



CROP DIVERSIFICATION IN LAKHISARAI DISTRICT OF BIHAR : A GEOGRAPHIC APPROACH

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ABSTRACT:

Agriculture diversification refers to either a change in cropping pattern or the farmers opting for other non-farming options like poultry farming, animal husbandry etc. There are two types of agricultural diversification; 1. Horizontal diversification and 2. Vertical diversification. The study of crop combination and crop combination regions constitute an important aspect of agricultural geography as it provides a good basis for agricultural regionalization. The crops are generally grown in combinations and it is rarely that a particular crop occupies a position of total isolation other crops in a given spatial unit at a given point of time. The distribution maps of individual crops are interesting and useful for planners but it is even more important to view the integrated assemblage of the various crops grown in a spatial unit. The demarcation of the district into the rice region or wheat region does not explain the agriculturally significant fact that very often the wheat region also has a rice crop and vice versa or wheat is often grown with gram, barley, mustard, lentil, peas and rapeseed. For a comprehensive study and clear cut understanding of the agricultural mosaic of an agro-climatic region and for the planning and development of its agriculture. A systematic study of crop combinations is of great significance.

KEYWORDS:

CROP COMBINATION, REGIONALIZATION, GRAM, BARLEY, MUSTARD, LENTIL, PEAS.

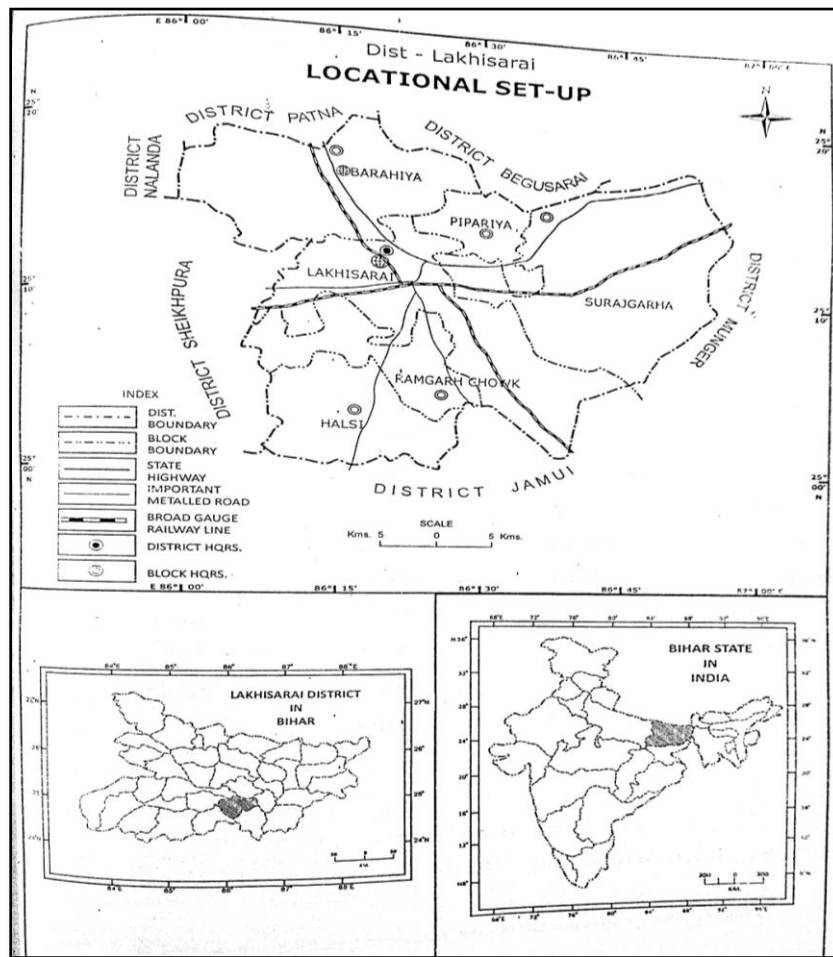
INTRODUCTION

The area undertaken for the research study regarding the recent trends in population change is newly formed district of Lakhisarai. The present Lakhisarai district lies between 24°58'45" N. Lat. to 25°20'45" N. latitudes and 85°54' E long. to 86°53'45" E longitude. In other words, the district extends on 00°22'00" parallels of latitudes and 00°59'00" meridians with a total population of 1000717 (2011). Lakhisarai district that formed a part of old Munger district, at present is delimited by the river Ganga from the north while the newly carved district of Jamui confines the district from the south. Munger district delimits the district from the east and the district of Sheikhpura from the west direction. The patterns of

agricultural land use in Lakhisarai district appears to be intensified along with the growth of population of the district. The correlation between population growth and the trends and patterns of agricultural land use in the district is partial positive. The trends and patterns of agricultural land use in the district includes crop intensity, irrigation intensity, double and multiple cropping, cultivation of cash crops etc.

RESEARCH METHODOLOGY:

The present paper is based on both the primary and the secondary data or information. The statistical information have been collected from the district statistical office or block offices. After preparing the statistical table, generalization of fact have been done.



HYPOTHESIS:

A few hypotheses have been formulated for testing during my field survey. After testing the following hypotheses, the present research paper has been prepared. Those are:

- Diversification of crops indicates agricultural progress.
- Agricultural facilities encourage crop combination and diversification.
- Farmer's income increases through crop diversification.

CROP DIVERSIFICATION:

Lakhisarai district has a highly diversified cropping pattern and a variety of crops such as cereals, pulses, sugarcane, oilseeds etc. are grown. Crop diversification is a concept which is opposite to crop specialization. The farmers all over the world, especially in the developing countries, try to grow several crops in their holding in an agricultural year. The level of crop diversification largely depends on the geo-climatic/ socio-economic condition and technological development in region. In general, higher the level of agricultural technology, lesser the

degree of diversification. Moreover, the rich farmers prefer to specialize in agricultural enterprise while the poor and subsistent farmers are generally more instead in the diversification of crops. The main causes for the crop diversification may be as under:

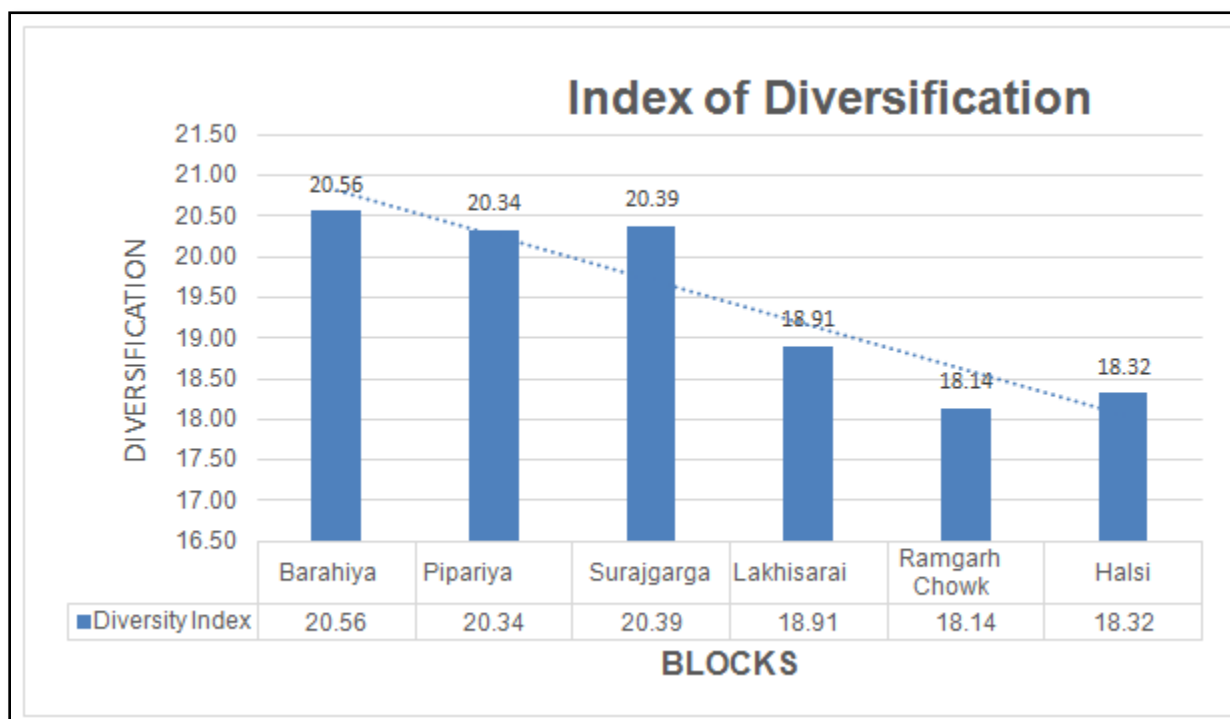
- (1) The uncertain weather, especially the erratic rainfall. In the areas where the variability of rainfall is high in adequate sources of irrigation are not available, farmers grow several crops in a seasons, requiring different quantities of moisture. It is being done mainly to get something from their field even in the case of extreme weather conditions.
- (2) In the tradition bond subsistent farming systems the farmers grow several crops to meet the family requirements. In such areas one may find a high degree of crops diversification.
- (3) As established by the agricultural scientists, diversification has usually been done by the farmers to enhance nitrogen in the soil and to replenish the soil fertility. The following table shows the crop diversification among cereal crops:

TABLE- 01 DIST. LAKHISARAI: CROP DIVERSIFICATION AMONG CEREALS, 2019-20

S.N.	Blocks	PTCA	No. of crops	Diversity Index
1	Barahiya	82.25	4	20.56
2	Pipariya	81.34	4	20.34
3	Surajgarha	81.54	4	20.39
4	Lakhisarai	75.63	4	18.91
5	Ramgarh Chowk	72.57	4	18.14
6	Halsi	73.29	4	18.32
	Total District	77.77	4	19.44

Source: Computed by the Research Scholar.

PTCA--%age TCA under cereals.



The above mentioned table describes the diversification of cropping in context to four cereal crops. The diversification index shows that higher the diversification index, lowers is the crop diversification in the area. It means there becomes an inverse proportion between crop diversification index and actual crop diversification. Here crop diversification means a number of various crops in a region; naturally it deviates from the index in opposite direction. In Lakhisarai district the diversification index is 19.44 while in the blocks of Lakhisarai, Ramgarh chowk

and Halsi blocks have lower diversification index as 18.91 and 18.14 and 18.32 respectively.

Thus, there is higher crop diversification in these two blocks than in the district as a whole. But in the blocks of Barahiya, Pipariya and Surajgarha, the index of diversification higher as 20.56, 20.34 and 20.39 respectively in comparison to that of the district. It indicates that there is lower crop diversification in these blocks in comparison to the district. The following table shows the crop diversification among six cash crops:

TABLE - 02 DIST.- LAKHISARAI: CROP DIVERSIFICATION (CASH CROPS), 2019-20

S.N.	Blocks	PTCA	No. of crops	Diversity Index
1	Barahiya	11.32	6	1.89
2	Pipariya	13.58	6	2.26

3	Surajgarha	13.63	6	2.27
4	Lakhisarai	15.95	6	2.66
5	Ramgarh Chowk	15.23	6	2.54
6	Halsi	14.95	6	2.49
	Total District	14.11	6	2.35

Source: Computed by the Research Scholar.

PTCA--%Age TCA under food cash crop.

The above mentioned table describes the diversity of total cropped area under cash cropping in context to six cash crops. Here crop diversification means a number of various crops in a region. Naturally, it deviates from the index in opposite direction. In Lakhisarai district, the diversification index is 2.35 while in the blocks of Surajgarha, Barahiya and Pipariya have lower diversification index as 2.27, 1.89 and 2.26 respectively.

Thus, there is higher crop diversification in these three blocks in comparison to the district as a whole. But in the blocks of Halsi, Ramgarh Chowk and Lakhisarai where the index of diversification higher as 2.49, 2.54 and 2.66 respectively in comparison to that of the district. It indicates that there is lower crop diversification in the blocks of Halsi, Ramgarh Chowk and Lakhisarai while it is higher in Surajgarha, Barahiya and Pipariya blocks in comparison to the district. The following table shows the crop diversification among pulse crops:

TABLE - 03 DIST.- LAKHISARAI : CROP DIVERSIFICATION AMONG PULSES, 2019-20

S.N.	Blocks	PTCA	No. of crops	Diversity Index
1	Barahiya	3.21	6	0.54
2	Pipariya	1.64	6	0.27
3	Surajgarha	1.24	6	0.21
4	Lakhisarai	4.52	6	0.75
5	Ramgarh Chowk	3.45	6	0.58
6	Halsi	3.39	6	0.57
	Total District	2.91	6	0.48

Source: Computed by the Research Scholar. PTCA--%Age TCA under Pulses

The above mentioned table describes the diversity of total cropped area under pulses in context to six pulses crops. Here crop diversification means a number of various crops in a region. Naturally, it deviates from the index in opposite direction. In Lakhisarai district, the diversification index is 0.48 while in the blocks of Pipariya and Surajgarha have lower diversification index as 0.27 and 0.21 respectively. Thus, there is higher crop diversification in these four blocks in comparison to the

district as a whole. But in the blocks of Lakhisarai, Ramgarh Chowk, Halsi and Barahiya where the index of diversification higher as 0.75, 0.58, 0.57 and 0.54 respectively in comparison to that of the district. It indicates that there is lower crop diversification in the blocks of Lakhisarai, Ramgarh Chowk, Halsi and Barahiya blocks in comparison to the district. The following table shows the crop diversification among millet crops:

TABLE - 04 DIST.- LAKHISARAI: CROP DIVERSIFICATION (MILLET CROPS, 2019-20)

S.N.	Blocks	PTCA	No. of crops	Diversity Index
1	Barahiya	0.65	6	0.11
2	Pipariya	0.47	6	0.08
3	Surajgarha	0.28	6	0.05
4	Lakhisarai	0.23	6	0.04
5	Ramgarh Chowk	1.42	6	0.24
6	Halsi	1.63	6	0.27

	Total District	0.78	6	0.13
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Source: Computed by the Research Scholar.

PTCA--%Age TCA under millets.

The above mentioned table describes the diversity of total cropped area under millets in context to six millet crops. In Lakhisarai district, the diversification index is 0.13 while in the blocks of Barahiya, Pipariya, Surajgarha and Lakhisarai have lower diversification index as 0.11, 0.08, 0.05 and 0.04 respectively. Thus, there is higher crop diversification in these four blocks in comparison to the district as a

whole. But in the blocks of Halsi and Ramgarh Chowk where the index of diversification higher as 0.27 and 0.24 respectively in comparison to that of the district. It indicates that there is lower crop diversification in the blocks of Halsi and Ramgarh Chowk blocks in comparison to the district. The following table shows the crop diversification among non-food crops:

TABLE - 05 DIST.- LAKHISARAI : CROP DIVERSIFICATION (NON-FOOD CROPS), 2019-20

S.N.	Blocks	PTCA	No. of Crops	Diversity Index
1	Barahiya	1.54	2	0.77
2	Pipariya	2.21	2	1.11
3	Surajgarga	1.85	2	0.93
4	Lakhisarai	0.96	2	0.48
5	Ramgarh Chowk	1.75	2	0.88
6	Halsi	1.85	2	0.93
	Total	1.69	2	0.85

Source: Computed by the Research Scholar.

PTCA--%Age TCA under non-food crops.

The above mentioned table describes the diversification of total cropped area under non-food crops in context to two non-food crops. Here crop diversification means a number of various crops in a region. Naturally, it deviates from the index in opposite direction. In Lakhisarai district, the diversification index is 0.85 while in the blocks of Barahiya and Lakhisarai have lower diversification index as 0.77 and 0.48 respectively. Thus, there is higher crop diversification

in these two blocks in comparison to the district as a whole. But in the blocks of Pipariya, Surajgarha, Halsi and Ramgarh Chowk blocks where the index of diversification higher as 1.11, 0.93, 0.93 and 0.88 respectively in comparison to that of the district. It indicates that there is lower crop diversification in these blocks in comparison to the district. The following table shows the crop diversification among other crops:

TABLE - 06 DIST.- LAKHISARAI: CROP DIVERSIFICATION (OTHER CROPS), 2019-20

S.N.	Blocks	PTCA	No of Crops	Diversity Index
1.	Barahiya	0.52	4	0.13
2.	Pipariya	0.15	4	0.04
3.	Surajgarga	0.86	4	0.22
4.	Lakhisarai	1.55	4	0.39
5.	Ramgarh Chowk	1.52	4	0.38
6.	Halsi	1.29	4	0.32
	Total	0.98	4	0.25

Source: Computed by the Research Scholar

PTCA--%age TCA under other crops.

The above mentioned table describes the diversity of total cropped area under other crops in context to four other crops. Here crop diversification means a number of various crops in a region. Naturally, it deviates from the

index in opposite direction. In Lakhisarai district, the diversification index is 0.25 while in the blocks of Barahiya, Pipariya, Surajgarha have lower diversification index as 0.13, 0.04 and 0.22 respectively.

CONCLUSION:

Thus, there is higher crop diversification in these three blocks in comparison to the district as a whole. But in the blocks of Lakhisarai, Ramgarh Chowk and Halsi where the index of diversification higher as 0.39, 0.38 and Halsi respectively in comparison to that of the district. It indicates that there is lower crop diversification in the blocks of Lakhisarai, Ramgarh Chowk and Halsi blocks in comparison to the district.

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