Vol III Issue I Feb 2013
Impact Factor : 0.2105
ISSN No : 2230-7850

Monthly Multidisciplinary
Research Journal

Indian Streams Research Journal

Executive Editor
Ashok Yakkaldevi

Editor-in-chief
H.N.Jagtap

IMPACT FACTOR : 0.2105

Welcome to ISRJ

RNI MAHMUL/2011/38595 **ISSN No.2230-7850**

Indian Streams Research Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. 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.

International Advisory Board

Editorial Board

Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.isrj.net

Indian Streams Research Journal
Volume 3, Issue.1,Feb. 2013
ISSN:-2230-7850
Available online at www.isrj.net

ORIGINAL ARTICLE

REGIONAL DISPARITIES IN THE LEVEL OF AGRICULTURAL DEVELOPMENT IN WEST BENGAL: A DISTRICT LEVEL STUDY

MD. NAJMUS SAADAT [1] SUJIT DAS [2] KRISHNENDU GUPTA [3] SHAKTIPADA MONDAL [4]

Research Scholar, Department of Geography, Visva-Bharati, Santiniketan.
Research Scholar, Department of Geography, Visva-Bharati, Santiniketan.
Assistant Professor, Department of Geography, Visva-Bharati, Santiniketan.
Research Scholar, Department of Geography ,Visva-Bharati,Santiniketan.

Abstract:

The economy of West Bengal is mainly agrarian. The present research work makes an attempt to examine the inter-district disparities in the levels of agricultural development based on eighteen selected variables in West Bengal. The entire work is based on the secondary sources of data. The district has been taken as a smallest unit of analysis. The statistical technique of composite index has been used to measure the level of development and to find out the disparities. Wide disparities were observed in the level of development among the different districts. The northern mountainous part and south western high land were found to be most agriculturally backward. Most of the districts of the state are found to be moderately developed. Particular strategies and techniques should be develop and adopt for the backward region keeping in view the ecological constraints of the region concerned for more sustainable agrarian development.

KEYWORDS-

Regional Disparity, Composite Index, Variables of Development, Sustainable Agriculture Development.

INTRODUCTION

Regional disparity refers to a problematic situation in terms of spatial variations in the level of economic development, standard of living and quality of life between component regions applying within a nation. Most of the countries of the world are faced with the problem of regional imbalances and regional inequalities. Even the most advanced nation of the world, viz. the USA, has not been able to solve this problem, and there are glaring regional disparities in the levels of development between northern and southern States. In most of the other developed countries as well regional inequalities and imbalances are present in substantial proportions. As far as the underdeveloped countries are concerned, the problem in many of them has assumed such a magnitude that their very political and economic stability is threatened (Chand, M and Puri, V.K. 1983).

The problem of regional imbalances, at both inter-state and intra-state levels has persisted in India even during the post-plan era. Although concern was voiced about regional disparities in India right from the beginning of the planning era, yet a more concerted effort to address this problem was made only in the Third Five-Year Plan. In the subsequent plans also this problem was taken up seriously and as a consequence, several area development programmes were started to mitigate the extent of disparities in the socio-economic development.(Sarkar, S. 2011).

Accelerating economic growth and reducing inter-personal and regional disparities have been the main objectives of India's development policy. Indian agriculture is known for its diversity which is mainly

Title :REGIONAL DISPARITIES IN THE LEVEL OF AGRICULTURAL DEVELOPMENT IN WEST BENGAL: A DISTRICT LEVEL STUDYSource:Indian Streams Research Journal [2230-7850] MD. NAJMUS SAADAT [1] SUJIT DAS [2] KRISHNENDU GUPTA [3] SHAKTIPADA MONDAL [4] yr:2013 vol:3 iss:1

the result of variations in resource endowments, climate, topography and historical, institutional and socio economic factors. Policies followed in the country and nature of technology that became available over time has reinforced some of the variations resulting from natural factors. As a consequence, production performance of agriculture sector has followed an uneven path and large gaps have developed in productivity between different geographic locations across the country (Chand, R. et al, 2009).

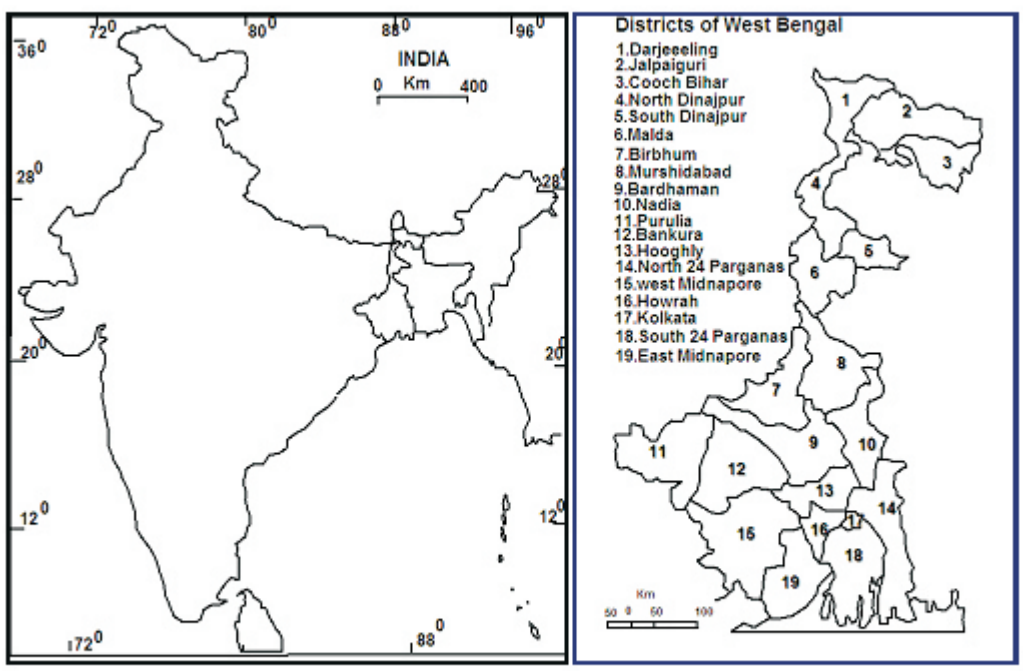
In every sectors of economy, the disparity can be seen. It is not only exist in post-independence period but also observed in pre-independence period but then the disparities were not so great and grave problems as today. In Indian agriculture, inter and intra regional disparities are day by day growing after the adoption of Green Revolution technology during late 1960s. Though in the 1980s, special drives were launched for agriculturally under developed regions to reduce the disparities, but significant result still not achieved.

The agriculture is the main sector of economy of West Bengal. About seventy per cent of the state population depends on agriculture. No doubt, West Bengal is one of the agriculturally advanced state of India, yet the state has sharp regional disparities in the level of agricultural development. The present study has tried to measure the level of development based on eighteen selected variables of agriculture in West Bengal. The measurement of agricultural development and its regionalization helps to find out the ground reality and to evolve and formulate the strategies and techniques to minimize and remove the regional disparities. Agriculture of any region not only provide food to the people of that region, it also directly affects the region's prospects for growth and hence sustainable development.

STUDY AREA:

The state of West Bengal is located in the eastern bottleneck of India and lies between 21º 25' to 26º 50 ' north latitudes and 86º 30' to 89 º58 /east longitudes with three international boundaries i.e. Bangladesh, Nepal and Bhutan. The total geographical area is about 88,752 sq. km. The state is mainly riverine plain land and extending from the Himalayas in the north to the Bay of Bengal

Location Map of the Study Area



d

Bangladesh, on the south by the Bay of Bengal and on the west by Orissa, Bihar and Nepal. According to 2001 Census, its total population is 80,176,197 (7.79 per cent of India's total population), density is 904 persons per sq. km. (in terms of population density West Bengal is on the top among the Indian states). The

total area under cultivation is 5450679.18 hectares in which 2334257.49 hectares area is under irrigation. The state accounts for 19.18% of cultivators and 24.97% of agricultural labourers to total (main+marginal) workers.

West Bengal is essentially a flat, featureless alluvial plain, large portion of it drained by river Ganga and its distributaries; only a small portion of its area in the far north is mountainous. The central region comprising the districts of Malda and Dinajpur is geographically an older part than the Gangetic plains below. The southern region, starting from the point where the Ganga bifurcates in the boundaries of the districts of Malda and Murshidabad consist of two distinct geographical regions i.e. the western plateau fringe consists of the Purulia district and the western part of the districts of Birbhum, Burdwan, Bankura and Midnapur and the rest of the southern region is a vast alluvial plain which is bisected by the Bhagirathi (Hooghly) river. The main river in this system is the Damodar, Bengal's 'River of Sorrow'. Thus, the West Bengal, a vast alluvial plain is spreading from Jalpaiguri and Siliguri in the north to the Sundarban creeks and its Kanthi littoral in the south.

The climate of West Bengal is full of variation, experiences tropical type of climate due to its geographical location. The climate of this region is controlled by the Monsoon. The climate allows the weather to remain dry during the winter and wet during summer. Due to climate and soil condition for Ganges Delta, this region is highly vegetated with tropical plants and considered one of the most fertile lands in the world.

OBJECTIVES:

Precisely, the present study has the following two specific objectives:

1.To examine the geographical patterns of several indicators determining agricultural development in West Bengal.
2.To analyze the regional disparities in the level of agricultural development based on selected indicators in West Bengal.

DATABASE AND METHODOLOGY:

The present research work is entirely based on secondary sources of data. The data is collected from District Census Handbook 2001, West Bengal, Statistical Abstract 2008 and Economic Review 2007-2008 published by Bureau of Applied Economics and Statistics, Govt. of West Bengal, West Bengal State Marketing Board, Govt. of West Bengal.

Development is a multi-faceted, multi-dimensional, multi-factored continuous future oriented process. To measure the level of development of any region, the measurement and analysis of any single indicator fails to provide the real comprehensive ground picture. Hence there is need to combine several indicators, so that the ground picture of the concerned region is reflected.

The district has been taken as the unit of analysis. The Kolkata district has been exempted from this study due to its highly urbanized character. To determine the level of agricultural development, a set of eighteen variables have been selected. All the variables selected for our study may not have the equal importance to agricultural development. Hence, different weights have been assigned to different variables by the method of Proportional Standardized Mean (Ajakekar B.A. and Masal N.S., 2011). The weight assigned to one variable is calculated by the formula-

$\bar{x}/s$,

Where,

$\bar{x}$ is the mean of the series of one particular variable

and σ is the standard deviation of the same series.
This $\bar{x}/\sigma$,is the weight of any variable. The calculated weightage of selected variables are shown in the table- 1.

Table-1: Result of Proportional Standardized Mean for Selected Variables of Agricultural Development in West Bengal.

Variables	Definition	Mean ($\bar{x}$)	SD (σ)	Weightage (W)
X_1	Percentage of Net Area Sown to Reporting Area	65.53	14.48	4.53
X_2	Percentage of net irrigated area to Net Area Sown	41.53	60.04	0.69
X_3	Literacy rate	65.2	9.16	7.12
X_4	Percentage of agricultural laborers to total workers	27.03	9.35	2.89
X_5	Average size of land holdings (in hectare)	0.89	0.28	3.18
X_6	Cropping intensity (in per cent)	175.94	41.02	4.29
X_7	Consumption of fertilizers per unit gross cropped area (kg/hac)	133.42	72.97	1.83
X_8	No. of pump set (electric +diesel) per 1000 net cropped land*	103.03	52.67	1.96
X_9	No. of tractors per 1000 net cropped land*	6.11	6.52	0.94
X_{10}	No. of agricultural credit societies per lakh of population	8.50	3.76	2.26
X_{11}	No. of commercial and cooperative banks per lakh of population	5.51	1.33	4.14
X_{12}	Intensity of rainfall (annual total in cm)	172.5	59.0	2.92
X_{13}	Average wage rate for male agricultural field labourers (in Rs.)	55.88	4.96	11.27
X_{14}	Percentage of area under total food grains to gross cropped area ('000 hac)	66.67	14.96	4.46
X_{15}	Percentage of area under total commercial crops to gross cropped area ('000 hac)	18.2	10.54	1.73
X_{16}	Yield of food grains (in metric tonne/ hectare)	2.16	0.33	6.55
X_{17}	Yield of commercial crops (in metric tonne/ hectare)	78.44	33.98	2.31
X_{18}	Yield of fruits and vegetables (thousand tonne/ hectare)*	12.62	1.78	7.09
Total				**70.16**

Source: Calculation is based on District level Published data, Census of India, 2001; Statistical Abstract 2008; Economic Review 2007-08; West Bengal State Marketing Board, Govt. of West Bengal.

*Due to unavailability, the data are of 2003 collected from Statistical Abstract 2008 and West Bengal State Marketing Board.

After calculating the weightage for different variables or indicators, Composite Index has been used for every district to measure the level of agriculture development. Thus the composite index (C.I) has been calculated with the help of following formula-

$$C.I = (x_1 w_1 + x_2 w_2 + x_3 w_3 + x_4 w_4 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots + x_{18} w_{18})/(w_1+w_2+w_3+w_4\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots w_{18})$$

After calculating the Composite Index of all the district, composite indices have been calculated taking the state average indices as 100. The composite indices have been calculated by the following equation-

$$\text{Indices} = \frac{\text{composite index of any district}}{\text{average composite index}} \times 100$$

FINDINGS:

The values of composite indices varied from 83.03 of Purulia to 110.93 of Hooghly district. In other words, Purulia is the agriculturally backward district and Hooghly is the agriculturally advanced district. Taking the state average indices as 100, we can divide the entire state into two groups viz. agriculturally foreward group (above the state average indices) and agriculturally backward group (lower than state average indices).

Foreward Group: There are eight district having the indices above state average. They are Cooch Bihar, Uttar Dinajpur, Burdwan, Mednipur, Howrah, Hooghly, Nadia and North 24 Parganas.

Backward Group: Below the state average indices, there are ten districts and these are Birbhum, Bankura, Darjeeling Daskin Dinajpur, Malda, South 24 Parganas, Jalpaiguri, Murshidabad and Purulia. We have considered these districts as backward in terms of agricultural development.

If we take the Ganga River as the dividing point for north and south Bengal, then it is seen that most of the district of forward group are located in south Bengal, whereas most of the district of north Bengal are in the backward group.

Table 2: District Wise Composite Indices of Agricultural Development in West Bengal, 2001.

Sl. No.	Name of District	Composite Index	Indices
1.	Darjeeling	50.30	91.21
2.	Jalpaiguri	53.81	97.57
3.	Cooch Behar	56.53	102.50
4.	Uttar Dinajpur	56.19	101.87
5.	Daskhin Dinajpur	50.93	92.35
6.	Malda	53.50	97.01
7.	Murshidabad	54.00	97.91
8.	Birbhum	52.32	94.87
9.	Burdwan	55.91	101.39
10.	Nadia	59.53	107.94
11.	North 24 Parganas	57.15	103.63
12.	South 24 Parganas	52.77	95.68
13.	Hooghly	66.14	119.93
14.	Howrah	61.49	111.50
15.	Bankura	52.52	95.23
16.	Mednipur	58.65	106.35
17.	Purulia	45.79	83.03
Average		**55.15**	**100**

Source: Based on Table 1.

Table 3: Level of Agriculture Development in West Bengal, 2001

Category	Indices	No. of District	Percentage of Total District	Name of the District
Highly Developed Zone	Above 110	02	11.76	Hooghly and Howrah
Developed Zone	100-110	06	35.29	Nadia, Burdwan, Cooch Bihar, North 24 Parganas, Uttar Dinajpur and Mednipur.
Moderately Developed Zone	90-100	08	47.06	Birbhum, Bankura, Daskhin Dinajpur, Malda, Murshidabad South 24 Parganas, Jalpaiguri and Darjeeling.
Poorly Developed Zone	Below 90	01	5.88	Purulia.
Total		**17**	**100**	-

Source: Based on Table 2.

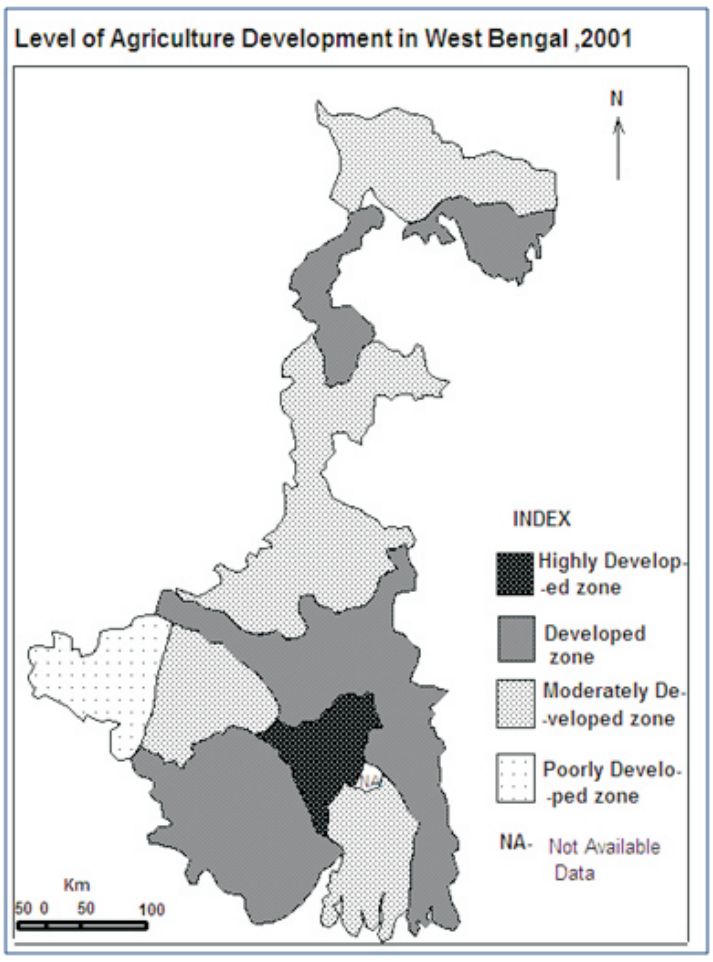
1.Highly Developed Zone:

This zone consist of only two district viz. Hooghly and Howrah whose composite indices is ten point above the district average. This zone covers only 11.76% area of the state. The district Hooghly having better position in all the variables of development in the state especially net area sown, net irrigated area, literacy rate, cropping intensity, higher consumption of fertilizers, higher inputs of agricultural machineries, good proportion of agricultural credit societies and banks; attained the highest composite indices.

The district Howrah attained value of 111.50 included in this zone. It is mainly because of highest consumption of fertilizers, higher literacy rate, good proportion of area under food crops, cropping intensity (more than state average). Both the district are located around the Metropolitan city Kolkata that's why transformation of new agricultural techniques have been taken place.

2.Developed Zone:

This zone consists of six district namely Nadia, Burdwan, Cooch Bihar, North 24 Parganas, Uttar Dinajpur and Mednipur covering 35.29 per cent area of the state. Among these districts Nadia and Mednipur have higher composite indices of 107.94 and 106.35 respectively and for the district Burdwan and Uttar Dinajpur, the composite indices are slightly above the state average. Nadia district has higher percentage of net area sown, net irrigated area, number of pump set, area under commercial crops and its yield, better proportion of agricultural credit societies and banks. Though Burdwan district is industrially developed, do not present bad situation in agriculture also. The district has highest percentage of net irrigated area under cultivation and tractors used, better proportion of agricultural credit societies and banks. Cooch Bihar and Uttar Dinajpur located in the northern parts of the state took part in this category due to their better percent of net area sown and good proportion of agricultural credit societies and banks. North 24 Parganas and Mednipur being part of south Bengal is agriculturally developed because of higher literacy rate, good percent of agricultural labours and proportion of agricultural credit societies and banks.



3.MODERATELY DEVELOPED ZONE:

This zone comprises of eight district of the state and they are Birbhum, Bankura, Daskhin Dinajpur, Malda, Murshidabad South 24 Parganas, Jalpaiguri and Darjeeling having composite indices ranging between 90-100 and covering almost half the area (47.06%) of the state. Four districts of this zone more or less part of mountainous and plateau region. This group is not agriculturally so developed because of topographic constraints and new agricultural strategies. The low level of agricultural development in this zone is mainly due to low net swon area, low irrigation development and inadequate banking and agricultural credit facilities.

4.POORLY DEVELOPED ZONE:

This zone comprises one district of the state namely Purulia, covering 5.88% area of the state whose value of indices about 20 point below the state average. The district having very poor situation regarding all the variables of development especially in net irrigated area, area under cash crops, yield of cash crops, wage rate for male agricultural labours, cropping intensity, number of tractors used. Topography and edaphic factors present main hindrance for agricultural development in the district.

CONCLUSION:

Above analysis reveals that there is wide range of disparities in the level of agricultural development in the state. There is about 40 point's gap between the composite indices of Hooghly and Purulia. It is interesting to note that the level of agriculture development in the district level have great similarity with the topography of the state. The northern districts, Darjeeling and Jalpaiguri is the part of

Himalaya, again in the south western part of the state, Purulia, Birbhum and Bankura is the tail-end of Chhastishgarh plateau and in the southern state, the district South 24 Parganas is the riverine forested low land; all these district have moderate to poor level of agriculture development. The regional disparities in the agricultural development have great impact on the overall development of the region and the socio-economic life of the people because agriculture is the main engine of economic growth for West Bengal. Therefore, it is the need of the hour to evolve and implement those strategies that can minimized and reduced the regional disparities in respect of agricultural growth and levels of overall development. However, the strategies and techniques of agriculture should be develop and adopt after considering the ecological constraints in the region concerned so that sustainable agricultural development can be achieved.

REFERENCES:

1.Ajakekar B.A. and Masal N.S. (2011): Regional Disparities In The Levels Of Agricultural Development In Kolhapur District Of South Maharastra, Indian Stream Research Journal Vol. 1, Issue II, pp.139-144
2.Census of India, (2001):District Census Handbook, Directorate of Census Operation, West Bengal.
3.Chand, M and Puri, V.K. (1983): Regional Planning in India, Allied India, New Delhi.
4.Chand, R.; Garg, S.; Pandey, L., (2009): Regional Variations in Agricultural Productivity A District Level Study, Discussion Paper, National Centre for Agricultural Economics and Policy Research (Indian Council of Agricultural Research), New Delhi.
5.Economic Review 2007-2008, Bureau of Applied Economics and Statistics, Govt. of West Bengal.
6.Husain, M.,(2007): Systematic Agricultural Geography, Rawat Publications, Jaipur.
7.Narain, P.; Sharma, S.D.; Rai, S.C.; Bhatia, V.K., (2000):Regional Disparities in Socio-Economic Development in Tamil Nadu, Indian Society of Agricultural Statistics, 53(1),: pp 35-46
8.Sarkar, S.,(2011): Variation of Agriculture Sector Development: With Special Reference to West Bengal State, J Economics, 2(1), pp 9-22.
9.Statistical Abstract 2008, Bureau of Applied Economics & Statistics, Govt. of West Bengal.
10.West Bengal State Marketing Board, Govt. of West Bengal.