapur		Gopedighi	
Canal irrigated area(%)	Area under Boro paddy (acre)	Canal irrigated area(%)	Area under Boro paddy (acre)	Canal irrigated area(%)	Area under Boro paddy (acre)	Canal irrigated area(acre)	Area under Boro paddy (acre)	Canal irrigated area(acre	Area under Boro paddy (acre)
55.00-61.66	3.60	60.00-73.33	0.72	<66.66	1.40	0.80-4.60	-	0.80-4.73	-
61.66-68.32	2.15	73.33-86.66	0.55	66.66-73.33	0.68	4.60-8.40	-	4.73-8.66	1.63
68.32-75.00	0.40	86.66-100.00	0.52	>73.33	0.88	8.40-12.00	-	8.66-12.66	4.10

Source: Table compiled from data obtained from field survey

Table-8: Percentage of area under different crops to gross cropped area in Birbhum District during the year 2010-11

Sl. No.	Blocks	Mustard	Potato	Wheat	Boro Paddy	Aman Paddy	Aus Paddy	Kharif Vegetable	Pre-kharif Vegetable
1.	Suri-I	9.27	6.22	7.29	4.00	42.40	-	7.00	8.15
2.	Suri-II	5.93	1.98	4.28	10.54	69.36	-	1.12	1.42
3.	Sainthia	5.48	6.76	43.00	11.30	25.17	-	1.37	1.26
4.	Bolpur-Sriniketan	8.00	6.40	7.00	22.17	30.30	3.45	3.52	4.36
5.	Illambazar	4.11	3.12	3.00	24.20	55.30	1.69	0.75	1.79
6.	Labpur	7.57	6.74	6.04	20.77	41.85	1.40	2.09	2.74
7.	Nanoor	14.60	5.27	7.46	19.47	35.29	3.57	1.27	1.26

Source: Table prepared from data obtained from report provided by office of Deputy Director Of Agriculture (Administration), Birbhum

Table-9: Percentage of area under different crops to gross cropped area in Birbhum District during the year 2011-12

Sl. No.	Blocks	Mustard	Potato	Wheat	Boro Paddy	Aman Paddy	Aus Paddy	Kharif Vegetable	Pre-kharif Vegetable
1.	Suri-I	3.80	2.28	2.25	2.05	72.11	1.37	3.95	4.67
2.	Suri-II	3.00	1.77	3.45	16.63	68.56	0.92	1.21	1.53
3.	Sainthia	6.08	5.25	2.35	16.66	58.76	0.39	1.65	1.64
4.	Bolpur-Sriniketan	3.59	3.89	3.59	13.29	59.68	2.40	2.14	2.65
5.	Illambaza	3.29	2.32	2.90	17.43	65.65	1.36	1.60	1.47
6.	Labpur	5.66	4.75	3.96	18.91	54.05	1.51	1.49	1.84
7.	Nanoor	12.48	3.27	5.49	14.97	48.65	3.62	0.60	1.77

Source: Table prepared from data obtained from report provided by office of Deputy Director Of Agriculture (Administration), Birbhum

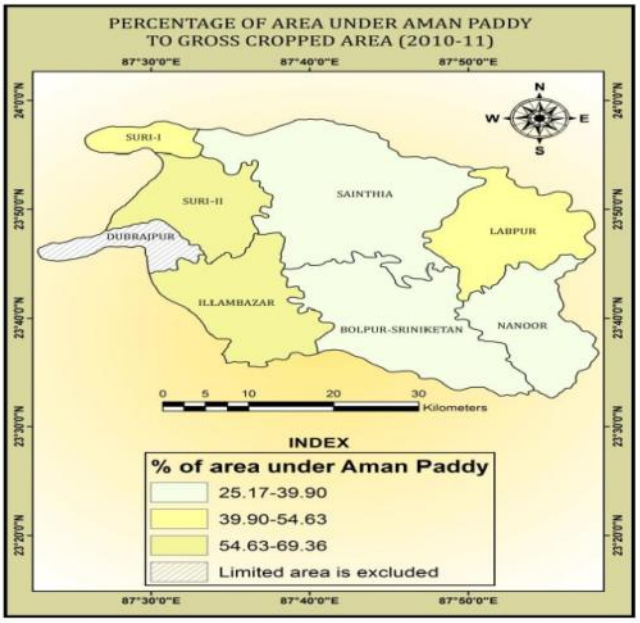


Figure-2

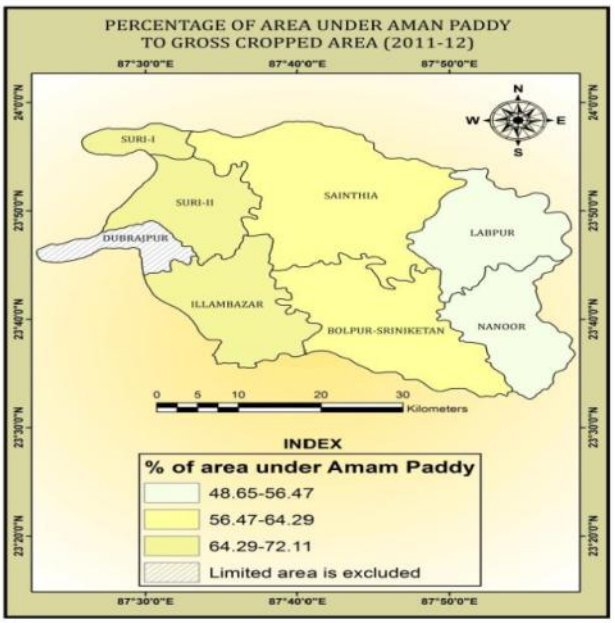


Figure-3

Source: Map prepared from data provided by office of Deputy Director of Agriculture (Administration), Birbhum

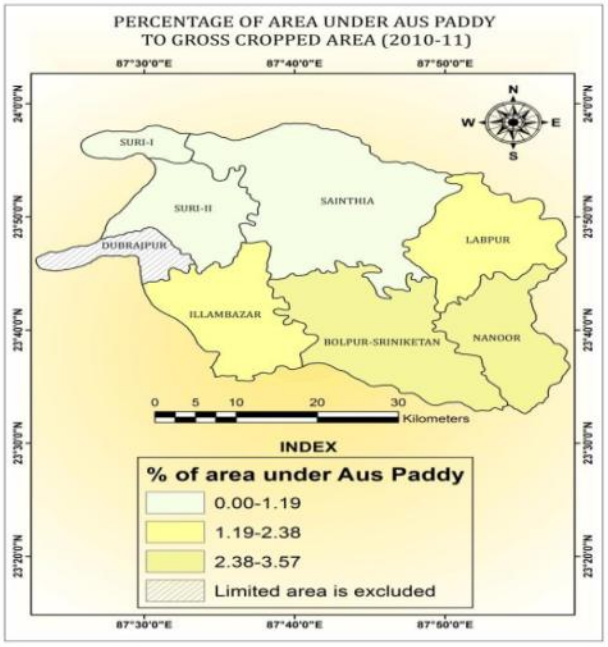


Figure-4

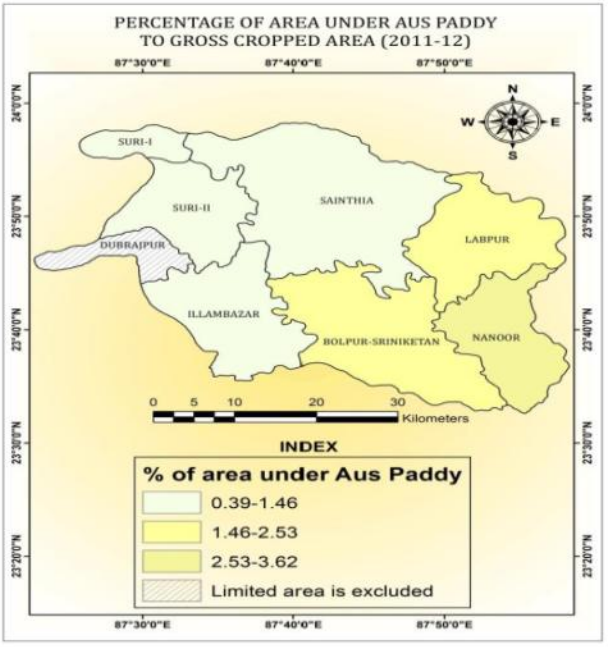


Figure-5

Source: Map prepared from data provided by office of Deputy Director of Agriculture (Administration), Birbhum

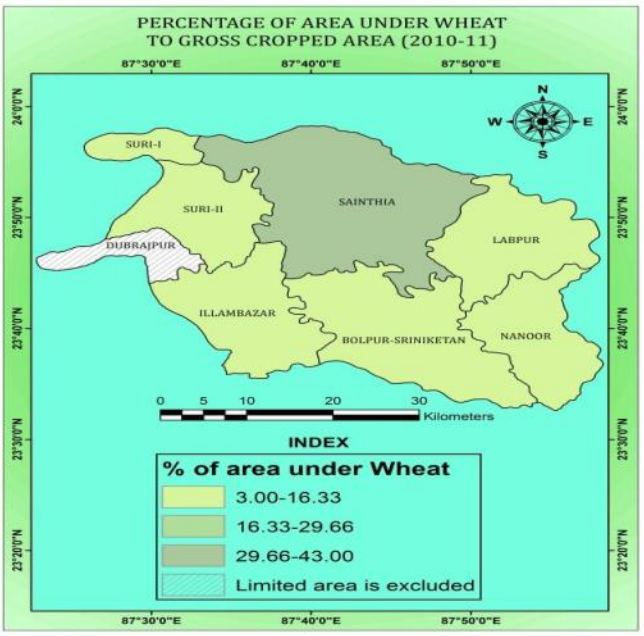


Figure-6

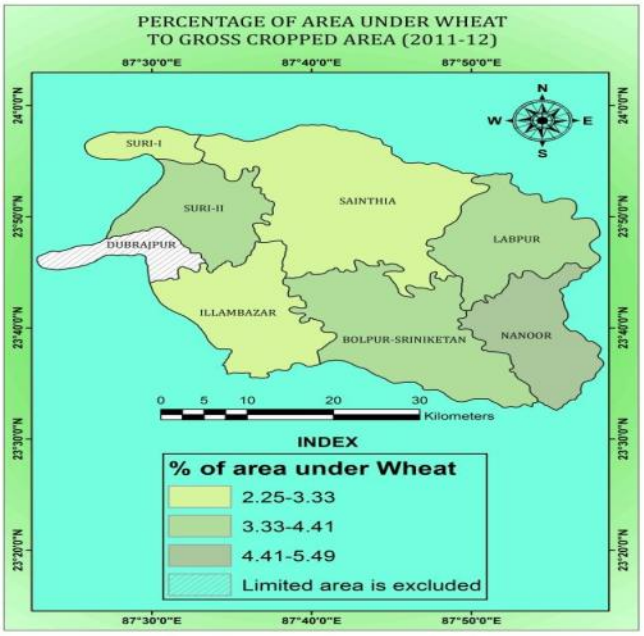


Figure-7

Source: Map prepared from data provided by office of Deputy Director of Agriculture (Administration), Birbhum

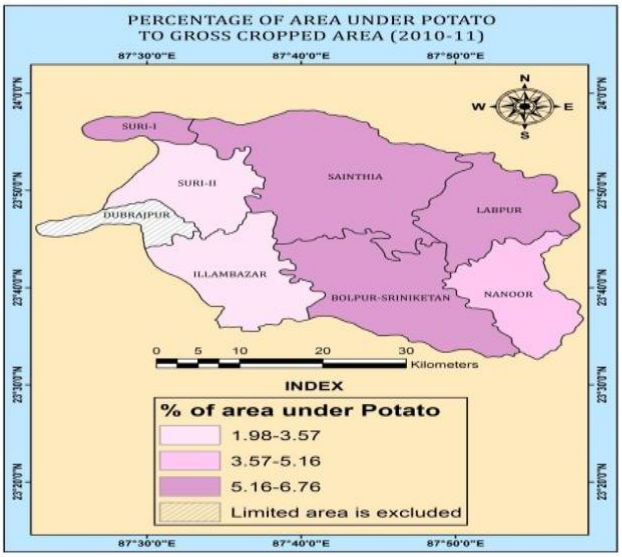


Figure-8

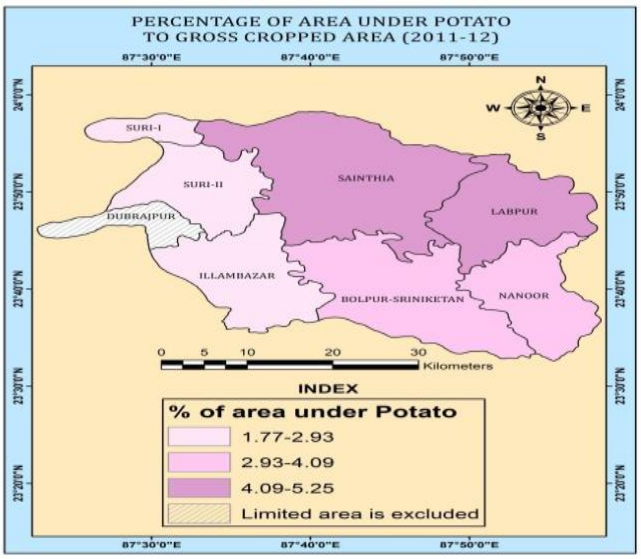


Figure-9

Source: Map prepared from data provided by office of Deputy Director of Agriculture (Administration), Birbhum

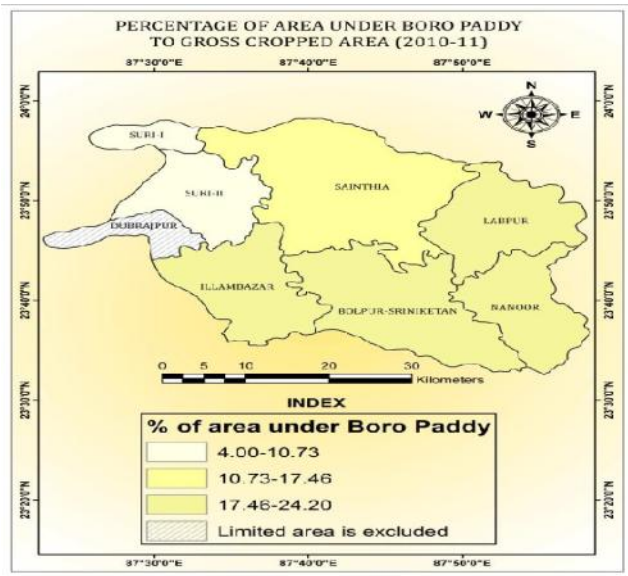


Figure-10

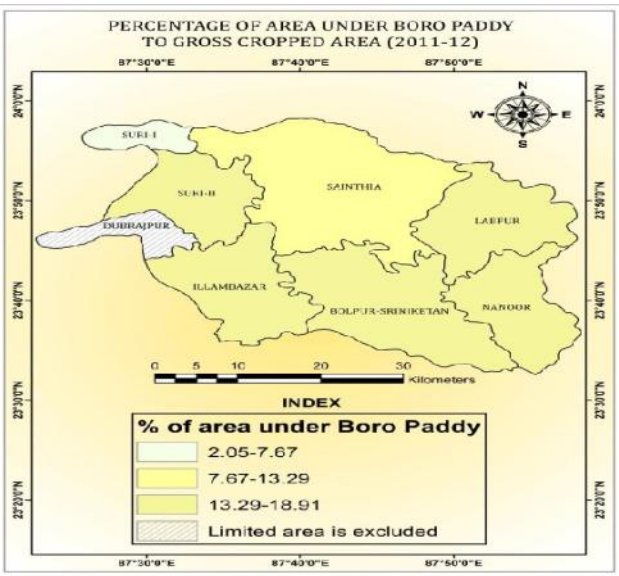


Figure-11

Source: Map prepared from data provided by office of Deputy Director of Agriculture (Administration), Birbhum

The above side by side figures represent difference between percentage of area under different crops cultivation to gross cropped area in 2010-11 and the same in 2011-12.

Table-10: Correlation between percentage of canal irrigated area and cropping pattern

villages	Variable 'Y'	Variable 'X'	'r'	Computed 't'	Tabulated 't'		Significant/ insignificant	Hypothesis accepted	
					5%	1 %		**(H0)**	**(H1)**
Sattore	PERCENTAGE UNDER CANAL IRRIGATED AREA	CROPPING PATTERN	-0.06	-0.43	2.01	2.68	Insignificant	Accepted	
Koma	PERCENTAGE UNDER CANAL IRRIGATED AREA	CROPPING PATTERN	-0.30	-2.18	2.01	2.68	Insignificant	Accepted	
Hatora	PERCENTAGE UNDER CANAL IRRIGATED AREA	CROPPING PATTERN	0.57	4.8	2.01	2.68	Significant		Accepted
Ramkrish	ABSO	CROPPI	0.98	34.11	2.01	2.6	Signific		Accept

napur	LUTE VALU E OF CANA L IRRIG ATED AREA	NG PATTE RN				8	ant		ed
Gopedighi	ABSO LUTE VALU E OF CANA L IRRIG ATED AREA	CROPPI NG PATTE RN	0.96	23.15	2.01	2.6 8	Signific ant		Accept ed

Source- : Table compiled from data obtained from field survey

Plate-1

Plate-2

Plate-3

Plate-4

Plate-5

Plate-6

Plate-7

Plates 1-7 represent cultivation of different crops

Source: Obtained from field survey

CONCLUSION

From the above discussion it is surmised that canal irrigation is available mainly during Kharif season and particularly during non kharif season. Therefore Aman and Aus paddy are largely and directly benefitted by canal irrigation of Tilpara barrage whereas mustard, wheat, potato, sugarcane, Boro paddy and sesame crops are cultivated during rabi and pre-kharif seasons when canal irrigation is either rarely or not at all available but the farmers take the assistance of irrigation from tank and submersible sources and these sources are enriched by different factors including canal during kharif rainy season.

REFERENCES

1. Agriculture Department West Bengal Govt, ―Basundhara‖ (Bengali), Mar-2007, vol-vii, pp 27-28
2. Annual Productivity Plan on agriculture, 1989-90, Birbhum, principal agricultural office, Suri, Birbhum.
3. Annual report of Irrigation and water ways department, Birbum, November, 2011, pp 2-23.
4. Bandaragoda, D.J Need for Institutional Impact Assessment for Irrigation System Modernization, IWMI Report 21, May 1998
5. Bhatia, S.S. 1965 : Economic Geography, ―Pattern of crop concentration and diversification in India‖, vol 41,pp 39-56.
6. Das Debashis, ―Canal and its benefits, effects on cropping pattern a case study of a village,‖ Indian journal of landscape systems and ecological studies, volume I, December, 1984, pp 11-19.
7. District Census Hand book, Birbhum 2001.

Publish Research Article

Dear Sir/Mam,

We invite unpublished Research Paper,Summary of Research Project,Theses,Books and Book Review for publication.

Address:- North Asian International Research Journal Consortium (NAIRJC) 221, Gangoo Pulwama - 192301
Jammu & Kashmir, India
Cell: 09086405302, 09906662570,
Ph No: 01933212815
Email: nairjc5@gmail.com, nairjc@nairjc.com, info@nairjc.com
Website: www.nairjc.com