

# THE INTERNATIONAL JOURNAL OF HUMANITIES & SOCIAL STUDIES

## Levels of Agricultural Development in Uttar Pradesh

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### **Abstract:**

*In this paper, an analysis of regional disparities of various attributes of agricultural development such as quality of agricultural land, techno-biological inputs in agriculture, agricultural institutions and services and agricultural production have been attempted. The entire research work is based on secondary sources of data, collected from Census of India publications 2001. The district has been taken as a smallest unit of the study. Levels of agricultural development for each district were computed by applying Composite Z-score technique. Results of the analysis mark out sufficient variation in districts/regions of the state. It is observed that Uttar Pradesh, has though achieved considerable levels of agricultural development, yet it is inflicted by striking regional disparities in agricultural development. Therefore, it is essential to expose vertical as well as horizontal disparities through an in depth regional analysis so that overall levels of agricultural development may be obtained.*

### **1. Introduction**

Regional disparities have become one of the most important glaring and growing problems not only in developing countries, but also in the most advanced countries of the world (Sharma & Kumar, 1993). It is true with the developing country like India, it has greater regional disparities in the sectors of agricultural, economy, industry, education, social, etc. Uttar Pradesh state has essentially an agrarian economy and about sixty-three percent of district's total population depends on agriculture.

Agricultural development denotes the quality of the agricultural system of a region; it is a multidimensional concept which mainly includes development in a real strength of cropped land, improvement in farm practices/system, improved farm implements, irrigation system and irrigated area, high yielding improved varieties of seeds, chemical fertilizers, insecticides and pesticides, intensity of cropping and specialization and commercialization of agriculture (Mohammed, 1980).

The changing agro-economic scenario drew attention of research workers on diffusion of technological development in agriculture. In India majority of its population depend upon agriculture. So a vast rural mass tries to earn their livelihood from agricultural land. With fast increasing pressure of population on agricultural land, old methods and techniques of production cannot cope with growing demand. As a result, new technologies and commercial crops are adopted to develop agro-economy. For these reason emphases on the diffusion of agricultural innovation are stressed.

#### *1.1. Objective*

The main objective of the present work is to analyse the regional disparities in the levels of agricultural development in Uttar Pradesh.

#### *1.2. Study Area*

The state of Uttar Pradesh forms the north-western part of the country and lies in between 23°52' and 29°45' N latitudes, and 77°4' and 84°38' E longitudes with a total area of 240,928 sq. km. It is the fifth largest (in terms of area) and most populous state of the country. Forming a part of the Ganga Plain, it contributes a major share to agricultural production in India. The state has a



Figure 1

tropical monsoon climate. The average temperature varies in plain areas from 3-4° C in the month of January to 43-45°C in the months of May and June. Average rainfall in parts of the state ranges from 100 to 200 cm in the east and 60 to 100 cm in the west. All the principal rivers, except River Gomti, of the state namely, the Ganga, the Yamuna, the Ghaghara, and the Ramganga rise in the Himalayas and provide canal water to three-fourth of the cultivated area.

### 1.3. Data Base and Methodology

The entire research work is based on secondary sources of data, collected from Census of India, 2001. The district has been taken as a smallest unit of the study. In the present analysis, a set of forty three indicators have been taken into account to determine the levels of agricultural development in Uttar Pradesh at one hand and quality of agricultural land, techno-biological inputs in agriculture, agricultural services and institutions and agricultural production on the other hand in the seventy districts of Uttar Pradesh. In the first step, the raw data for each variable which determines the areal variations of quality of agricultural land, techno-biological inputs in agriculture, agricultural services and institutions and agricultural production and their levels of agricultural development have been computed into standard score. It is generally known as Z value or Z-score. The score quantify the departure of individual observations, expressed in a comparable form. This means it becomes a linear transformation of the original data (Smith, 1973: 85). It may be expressed as:

$$Z_{ij} = \frac{X_{ij} - \bar{X}_i}{\sigma_i}$$

Where:  $Z_{ij}$  = Standardised value of the variable  $i$  in district  $j$ ,  
 $X_{ij}$  = Actual value of variable  $i$  in district  $j$ ,  
 $\bar{X}_i$  = Mean value of variable  $i$  in all districts,  
 $\sigma_i$  = Standard deviation of variable  $i$  in all districts.

In the second step, the Z-scores of all variables have been added district wise and the average has taken out for these variables which may be called as composite score (CS) for each district and may be algebraically expressed as:

$$CS = \frac{\sum Z_{ij}}{N}$$

Where: CS stands composite score,  
 $\sum Z_{ij}$  indicates Z-scores of all variables  $i$  in district  $j$ ,  
 $N$  refers to the number of variables.

S.No.	Attributes	Indicators	
A	Quality of Agricultural Land	1.	Percentage of Cultivated Area to Total Reported Area
		2.	Cropping Intensity
		3.	Percentage of Net Irrigated Area to Net Cultivated Area
		4.	Intensity of Irrigation
		5.	Percentage of Underground Water Utilized in Irrigation
		6.	Average Size of Operational Holdings
		7.	Cultivated Area Per Agricultural Worker
		8.	Percentage of Area Under Commercial Crops to Gross Sown Area
		9.	Percentage of Uncultivated and Culturable Waste land to Total Reported Area
		10.	Percentage of Fallow Land to Total Reported Area
		11.	Percentage of Area Affected by Floods and Rains to Total Reported Area.
B	Techno Biological Inputs in Agriculture	12.	Tractors Per Thousand Hectare of Cultivated Area
		13.	Disc – Herrows Per Thousand Hectare of Cultivated Area
		14.	Seed Cum Fertilizer Drills Per Thousand Hectares of Cultivated Area.
		15.	Diesel Pump sets Per Thousand Hectares of Cultivated Area.
		16.	Electric Pump sets Per Thousand Hectare of Cultivated Area
		17.	Consumption of Fertilizers Per Hectare of Cultivated Area
		18.	Consumption of Pesticides per Hectare of Gross Sown Area
C	Agricultural Services and Institutions	19.	Cultivators As Percentage to Total Agricultural Workers
		20.	Percentage of Workers in Agricultural Allies Activities to Total Workers in Primary Sector
		21.	Crop Loan from Commercial Bank Per Thousand Hectares of Cultivated Area
		22.	Crop Loan From Co-operative Banks Per Thousand Hectare of Cultivated Area.
		23.	Percentage of Agricultural Land Holders Having Kisan Credit Cards
		24.	Rural Development Banks Per Lac Hectare of Cultivated Area
		25.	Primary Agricultural Co-operative Societies Per Lac Hectare of Cultivated Area
		26.	Joint Agricultural Co-operative Societies Per Lac Hectare of Cultivated Area
		27.	Mandi Samitee Per Lac Hectare of Cultivated Area
		28.	Total Arrival of Agricultural Produce Per Lac Hectare of Cultivated Area
		29.	Rural Market Per Lac Hectare of Cultivated Area
		30.	Cold Storage Per Lac Hectare of Cultivated Area.
		31.	Animal Markets Per Lac Hectare of Cultivated Area.
		32.	Fertilizer Sellers Per Lac Hectare off Cultivated Area.
D	Agricultural Production	33.	Per Hectare Yield of Kharif Crops is Quintals
		34.	Per Hectare Yield Rabi Crops in Quintals
		35.	Per Hectare Yield of Food Grains in Quintals.
		36.	Per Hectare Yield of Cereals in Quintals.
		37.	Per Hectare Yield of Pulses in Quintals
		38.	Per Hectare Yield of Oilseeds in Quintals
		39.	Per Hectare Yield of Sugarcane in Quintals.
		40.	Pre Agricultural Worker Production of Food grains.
		41.	Per Cultivator Production of Main Fruits.
		42.	Value of Agricultural Produce Per Hectare of Gross Area Sown (At Current Price)
		43.	Per Hectare Value of Agricultural Produce (At Current Price)

Table 1

List of the Selected Indicators of Levels of Agricultural Development in Uttar Pradesh, 2001

The positive values relating to the districts' Z-score explain high level, while, negative values indicate the low level of quality of agricultural land, techno-biological inputs in agriculture, agricultural services and institutions and agricultural production and agricultural development in the study area.

Besides, advanced statistical techniques, GIS-Arc view programme (Version 3.2a) has been applied to show the spatial variations of quality of agricultural land, techno-biological inputs in agriculture, agricultural services and institutions and agricultural production and agricultural development among the 70 district of the Uttar Pradesh through maps.

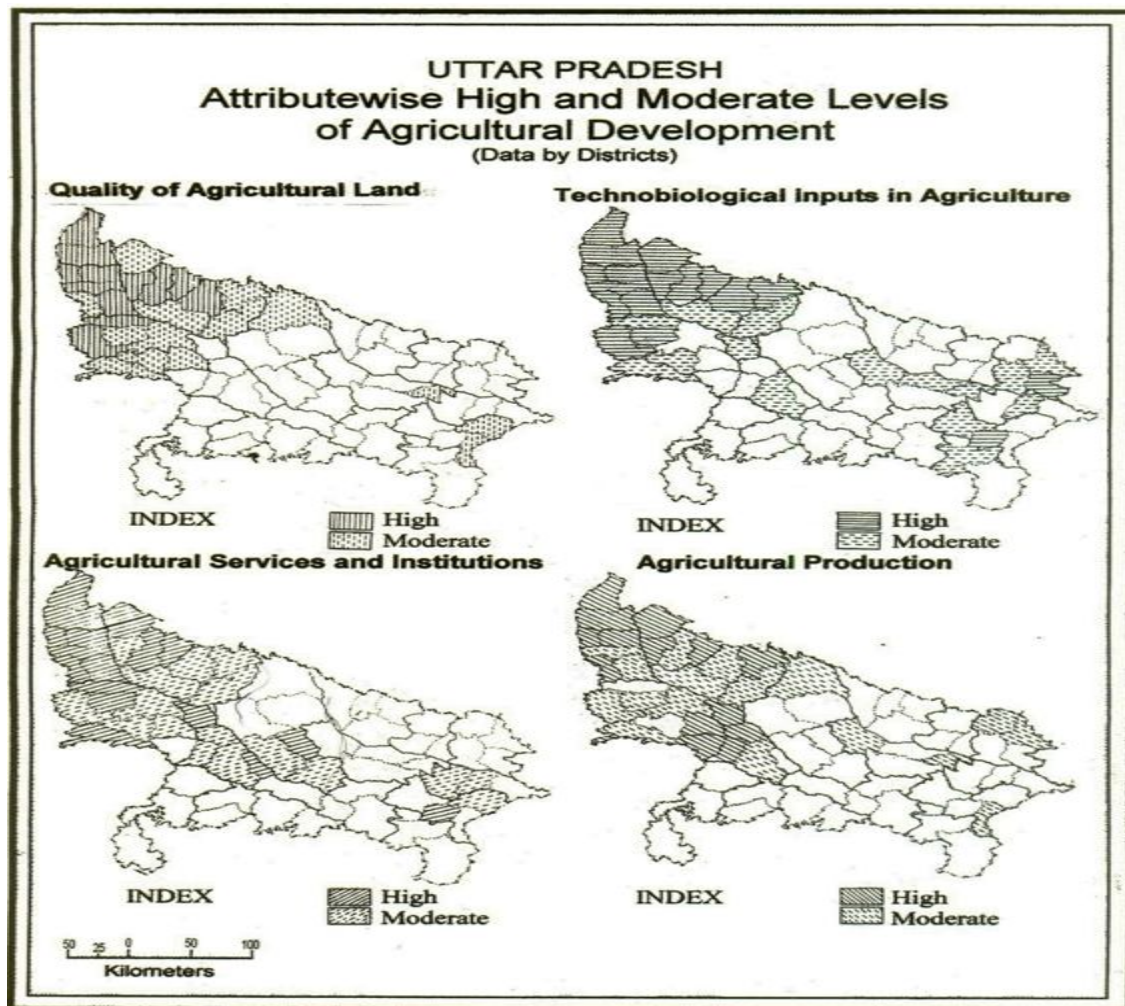
**2. Result and Discussion**

*2.1. Measurement of Overall Disparities of Agricultural Development*

Before analyzing the spatial pattern of intra-regional disparities in agricultural development, it is

S. No.	Attributes	Highest (Z Scores)	District	Lowest (Z Scores)	District	Range	Disparity Index
1.	Quality of Agricultural Land	1.02	Meerut	-0.99	Balrampur	2.01	2.03
2.	Technobiological Inputs in Agriculture	1.50	Moradabad	-0.85	Kanpur (Nagar)	2.35	2.76
3.	Agricultural Services and Institutions	1.11	Lucknow	-0.98	Banda	2.09	2.13
4.	Agricultural Production	1.12	Sharanpur	-1.05	Mahoba	2.95	2.81
<b>Over All Agricultural Development</b>		<b>1.12</b>	<b>Sharanpur</b>	<b>-0.80</b>	<b>Chitrakoot</b>	<b>1.92</b>	<b>2.40</b>

*Table 2  
Uttar Pradesh  
Attribute Wise Range and Index of Disparities in Agricultural Development*



*Figure 2*

essential to discern vertical disparities among various attributes of agricultural development. For this purpose attribute wise the highest and the lowest standard score values were put into a table to find out the range, ratio and finally the disparity index (Table 2). The Table 2 shows that the overall district wise disparity index of agricultural development from bottom to top is 2.40 and it is highest in the case of agricultural production (2.81) which is followed by techno-biological inputs in agriculture (2.76) and agricultural services and institutions (2.13). However, the quality of agricultural land, which is the most dominant aspect of agricultural development in the state has the least disparity index i.e. 2.03. It is attributed to the ubiquitous fertile Gangatic Plain comprising with the study area. In this table attribute wise range of standard score is also calculated which follows the same patterns as in the case of disparity index. Here agricultural production has the highest index value (2.95), followed by techno-biological inputs in agriculture (2.35) and agricultural services and institutions (2.09).

It is inferred that disparity in techno-biological inputs has given considerable impetus to disparities in agricultural production. This is the reason that both of these attributes are having higher disparity index values. The overall disparity index value is 2.40, which shows that region is having considerable disparities in agricultural development. As it indicates that the disparities are 2.4 times greater than the optimum balanced level of agricultural development. Further more, if district wise highest and lowest attribute wise standard scores are considered, it is observed that all the districts of highest category are concentrated in western U.P. except Lucknow which scored highest score value for agricultural services and institutions being the capital district. Contrarily, all the districts belonging to lowest category are located in eastern and southern part of the study region.

## 2.2. Structure of Vertical Disparities in Agricultural Development

Though the compound standard score values of various attributes lead towards the overall levels of agricultural development, yet even a very high compound score of a district may conceal vertical disparities of various attributes of agricultural development. Therefore, to discern the vertical structure of disparities, spatial analysis of convergence and divergence of various attributes of agricultural development is performed. It reveals that despite a considerable degree of correspondence in spatial pattern of quality of agricultural land, technobiological inputs, agricultural institutions and services and agricultural production, striking vertical disparities are present in the state (Fig. 3). This phenomenon is divided into four categories, one, homogeneous structure-nomenclatured for the districts where all the attributes of development have recorded similar levels, two, relatively homogeneous are those areas where three attributes are having the same levels of development; third, relatively heterogeneous are those areas where two pairs of attributes of development have similar levels of development and finally heterogeneous are those areas, where only two attributes have the same level of development or none attribute have the same level of development.

The spatial patterns of convergence and divergence show that the Uttar Pradesh has sixteen districts homogeneous in structure of agricultural development. It is a noteworthy feature

SI	Structure	Levels of Agricultural Development	Districts
1	Homogenous	High	Saharanpur, Muzaffarnagar, Meerut, Baghpat, Rampur
		Moderate	Badaun, Shahjahanpur
		Low	-----
		Very Low	Bahraich, Shrawasti, Balrampur, Lalitpur, Hamirpur, Fatehpur, Banda, Chitrakoot, Sonbhadra
2	Relative Homogenous	High	Ghaziabad, Bulandshahr, Bijnor, Moradabad, J. P. Nagar, Agra
		Moderate	G.B. Nagar, Etah, Firozabad, Deoria
		Low	Hardoi, Sitapur, Kanpur (Dehat), Faizabad, Maharajganj, Gorakhpur, Ambedkar Nagar, Ballia, Jaunpur, Allahabad
		Very Low	Mahoba, Gonda, S.K. Nagar, Azamgarh, Pratapgarh, Kaushambi
3	Relative Hetrogenous	High	Hathras, Mathura, Braielly, Pilibhit
		Moderate	Etawah, Barabanki, Chandauli, Varanasi
		Low	Sultanpur, Mau, Ghazipur, S.R.Nagar
		Very Low	Jalaun, Jhansi, Basti
4	Hetrogenous	High	-----
		Moderate	Aligarh, Farrukhabad, Kannauj, Auriya, Mainpuri, Lucknow
		Low	Kheri, Kanpur (Nagar), Unnao, Raibareli, Kushinagar, Mirzapur
		Very Low	Siddharthanagar

Table 3

Uttar Pradesh

Relationship between Structure and Levels of Agricultural Development

that Saharanpur, Muzaffarnagar, Meerut, Baghpat, and Rampur districts which have scored the highest compound score values for overall levels of agricultural development, scored the highest levels in all the four aspects of agricultural development. On the other hand Trans Ghagra plain west except of Gonda, Lalitpur, Hamirpur, Banda, Chitrakoot districts of Bundelkhand region adjoining district of lower Ganga-Yamuna Doab i.e. only Fatehpur and Sonbhadra of Vindhyachal region have scored the lowest level of

agricultural development in all the attributes. Between these two extremes, all the districts are forming various types of structure of agricultural development. As much as 26 districts out of a total of 70 districts of the state have recorded relatively homogeneous structure. Besides, fifteen districts are confined to relatively heterogeneous category and thirteen districts belong to heterogeneous category (Table 3).

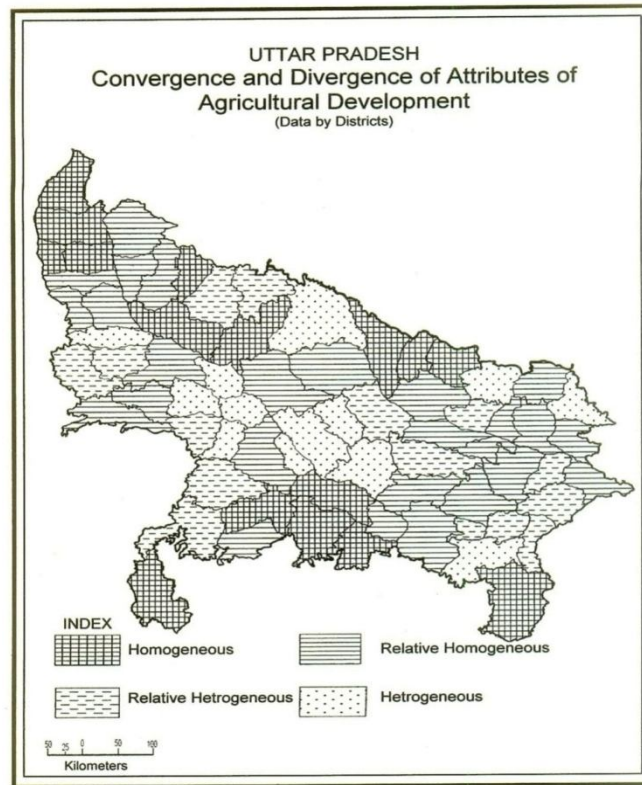


Figure 3

It is also noticed that districts with moderate and low levels of agricultural development are mostly confined to relatively homogeneous and relatively heterogeneous categories. It is also inferred that convergence is more a common phenomenon especially, in western Uttar Pradesh which has obtained a high level of agricultural development. Besides, Badaun and Shahjahanpur districts of Rohilkhand region have also recorded high degree of convergence though for moderate levels of agricultural development in all the attributes. Contrarily, the areas marked with striking heterogeneity scattered in the form of small patches throughout the central, western and eastern parts of the state.

### 2.3. Aspectwise Concentration of Levels of Agricultural Development

The Figure 4 shows high and moderate levels of each dimension of agricultural development. It is noticed that even the high and moderate levels of each dimension vary greatly. Although high levels of all four attributes of agricultural development confined to the northwestern part of the state yet they do not overlap each other exactly. For instance, high level of quality of agricultural land enclosed to the districts extending over upper Ganga-Yamuna Doab and most of the districts of Rohilkhand region fringing the Tarai belt. These districts are J.P.Nagar, Moradabad, Rampur and Bareilly. Besides, Mathura district of Middle Ganga-Yamuna Doab also comes to this category.



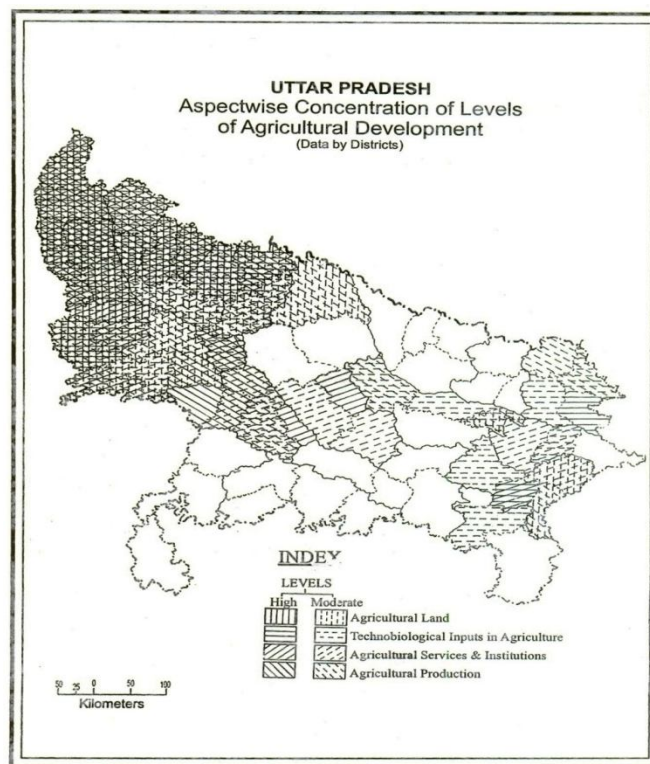


Figure 4

Techno-biological inputs in agriculture are the second attribute of agricultural development. It plays an important role in agricultural development as it helps in increasing the production of crops. The farmers having good quality of land occupied rich resources for assembling technical as well as biological inputs for practicing in their fields, therefore both the attributes are positively correlated with each other. There are, of course, some similarities in spatial patterns of high and moderate levels of these two attributes of agricultural development. All the districts of Upper Ganga-Yamuna Doab and most of Rohilkhand region except of Badaun and Shahjahanpur have recorded high level of techno-biological inputs in agriculture. Middle Ganga-Yamuna Doab except in Mathura and Hathras and some districts of Purvanchal also comes to this category. The districts of moderate development of this attribute are scattered in the adjoining areas of the above mentioned districts.

Similarly some sort of identities is also observed in the case of levels of development of techno-biological inputs in agriculture and agricultural services and institutions. Many characteristics of techno-biological inputs are the outcome of availability of agricultural services and institutions. In the same way distributions of agricultural services and institutions also depends on the demand of the people. Hence, almost identical spatial patterns of these two attributes are seen in most of the districts of Upper and Middle Ganga-Yamuna Doab, and Rohilkhand region. Some patches also observed in eastern Uttar Pradesh in mixed form.

Fourth but the most important feature of agricultural development is agricultural production. It is the chief measure for the levels of agricultural development. In the present study the spatial patterns of high and moderate levels of agricultural production are mainly found in a contiguous belt of Ganga-Yamuna Doab and Rohilkhand Region fringing to the Terai tract which acquired fertile land, rich resources for techno-biological inputs and good sources for agricultural services and institutions.

Therefore, the spatial patterns of high and moderate levels of various dimensions of agricultural development depict that these are coterminous and highly correlated in nature. Their concentration in the north western part of the state indicates that some gravitational forces are attracting them to concentrate but their divergence in spatial patterns depicts that all the incidents, activities and processes taking place in the region can generate each dimension of agricultural development equally.

#### 2.4. Overall Levels of Agricultural Development

The overall intra regional disparities are measured by aggregating composite standard score values of various attributes of agricultural development in all the seventy districts of the state (Table 4). Thus mean values so received are grouped into four categories, two positive and two negative and Fig. 5 is prepared to find out the spatial patterns of agricultural development. It is observed that Saharanpur is the most developed district of the state in case of agriculture as it has obtained the highest mean standard score values (+1.12) which is followed by Muzaffarnagar (+0.98), Meerut (+0.89), Rampur (+ 0.87) and Baghpat (+ 0.71). All these five districts have recorded high level of development for all the four attributes of agricultural development. In addition ten more districts also fall in this category, namely Ghaziabad, Bulandshahar, Mathura, Hathras and Agra of Ganga-Yamuna Doab and six districts of Rohilkhand region except Badaun and Shahjahanpur. Thus a contiguous belt of high level of agricultural development exists in the northwestern part of the state. It is largely extended over Upper Ganga-Yamuna Doab and Rohilkhand regions. The areas of moderate level of agricultural development are fringing the areas of high level of development towards eastern side. In all there are 17 districts

falling in this category. This type of development is mainly observed in Middle Ganga-Yamuna Doab and adjoining parts of this tract. Out of seventeen districts of this category, seven districts of upper Ganga-Yamuna Doab fall in this category. These are Etah, Mainpuri, Firozabad, Farrukhabad, Kannauj Etawah and Auriya. Other districts of this category are Badaun and Shahjahanpur of Rohilkhand region, Lucknow and Barabanki of Avadh plain. Some scattered patches may be seen in Purvachal.

S. No.	DISTRICT	Quality of Agricultural Land	Techno-Biological Inputs in Agriculture	Agricultural Services and Institutions	Agricultural Production	Agricultural Development
1.	Sharanpur	0.83	1.04	0.73	1.90	1.12
2.	Muzaffarnagar	0.90	1.18	0.49	1.35	0.98
3.	Meerut	1.02	0.74	0.88	0.93	0.89
4.	Rampur	0.93	0.93	0.94	0.66	0.87
5.	Sonbhadra	-0.71	-0.72	-0.71	-0.97	0.78
6.	Moradabad	0.80	1.50	0.39	0.35	0.76
7.	Baghpat	0.99	0.53	0.68	0.67	0.71
8.	Jyotibaphule Nagar	0.98	0.98	0.26	0.53	0.69
9.	Pilibhit	0.54	0.81	0.30	1.06	0.68
10.	Bijnor	0.54	0.30	0.49	1.38	0.68
11.	Ghaziabad	0.58	0.66	0.84	0.32	0.60
12.	Bulandshahr	0.83	0.48	0.62	0.36	0.57
13.	Agra	0.52	0.23	0.80	0.24	0.45
14.	Bareilly	0.55	0.16	0.33	0.30	0.45
15.	Mathura	0.65	0.79	0.26	0.07	0.44
16.	Hathras	0.47	0.30	0.67	0.27	0.43
17.	Aligarh	0.88	0.14	0.56	-0.01	0.39
18.	Gautam Budh Nagar	0.24	0.35	0.37	0.57	0.38
19.	Farrukhabad	-0.04	0.16	0.43	0.53	0.27
20.	Shahjahanpur	0.49	0.0	0.11	0.43	0.26
21.	Badaun	0.37	0.03	0.22	0.32	0.24
22.	Kannauj	-0.09	-0.04	0.30	0.70	0.22
23.	Auraiya	-0.07	-0.09	0.04	0.97	0.21
24.	Ambedkarnagar	0.22	0.23	-0.21	0.43	0.17
25.	Firzabad	0.45	0.02	0.24	-0.12	0.15
26.	Varansi	-0.19	0.38	0.49	-0.08	0.15
27.	Mainpuri	0.03	-0.22	0.16	0.51	0.12
28.	Etah	0.21	-0.01	0.18	0.0	0.10
29.	Deoria	-0.02	0.46	-0.07	-0.01	0.09
30.	Chandulli	0.02	-0.14	-0.02	0.39	0.06
31.	Barabanki	-0.08	0.15	-0.11	0.18	0.04
32.	Etawah	-0.19	-0.11	-0.09	0.54	0.04
33.	Lucknow	-0.39	-0.19	1.11	-0.54	0.0
34.	Kanpur (Dehat)	-0.41	0.09	0.13	0.15	-0.01
35.	Mau	-0.17	0.16	0.10	-0.21	-0.03
36.	Kheri	0.28	-0.55	-0.27	0.36	-0.04
37.	Maharajganj	-0.09	-0.02	-0.4	0.32	-0.05
38.	Ghazipur	0.07	-0.18	0.0	-0.08	-0.05
39.	Faizabad	-0.13	0.19	-0.36	-0.03	-0.08
40.	Kushinagar	-0.24	0.01	-0.43	0.32	-0.08
41.	Azamgarh	-0.22	-0.03	0.10	-0.24	-0.10
42.	Mirzapur	-0.44	0.16	-0.19	-0.10	-0.14
43.	Gorakhpur	-0.28	0.0	-0.15	-0.23	-0.17
44.	Jaunpur	-0.26	-0.07	-0.21	-0.28	-0.17
45.	Ailahabad	-0.16	-0.12	-0.24	-0.37	-0.22
46.	Santravidas Nagar	-0.30	-0.16	-0.02	-0.38	-0.22
47.	Kanpur (Nagar)	-0.52	-0.85	0.62	-0.16	-0.23
48.	Raibareli	-0.43	-0.39	0.22	-0.34	-0.23
49.	Sitapur	-0.07	-0.52	-0.16	-0.32	-0.27



50.	Ballia	-0.17	-0.54	-0.35	-0.24	-0.32
51.	Hardoi	-0.12	-0.66	-0.27	-0.25	-0.32
52.	Unnao	-0.62	-0.01	0.16	-0.79	-0.32
53.	Sultanpur	-0.31	-0.47	-0.38	-0.17	-0.33
54.	Siddharthnagar	-0.19	-0.38	-0.5	-0.36	-0.36
55.	Gonda	-0.33	-0.45	-0.37	-0.39	-0.38
56.	Basti	-0.58	-0.16	-0.54	-0.34	-0.41
57.	Fatehpur	-0.30	-0.54	-0.52	-0.35	-0.43
58.	Santkabr Nagar	-0.45	-0.49	-0.65	-0.19	-0.44
59.	Kaushambi	-0.52	-0.16	-0.55	-0.57	-0.45
60.	Jalaun	-0.60	-0.16	-0.29	-0.87	-0.48
61.	Paratapgarh	-0.57	-58.0	-0.22	-0.60	-0.49
62.	Shravasti	-0.38	-0.45	-0.49	-0.69	-0.50
63.	Jhansi	-0.26	-0.37	-0.42	-0.97	-0.51
64.	Bahraich	-0.43	-0.53	-0.51	-0.61	-0.52
65.	Lalitpur	-0.56	-0.47	-0.56	-0.84	-0.61
66.	Hamirpur	-0.03	-0.56	-0.84	-1.03	-0.62
67.	Balrampur	-0.99	-0.66	-0.48	-0.47	-0.65
68.	Banda	-0.28	-0.64	-0.98	-0.75	-0.66
69.	Mahoba	-0.31	-0.47	-0.87	-1.05	-0.67
70.	Chitrakoot	-0.89	-0.54	-0.83	-0.93	-0.80

Table 4

## Uttar Pradesh

*District Wise Aggregate and Overall Levels of Agricultural Development  
(Based on Composites and Compound Standard Score Values)*

The low levels of agricultural development are observed in the eastern and central part of the state in continuity of the areas of moderate levels of development. About 20 districts fall in this category. Out of these ten fall in Purvanchal, five in Avadh plain, three in Vindhyachal Region and only two in lower Ganga-Yamuna Doab. None of the districts of Rohilkhand, Upper and Middle Ganga-Yamuna Doab and Bundelkhand Region comes under this category. In this way two dominant areas of low development are observed. One continuous belt of districts has been seen in the central part, which is sandwiched between the areas of very low level of development. Another area is extending in the eastern end of Uttar-Pradesh.

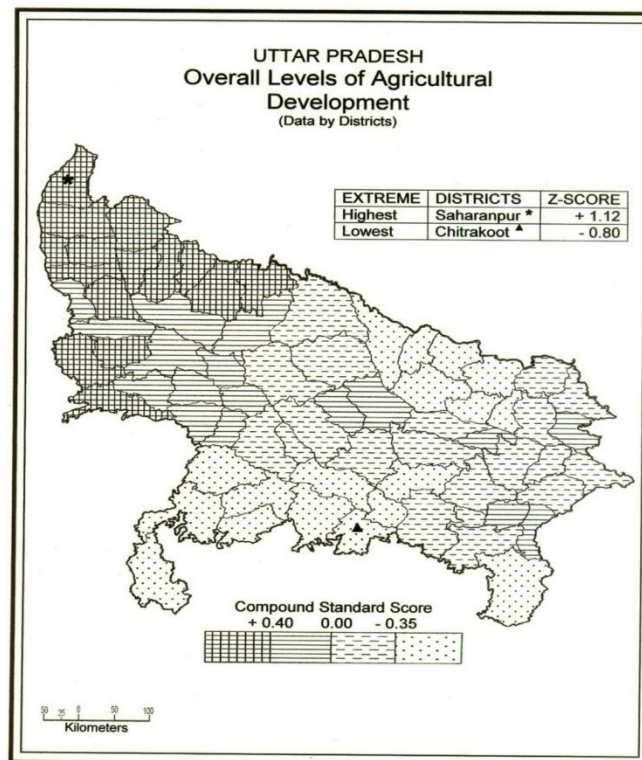


Figure 5

Out of a total of seventy districts of the region, eighteen districts have recorded a very low level of development. Here in the state roughly two main areas of this category can be seen. One of them is situated in the extreme north and other is extreme south of the central belt of low level of agricultural development. Entire Bundelkhand region, Fatehpur, Kaushambi of lower Ganga-Yamuna Doab, Balrampur, Gonda, Basti, Siddharthnagar, Sant Kabir Nagar and Pratapgarh of Purvanchal and adjoining districts of Avadh Plain Bahraich and Sharavasti fall in this category. Except these Sonbhadra of Vindhyachal Region also comes to this category. Chitrakoot district of Bendulkhad Region has recorded the lowest level of agricultural development with a standard score value of – 0.80.

### 3. Conclusion

It is observed that very good striking results were obtained from the spatial analysis of horizontal as well as vertical levels of agricultural development in Uttar Pradesh. All dimensions of agricultural development has wider inter-relationship and are the outcome of synthetic fabric of physio-cultural-economic conditions prevailing in the state.

The success of present research work may be justified from the spatial patterns of overall levels of agricultural development. In the study region, compact and contiguous blocks of districts with similar levels of development were observed with a gradual declining from west to east. The entire western and northwestern part of the region has recorded high levels of development. The spatial patterns slightly differ when aspect wise levels of development for high and moderate values were recorded. Although, general trend of all aspect has remained same i.e. development peak towards west yet it is more contiguous in the case of techno-biological inputs and least for agricultural services and institutions. The good quality of land has demanded higher techno-biological inputs while distribution of agricultural services and institutions has urban bias. Overall high level of agricultural production has good association with commercial crops as it is mostly confined to sugarcane and potato growing areas. Thus, the gradual declining gradients of levels of agricultural development confirm the “trickle down effect model.”

The levels of agricultural development are also having a positive co-relationship with convergence and divergence of levels of development. It is observed that homogeneity is more striking in the case of either high or very low levels of agricultural development. Contrarily heterogeneity is associated with intermittent levels of development. It confirms Gunnar Myrdal's model that deviations in aspect of development accentuated when the desired level of development accentuated when desired level of development is achieved. Thus, the hypotheses formulated in the beginning are found quite valid from the results of analysis.

### 4. References

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