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Spatial Disparity in Agricultural Development and Productivity in Hooghly District, 2011

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Abstract: Agriculture is the back bone of Indian economy. It contributes about 14.6% in Gross Domestic Production (GDP) and about 2/3rd population directly or indirectly depend on it. Main objective of this study is to examine the block wise agricultural development and agricultural productivity index in Hooghly district, and classify these blocks into different agricultural development and productivity zones.The Study area located in between 23^0 01'20"N to 22^0 39'32"N latitude and 88^0 30'15"E to87^0 39'32" E longitude and comprises with 18 community development blocks.The analysis has been made in this paper mostly based on secondary data base,collected from Department of Agriculture of Hooghly, Bureau of Applied Economics and Statistics of West Bengal, District Statistical Hand Book of Hooghly and Census of India etc. Collected secondary data has been converted into tertiary data set and then various calculations, mapping have been done in different software like Microsoft excel, Map info etc. Agricultural development is high on the bases of some selected indicators, in the blocks, situated at the northern part of the study area. Alternatively, the blocks situated at the southern portion of the district remain less developed in agriculture. On the other hand agricultural productivity is low at the middle and north eastern part of the study area.

Key Words: Agricultural development, Agricultural productivity, Land utilization, Crop diversification, High yielding variety, Agricultural growth

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I. INTRODUCTION

Agriculture is the back bone of Indian Economy. It contributes about 14.6% in Gross Domestic Production (GDP) and about 2/3rdpopulation directly or indirectly depend on it. India experienced rapid growth in agricultural productivity with the advent of Green Revolution in 1960s and it has managed to move from food deficient crisis to self-food sufficient situation today. It also has experienced a slower decline in employment share in agriculture, compared to its output share; a rapid growth in labour and land productivity and a shift in agriculture from traditional to high yielding variety product (HYV). In Hooghly District, which is an industrially as well as agriculturally developed district in the state of West Bengal, there was also a structural transformation in agricultural perspective. Young educated generation are not interested in agricultural practice due to the better scope of job in urban service center, which provides attractive salary and good quality of life. On the other hand, geo-climatic situation, socio-economic factors, historical and political factors have favouredagricultural development in the district. Differences in attitude towards the rural land in the level of prosperity and technology have produced changes in emphasis.

II. REVIEW OF LITERATURE

In a developing country, agriculture plays key role to employment generation and enhancement of the gross domestic production (GDP), but due to unsustainable development, lack of proper market guidance and disintegrated development the processes could not grow rapidly.A specific outline of the changing degree of agricultural transformation is that of Timmer's (1988, pp.279-283) four phase like- i) Agricultural productivity increase, ii) Agricultural surplus enable growth of non-agricultural sectors, iii) Improvement of infrastructure and the development of the market by integrated development, iv) When integration is successful then the economy is deemed industrialized. On the other hand agricultural growth drive the income of farm household andalso allow to invest in human capital, enabling family members to find employment outside the farm (Otsuka and Yamano-2006). Ranis (1995) argued for China, it has experienced agricultural development by technological change. China mostly focused on new crop-cotton, fruits and vegetables. Agricultural transformation thus involves parallel development of industry (agro- processing) and services (finance, logistics, marketing etc.).

III. OBJECTIVES

a) To examine the block wise agricultural development status in Hooghly district.

b) To assess agricultural productivity index of different blocks of the study area and classify them into different productivity zone.

IV. STUDY AREA

a) Location of the study area:

The Study area, Hooghly located in between 23^0 01'20"N to 220 39'32"N latitude and 880 30'15"E to87^0 39'32" E longitude. The District is bounded on the north by Bardwan district; on the east by the Hooghly River, on the south and west by the Rupnarayan River.

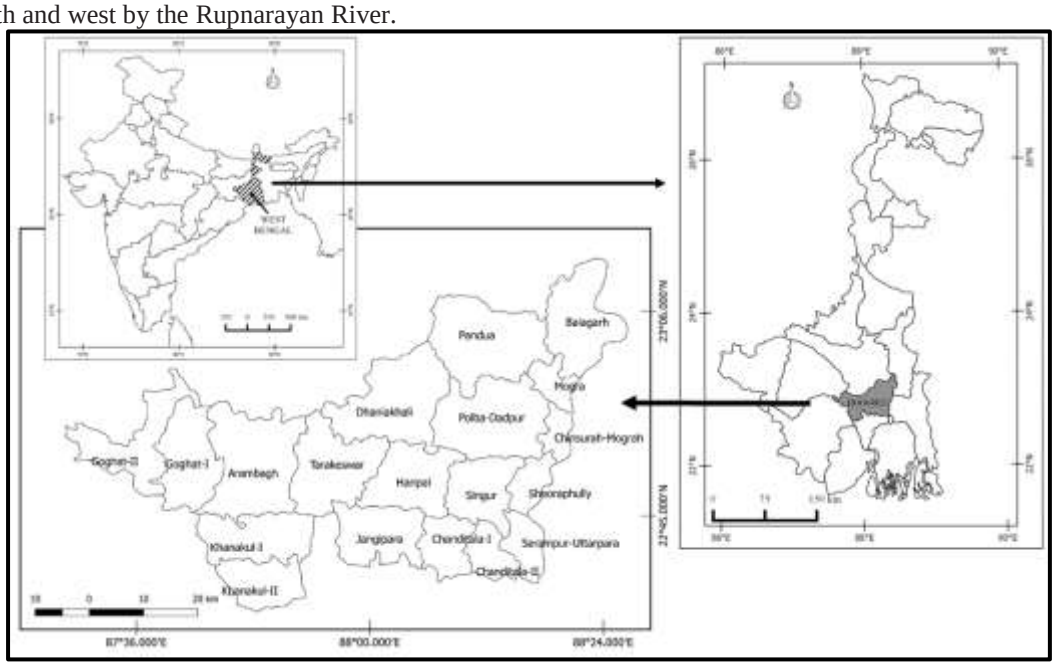

Figure 1 Location of the study area, Hooghly District

b) Physical Setup of the study area:

The district is mostly bounded by its principal rivers, Hooghly, the Damodar and the Rupnarayan. The Hooghly River flows along the eastern boundary of the district. The Damodar, which enters Hooghly district from Bardwan district, is the only large river which intersects the district.

The study area is mainly divided into two natural divisions, like the plains and the uplands.The river Dwarakeswar is situating here as a dividing line between this two divisions. The flat alluvial plains again be sub-divided into three regions, (i) the Dwarkeswar-Damodarinterriverine plain, (ii) the Damodar-Bhagirathi interriverine plain and (iii) the Char lands (Banerji, 1972).

c) Administrative setup of the study area:

The district is located over an area of 3149 Sq. Km. with around 55.19 lakh inhabitants, as per census 2011. The density of the district is 1753 persons per Sq. Km. It comprises with 4 sub-divisions, 18 blocks, 207 Gram Panchayat, 2585 villages and 12 municipalities

V. DATABASE AND METHODOLOGY

The analysis has been made in this paper mostly based on secondary data base,collected from Department of Agriculture of Hooghly, Bureau of Applied Economics and Statistics, Government of West Bengal, District Statistical Hand Book of Hooghly and Census of India etc. Collected secondary data has been converted into tertiary data set and then various calculations, mapping have been done in different software like Microsoft excel, Map info etc.To understand the level of agricultural development in Hooghly district, block wise values of some selected variables have been standardized by Z score method. Then on the basis of these Z scores Composite Z score of each block has been done. Agricultural Productivity Index has been prepared by using the Hussain (1976) method.

VI. RESULT AND DISCUSSION

a) Agricultural Development:

Hooghly district is situated in the wet monsoonal-climatic region and located beside the Hooghly river embankment area. So, Hooghly district has an ideal agro-climatic condition to culture the agricultural practice.

On the other hand, from the colonial period this district has a good socio-economic condition that leads to a healthy infrastructural development. Hence, this region has two types of development- (i) from the colonial period Serampur and Chandannagar sub-division was an industrially developed area and (ii) In Arambagh and Sadar sub-division the practices of agriculture was highly developed. So, the presence of the Hooghly River in the eastern part of the district has an important role in the industry and agriculture as well as economic and infrastructural development. This district consists 68.62% rural population as per 2011 census and about 59% rural population depended on the agriculture. Most important matter is that the scope of agro based industry and food processing industry lead to present agricultural scenario in all over India as well as Hugli District. Therefore, to improve the present rural economy, proper land utilization and crop diversification is needed. To assess the agricultural development in the study area all the thirteen variables have been aggregated. To represent development of agriculture, on the basis of the Z score values of thirteen variables, composite Z score of each blocks have been prepared. And agricultural development map on the basis of these composite Z-score value has been prepared. (Figure. 2).

TABLE-1: Selected Variables for Measurement of Agricultural Development

Serial number	Variables	Particulars
1.	X_1	Cropping Intensity
2.	X_2	Percentages of Net Sown Area to Total Area
3.	X_3	Percentages of Net Irrigated Area
4.	X_4	Fertilizers Uses in MT
5.	X_5	HYV Seed Uses (in MT)
6.	X_6	Pesticides Uses (in MT)
7.	X_7	Number of Market
8.	X_8	Number of Deep Tube Wells
9.	X_9	Percentages of Rural Population to Total Population
10.	X_{10}	Percentages of Cultivators to Total Workers
11.	X_{11}	Percentages of Agricultural Laborers to Total Workers
12.	X_{12}	Percentages of Marginal Farmers to Total Farmers
13.	X_{13}	Surface Road Density/ Sq. Km.

Source: *Selected by the authors*

On the basis of composite Z-score, blocks of the study area have been categorized into three classes viz. high, medium and low; which clearly shows the spatial variation in level of agricultural development in the district.

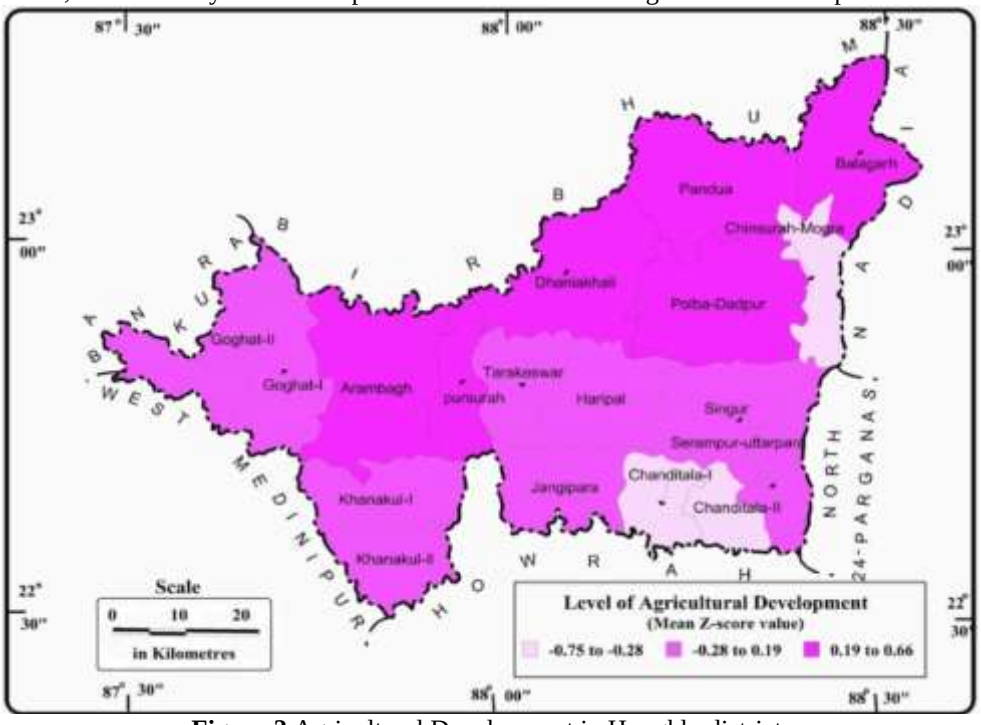

Figure 2 Agricultural Development in Hooghly district

i) High level of agricultural development:

Arambegh, Dhaniakhali. Pandua, Polba-dadpur, Balagarh block have high level of agricultural development, where the range of composite Z-score value is 0.19 to 0.66. It has been observed that in these blocks the application of modern technology in agriculture is relatively more.

ii) Moderate Level of agricultural Development:

The blocks which fall under the moderate category have composite Z-score ranging from -0.28 to 0.19. This category includes the blocks namely Tarakeswar, Singur, Haripal, Jangipara, Serampur-Uttarpara, Khanakul-I & II, Goghat- I & II.

iii) Low Level of agricultural Development:

Three blocks which have their composite Z-score below -0.28 come under the low level of agricultural development, these are Chinsurah-Mogra, Chanditala-I & II. Chanditala-II block .It shows the lowest level of agricultural development in the district.In short, it has been observed that the modern technological inputs are important determinant which influencethe development of agriculture**.**

b) Agricultural productivity

To delineate the pattern of agricultural productivity of Hooghly, an index as derived by Hussain in 1976 has been used here to indicate the area of all crops, their total production and their prices then prevailing. For this purpose area and production has been converted in terms of money.

On the basis of this calculation, the blocks of the study area has been classified (figure.3) into three distinctive zones viz. high, medium and low.

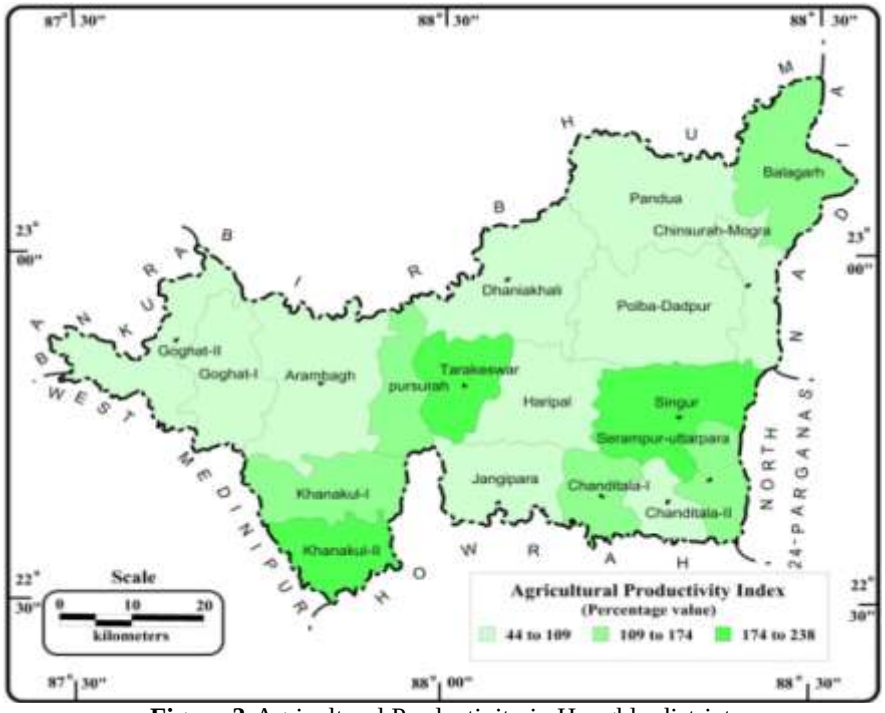

Figure 3: Agricultural Productivity in Hooghly district

i) High Productivity Region:

The pattern of regional productivity of agriculturereveals that four block of the Hooghly district, i.e. Balagarh, Singur, Tarakeswar and Khanakul-II have the high agricultural productivity. In this region agricultural practices are more diversified and there are a tendency to practice commercial crops. Therefore this region has greater level of agricultural infrastructural development and edaphic condition in this area has introduce to produce here potato and jute andthe dominant crop rice, which are more significant to the enhancement of agricultural productivity as well as earning money for the farmers.

ii) **Medium Productivity Region**:

The regions of medium productivity are confined in the block Pursurah,Khanakul-I, Chanditala-I, Serampur-Uttarpara. In this region cereal crops like paddy and wheat are dominant.Cash crops like jute, potato, til and mustard are also equally important here.

iii) Low Productivity Region:

Low productivity region is found in Pandua,Polba-Dadpur, Chinsurah-Mogra, Dhaniakhali,Haripal,Jangipara, Chanditala- II, Arambagh,Goghat- I and II blocks. It is also because of the fact that 'Aman' paddy rather than

other valuable cash crops like jute, potato, oil-seeds etc. is the significant crop here. Among the paddy again 'Boro' which has a very high yield rate occupies an insignificant proportion of total cropped area in the block, due to lack of adequate irrigation facilities which are indispensable for 'Boro' cultivation.

IV. CONCLUSION

So here it can be concluded that, on the basis of selected indicators agricultural development is high in some blocks, situated at the northern part of the study area. Arambagh, Pursurah, Dhaniakhali, Pandua, Polba-dadpur, Balagaretc. blocks are taken in such category.But at the same time, from the aspect of agricultural productivity these are also backward than other blocks. These blocks are more developed from the aspect of economy, technology, education, urbanization etc. Local population of these blocks are more involved in secondary or tertiary activity, and cultivable area is less than the other blocks. That's way despite of being better in agricultural development, these blocks are low in agricultural productivity. The blocks like Balagarh, Singur, TarakeswarKhanakul-II situated at the southern portion study area, in the fact of being not so good in agricultural development, are forward in case of agricultural productivity. On the other hand, Chinsurah-Mogra, Chanditala- I & II are low from the aspect of agricultural development and productivity both. Beside this, the blocks Goghat I & II, situated at the north western corner of the study area, are moderately developed in agriculture, but very poor in agricultural productivity, just because of being most affected blocks due to flood in every area.

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