Int. J. Agricult. Stat. Sci. Vol. 16, Supplement 1, pp. 1033-1040, 2020 www.connectjournals.com/ijass
DocID: https://connectjournals.com/03899.2020.16.1033 ISSN : 0973-1903, e-ISSN : 0976-3392

ORIGINAL ARTICLE

AGRICULTURAL DEVELOPMENT IN UTTAR PRADESH: A STATISTICAL EVALUATION

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Abstract: Uttar Pradesh is the agricultural powerhouse of India. Being predominantly agrarian, the economics of Uttar Pradesh is enormously influenced by agriculture which is the means of sustainment of almost 65% of its total population. Inevitably, the economic growth and development of the state is heavily dependent on the development of agriculture sector in UP. It has been noticed that despite putting in similar efforts over the years, the pace of development in agricultural sector varies significantly in various parts of the state. This is, what has impelled us to carry out work to evaluate spatiotemporal disparities in agricultural development in the state of Uttar Pradesh. Using composite index of development, all the districts of UP are ranked categorized into various levels of agricultural development for three different time points.The work also has been done to identify model districts and potential targets for all the least and less developed districts of the state.

***Key words*:** Regional agricultural disparities, Development indicators, Potential targets.

Cite this article

Madhulika Dube, Vishwajeet Singh and S.K. Yadav (2020). Agricultural Development in Uttar Pradesh: A Statistical Evaluation. *International Journal of Agricultural and Statistical Sciences.* DocID: https://connectjournals.com/03899.2020.16.1033

1. Introduction

Balanced regional development is important for the harmonious and concurrent growth of a state. It does not imply equal development of all regions of a state. Rather it indicates utilization of development potential of all areas as per its capacity so that the benefit of overall economic growth is reaped by the inhabitants of all the regions of a state. As per census 2011, 77.73% of the population of UP resides in rural areas and the agriculture is the foremost means of livelihood. Blessedly located in the Gangetic plains, Uttar Pradesh grows a large variety of crops owing to its wide agroclimatic variability. Since independence agricultural development of the state has always remained a cherished goal by the government and policy makers. Though the Green Revolution helped to drastically improve agricultural sector, disparities in agricultural development is the outcome of lopsided regional development owing to several factors related to the demographic, historic, economic, socio-cultural and environmental characteristics. Undoubtedly, the emphasis of government should be an answering reduction in regional disparity in the pace of development in every district of the state. This is, what has impelled us to carry out work to evaluate spatiotemporal disparities in agricultural development in the state of Uttar Pradesh.

Estimation of the regional disparities of any state is a complex process and cannot be easily understood by a single indicator. In view of this, Iyenger and Sudershan (1982) proposed a methodology to compute a composite index for measuring the spatial differentials in the level of development. Later, Narain *et al.* (1991) developed a methodology for the estimation of Composite Development Index. Since then, a number of studies have been conducted to estimate the level of development in different sectors of economy for different states taking districts as a unit of analysis for some particular time period. Using forty-seven indicators in all the districts of Haryana state Dube *et al.* (2012) quantified the developmental efforts for agricultural, industrial, infrastructural and socio-economic sectors. Nizamuddin (2014) quantified the

***Author for correspondence** **Received** January 02, 2020 **Revised** June 07, 2020 **Accepted** July 29, 2020

levels of development using optimum combination of twenty-two socio-economic and environmental sustainability indicators for different states of India. Singh and Mehala (2016) estimated the level of agricultural development of seventeen different states of India with the help of composite index on optimum combination of eight agricultural development indicators.Using principal component and canonical correlation analysis. Hooda *et al.* (2017) attempted to measure the strength of relationship between Socio-economic and Agricultural sectors in Haryana.

Owing to the enormous size of the state, disproportionate development in various districts of the state of Uttar Pradesh are expected to exist in agricultural development. In order to carry out work in this direction, the district wise data on twenty-two agricultural indicators for three different time points *viz,* 2000-01, 2010-11 & 2017-18 have been obtained and composite indices of development have been computed. This allows to rank various districts of the state of Uttar Pradesh. Attempts have also been made to categorize the districts into various categories according to their level of development. The most important feature of the present study is that we have determined the model district for all least and less developed districts of latest time period so that the suitable attention be given by the planners and policy makers to these districts keeping in mind the model districts allocated to them. For the fast pace of agricultural development in less and least developed districts the study also shed light on the allocation of potential targets which is consummate for future planning.

2. Methodology

Given the large size of the state and its diverse geography, topography and climate the development level of Uttar Pradesh is well understood and well interpreted when studied at the district level. In order to compute and analyze disparities in agricultural sector, the data on all the seventy-five districts of Uttar Pradesh on twenty two indicators depicting the progress of development in agricultural sector have been utilized for three different points of time *i.e* Period-I (2000-01), Period-II (2010-011) and Period-III (2017-18). The data on the following twenty-two agricultural development indicators have been taken into account for the estimation of composite indices in case of district wise analysis for the state of Uttar Pradesh.

(i) Percentage of gross irrigated area to gross area sown

(ii) Percentage of net area sown to cultivated land

(iii) Percentage of cultivable land to total reporting area

(iv) Productivity of total food grains (Quintals / Hectare)

(v) Percentage of net irrigated area by canal to total net irrigated area

(vi) Percentage of net irrigated area by government tube wells to total net irrigated area

(vii) Cropping intensity

(viii) Distribution of fertilizers per hectare of gross area sown (Nitrogen in Kg.)

(ix) Number of regulated mandis per lakh hectare of net area sown

(x) Availability of gross area sown per Tractor (Hectare)

(xi) Productivity of Wheat (Quintals /Hectare)

(xii) Productivity of Rice (Quintals /Hectare)

(xiii) Productivity of Oilseeds (Quintals /Hectare)

(xiv) Productivity of Sugarcane (Quintals /Hectare)

(xv) Per capita production of food grains (Kg)

(xvi) Per capita production of Pulses (Kg)

(xvii) Percentage of area under commercial crops to gross sown area

(xviii) Production of fish in departmental area of Fisheries (Kg)

(xix) Per Capita Milk availability (Kg)

(xx) Percentage share of area under *kharif* crops

(xxi) Percentage share of area under *rabi* crops

(xxii) Distribution of Phosphate per hectare of gross area sown (Kg)

2.1 Estimation of composite index of development

The variables which has been used for the analysis are recorded from various population and are measured in different units of measurement. Therefore, the variables under consideration have been first standardized and used to get a composite index of agricultural development. As some indicators have a

Table 1: Composite indices (C.I.) & normalized indices (N.I.) of development of various districts

Districts	Periods								
	Period-I (2000-01)			Period-II (2010-11)			Period-III (2017-18)		
	C.I.	N. I.	Rank	C.I.	N. I.	Rank	C.I.	N. I.	Rank
Agra	0.7505	0.6989	32	0.8472	0.6395	28	0.8468	0.7543	21
Amroha	0.7494	0.7010	31	0.8696	0.5787	42	0.8373	0.7868	15
Aligarh	0.6597	0.8741	3	0.8543	0.6203	34	0.8504	0.7421	23
Auraiya	0.7638	0.6733	34	0.8055	0.7529	12	0.8329	0.8018	12
Allahabad	0.7858	0.6308	39	0.8358	0.6706	25	0.9111	0.5358	53
Ayodhya	0.7324	0.7338	22	0.8242	0.7021	18	0.8812	0.6374	38
Ambd. Ngr.	0.7786	0.6447	37	0.8190	0.7162	17	0.8444	0.7625	19
Amethi	0.8753	0.4583	60	0.9794	0.2803	71	0.8565	0.7214	28
Azamgarh	0.8740	0.4608	59	0.9318	0.4096	66	0.9162	0.5184	54
Barabanki	0.7358	0.7272	23	0.8296	0.6874	23	0.8671	0.6854	32
Bahraich	0.8095	0.5852	47	0.9236	0.4320	64	0.8905	0.6059	44
Balrampur	0.9342	0.3447	69	0.8699	0.5778	43	0.9275	0.4799	62
Basti	0.7441	0.7113	29	0.8600	0.6046	36	0.9191	0.5084	56
Balia	0.8388	0.5287	51	0.8875	0.5301	51	0.8653	0.6915	31
Banda	0.9694	0.2768	70	0.9858	0.2627	73	0.9930	0.2574	72
Badayun	0.7068	0.7833	14	0.8525	0.6252	33	0.8563	0.7219	27
Bareily	0.7401	0.7190	27	0.8639	0.5943	39	0.8833	0.6302	39
Baghpat	0.6859	0.8235	9	0.8020	0.7623	9	0.8089	0.8831	4
Bulndshr.	0.5944	1	1	0.8288	0.6895	21	0.7936	0.9352	2
Bijnor	0.7760	0.6498	36	0.8622	0.5986	37	0.8262	0.8244	9
Chandauli	0.8699	0.4686	58	0.9165	0.4512	62	0.9319	0.4650	63
Chitrakoot	0.9962	0.1615	74	0.9962	0.1163	74	0.9982	0.0000	75
Deoria	0.7231	0.7518	19	0.8428	0.6515	26	0.9258	0.4858	61
Etawah	0.7540	0.6921	33	0.7815	0.8182	5	0.8392	0.7802	17
Etah	0.7021	0.7922	11	0.8095	0.7420	14	0.8478	0.7509	22
Farukhbd.	0.6741	0.8461	6	0.7466	0.9130	2	0.8529	0.7338	26
Fatehpur	0.7936	0.6158	43	0.8841	0.5391	49	0.9808	0.2987	69
Firozabad	0.7376	0.7237	26	0.8674	0.5847	40	0.8626	0.7007	30
G.B. Ngr.	0.8407	0.5249	52	0.7776	0.8287	4	0.7746	1	1
Gorakhpur	0.7790	0.6439	38	0.8841	0.5391	48	0.9409	0.4343	64
Gonda	0.8616	0.4846	57	0.8519	0.6267	32	0.8383	0.7835	16
Ghaziabad	0.6697	0.8547	5	0.7146	1	1	0.8286	0.8163	10
Ghazipur	0.7756	0.6506	35	0.8731	0.5690	44	0.8928	0.5980	47
Hapur	0.7418	0.7157	28	0.8278	0.6923	20	0.8523	0.7358	25
Hathras	0.7129	0.7714	15	0.8273	0.6937	19	0.8425	0.7691	18
Hardoi	0.7975	0.6082	44	0.8742	0.5662	45	0.8797	0.6425	37
Hamirpur	0.9952	0.1781	72	0.9635	0.3235	68	0.9171	0.5153	55
Jalaun	0.9201	0.3719	66	0.9037	0.4860	57	0.8948	0.5911	48
Jaunpur	0.7867	0.6292	40	0.9231	0.4333	63	0.8966	0.5849	50
Jhansi	0.9232	0.3659	68	0.9066	0.4780	58	0.9231	0.4949	60
Kasganj	0.7163	0.7648	17	0.8597	0.6056	35	0.8078	0.8871	3
Kannauj	0.6806	0.8338	8	0.7841	0.8111	7	0.9105	0.5379	52
Kanpur (D)	0.7324	0.7339	21	0.8055	0.7530	11	0.8344	0.7966	13
Kanpur (N)	0.7469	0.7058	30	0.8048	0.7548	10	0.8887	0.6118	42
Kheri	0.7987	0.6059	45	0.8799	0.5507	47	0.8744	0.6606	34
Kausambi	0.9225	0.3672	67	0.9136	0.4591	61	0.8949	0.5908	49
Kushingr	0.7876	0.6273	41	0.8788	0.5536	46	0.9223	0.4975	57

Table 1 continued...

Table 1 continued...

Lalitpur	0.9942	0.2290	71	0.9658	0.3172	69	0.9875	0.2759	71
Lucknow	0.8212	0.5625	49	0.8481	0.6371	29	0.9453	0.4196	65
Mathura	0.7022	0.7921	12	0.8340	0.6755	24	0.8363	0.7900	14
Mainpuri	0.6754	0.8438	7	0.7971	0.7756	8	0.8444	0.7624	20
Mahoba	0.9958	0.1626	73	0.9840	0.1489	72	0.9839	0.2884	70
Mau	0.8143	0.5758	48	0.8894	0.5248	54	0.8924	0.5992	46
Mahrajganj	0.8034	0.5969	46	0.8694	0.5792	41	0.8895	0.6091	43
Meerut	0.6589	0.8756	2	0.7835	0.8127	6	0.8139	0.8663	5
Mirzapur	0.8960	0.4184	64	0.9553	0.3458	67	0.9942	0.2533	73
Moradabad	0.7263	0.7457	20	0.8088	0.7440	13	0.8510	0.7402	24
Mzfr. Ngr.	0.6670	0.8600	4	0.8185	0.7176	16	0.8322	0.8040	11
Pratapgarh	0.8883	0.4332	62	0.8997	0.4967	56	0.9807	0.2990	68
Pilibhit	0.7195	0.7587	18	0.8184	0.7179	15	0.8881	0.6140	41
Rampur	0.7157	0.7661	16	0.8882	0.5281	52	0.8151	0.8621	6
Raebareli	0.8496	0.5079	54	0.8894	0.5248	53	0.9646	0.3538	67
Sahjhnpur	0.7365	0.7258	24	0.8294	0.6879	22	0.8721	0.6684	33
Sharanpur	0.6969	0.8023	10	0.8634	0.5956	38	0.8170	0.8556	8
Sambhal	0.8499	0.5073	55	0.9094	0.4705	59	0.8868	0.6184	40
Sidd. Ngr	0.8479	0.5111	53	0.8940	0.5124	55	0.8911	0.6039	45
Sitapur	0.8299	0.5458	50	0.8848	0.5374	50	0.8755	0.6569	36
Shamli	0.7370	0.7250	25	0.8483	0.6365	30	0.8154	0.8610	7
Shrawasti	0.8888	0.4323	63	0.9685	0.3098	70	0.9472	0.4130	66
Sonbhadra	0.9972	0.0000	75	0.9952	0.0000	75	0.9972	0.1294	74
S.K. Nagar	0.8524	0.5023	56	0.9101	0.4684	60	0.9224	0.4974	58
SRD. Nagar	0.7928	0.6172	42	0.8462	0.6423	27	0.8754	0.6573	35
Sultanpur	0.8805	0.4482	61	0.8517	0.6274	31	0.9024	0.5653	51
Unnao	0.9100	0.3913	65	0.9250	0.4281	65	0.9225	0.4971	59
Varanasi	0.7048	0.7870	13	0.7548	0.8908	3	0.8582	0.7158	29
Mean	**0.7974**			**0.8685**			**0.8862**		
C.V.	**12.701**			**7.569**			**6.4155**		

positive effect on the development while others negatively influence it, the optimum standardized value for each indicator (minimum or maximum depending upon the direction of the development) is identified and the deviations of different indicators from the corresponding optimum variables are obtained for each indicator. The statistical procedure given by Narain *et al.* (1991) are used to develop the composite index of agricultural development for each of the district. The value of composite index thus obtained is non-negative and lies between 0 & 1. The value of index closer to zero indicates the higher level of development while the value of index closer to 1 indicates otherwise.

2.1.1 Composite development indices - agricultural development in UP

For all the seventy-five districts of Uttar Pradesh the composite indices of development have been computed for agricultural sector over three different time periods *i.e.* Period -I (2000-01), Period- II: (2010-11), and Period -III: (2017-18) for which the data have been obtained from 'District wise Development Indicators Uttar Pradesh' published annually by the Economics and Statistics Division, State Planning Institute, Planning Department (UPDES), Government of Uttar Pradesh. The values of composite indices (C.I.) of various districts along with their ranks are given in Table 1.

The composite indices (C.I.) of most of the districts for agricultural sector are closer to 1, indicating a that an extensive attention should be paid towards various agricultural indicators so as to ensure higher agricultural development in the state. From Table 1 we observe that in UP, the districts of Bulandsahar, Ghaziabad & G.B. Nagar occupy the top ranks respectively, in all the considered time periods. However, the districts of Sonbhadra and Chitrakoot remain lowest in agricultural rankings. It may further be noticed that Sonbhadra, Chitrakoot, Mahoba, Banda and Hamirpur lagged much

Table 2: Classification of districts

Level of development	States		
	Period I (2000-01)	**Period II (2010-11)**	**Period III (2017-18)**
Highly developed	Aligarh,Bulandsahar, Baghpat, Farrukhabad, Ghaziabad, Kannauj, Meerut, Muzaffar Nagar, Mainpuri,	Farrukhabad,Ghaziabad, Varanasi	Auraiya, Baghpat, Bulandsahar, Bijnor, G.B. Nagar, Ghaziabad, Kasganj. Meerut, Muzaffar Nagar Rampur, Shamli, Sharanpur
Developed	Agra, Amroha, Ambedkar Nagar, Auraiya, Ayodhya, Azamgarh, Bareily,Barabanki, Bahraich, Badayun, Baliya, Basti, Bijnor, Chandauli, Deoria, Etah, Etawah, Firozabad, Fatehpur,G.B. Nagar, Ghazipur, Gorakhpur, Gonda,Hardoi,Hapur, Hathras, Jaunpur, Kushi Nagar, Kasganj,Kanpur (D), Kanpur (N), Kheri, Lucknow, Mahrajganj, Mau,Mathura, Moradabad, Prayagraj, Pilibhit, Rampur, Raebareli, Shahjahanpur, Shamli, S.R.D. Nagar, Sitapur,Siddharth Nagar, Sambhal, S.K. Nagar, Saharanpur, Varanasi ,	Agra,Aligarh,Amroha, Ambedkar Nagar,Auraiya, Ayodhya,Baghpat,Badayun, Balrampur,Barabanki, Basti, Bareily, Bareily,Bulandsahar, Bijnor,Deoria,Etah,Etawah, Fatehpur,Firozabad,G. B. Nagar, Ghazipur,Gorakhpur, Gonda, Hapur,Hathras, Hardoi,Meerut, Kasganj, Kannauj, Kanpur (N), Kanpur (D), Kheri, Kushi Nagar, Lucknow,Moradabad, Mainpuri, Mahrajganj Mau, Pilibhit, Muzaffar Nagar, Mathura, Prayagraj, Rampur, Raebareli, Saharanpur, S. R. D. Nagar, Shamli, Sultanpur, Sitapur, Shahjahanpur	Aligarh, Agra, Amroha, Ambedkar Nagar, Amethi, Ayodhya, Azamgarh, Badayun, Bahraich, Bareily, Baliya, Barabanki, Balrampur, Basti, Chandauli, Deoria, Etawah, Etah, Farrukhabad, Firozabad,Ghazipur, Gonda,Hardoi, Hapur, Hamirpur, Hathras, Jalaun, Jaunpur, Jhansi, Kannauj.Kanpur (D), Kanpur (N), Kausambi, Kheri,Kushi Nagar, Mahrajganj,Mathura, Mainpuri, Mau Moradabad, Prayagraj, Pilibhit,Shahjahanpur, S. R. D. Nagar, Sitapur, Sambhal, Sidharth Nagar, Sultanpur, S. K. Nagar, Unnao,Varanasi
Developing	Amethi, Banda, Balrampur, Hamirpur, Jalaun, Jhansi, Kausambi, Lalitpur, Mirzapur, Pratapgarh, Sultanpur, Shrawasti, Unnao	Amethi, Azamgarh,Banda, Bahraich, Chandauli, Hamirpur, Kausambi, Jalaun, Jaunpur, Jhansi, Kausambi, Lalitpur, Mirzapur, Pratapgarh, Sambhal, S. K. Nagar, Shrawasti, Sidharth Nagar, Unnao	Banda, Fatehpur, Gorakhpur, Lalitpur Lucknow, Mahoba, Pratapgarh, Raebareli, Shrawasti
Less developed	Mahoba	Chitrakoot, Mahoba	Mirzapur, Sonbhadra
Least developed	Chitrakoot, Sonbhadra	Sonbhadra	Chitrakoot

behind the other districts of the state during the periods I & II while, districts of Chitrakoot, Sonbhadra, Mirzapur and Banda lagged much behind the other districts of the state in period III, and require due attention of governments to give impetus and genuine support for proper development of these districts. Interestingly

Table 3: Model districts for less & least developed districts.

Sr. No.	Name of the Less/ Least Developed Districts	Model Districts for Less/ Least Developed Districts
1.	Chitrakoot	Agra,Ayodhya, Azamgarh, Banda, Baliya, Balrampur, Firozabad, Farrukhabad, Gorakhpur, Ghazipur, Hardoi, Hamirpur, Jalaun, Jhansi,Jaunpur, Kausambi,Kannauj, Kanpur (D), Kanpur (N), Mau, Pratapgarh, Prayagraj, Raebareli, Sultanpur, Shrawasti, S. K. Nagar, Unnao
2.	Mirzapur	Agra,Aligarh, Ambedkar Nagar, Amethi, Auraiya, Ayodhya,Azamgarh, Badayun, Bareily, Basti, Baliya, Banda,Barabanki Balrampur, Deoria, Farrukhabad, Firozabad, Ghazipur,Gonda,Gorakhpur, Hardoi, Hathras, Jaunpur, Jhansi,Kannauj, Kanpur (D), Kanpur (N),Kushi Nagar, Mau, Moradabad, Mathura, Mahrajganj, Mahoba,Pilibhit, Sambhal, Sitapur, Sultanpur, Shrawasti, Sidharth Nagar, S. K. Nagar, Sharanpur
3.	Sonbhadra	Prayagraj, S. R. D. Nagar, Varanasi

Table 4: Potential target for less/least developed districts

Sr. No.	Indicators	Potential Targets		
		Chitrakoot	Mirzapur	Sonbhadra
1.	% of gross irrigated area to gross area sown	73.83 (41.32)	79.42 (71.03)	82.65(26.17)
2.	% of net area sown to cultivated land	84.74(76.13)	88.99(75.74)	80.95(56.92)
3.	% of cultivable land to total reporting area	81.23(67.13)	81.73(61.43)	79.01(41.57)
4.	Productivity of total food grains (Qt./Hect.)	26.24(16.47)	27.52(23.46)	26.75(18.34)
5.	% of net irri. area by canal to total net irri. area	20.23(6.27)	14.3(55.36)*	27.25(36.12) *
6.	% of net irrigated area by govt. tube wells to total net irrigated area	3.88(0)	3.12(4) *	22.29(43.89) *
7.	Cropping intensity	154.0(112.68)	160.9(141.58)	153.4(126.6)
8.	Dist. of Nitrogen per hect. of gross area sown	104.28(99.32)	110.3(90.89)	100.4(98.91)
9.	Regulated mandis /lac hect. of net area sown	1.51(1.15)	1.42(0.95)	1.21(1.24) *
10.	Avail. of gross area sown per Tractor (Hect.)	26.77(24.74)	26.18(40)*	44(12.75)
11.	Productivity of Wheat (Qt./Hect)	34.38(30.96)	35.17(24.08)	32.29(24.08)
12.	Productivity of Rice (Qt./Hect.)	23(20.7)	23.45(26.4) *	26.69(25.96)
13.	Productivity of Oilseeds (Qt./Hect.)	9.64(5.8)	10.30(4.73)	8.54(3.92)
14.	Productivity of Sugarcane (Qt./Hect.)	592.8(429.5)	622.7(726.6)*	704.2(726.6)*
15.	Per capita production of food grains (Kg.)	280(274.5)	286.7(218)	148(141)
16.	Per capita production of Pulses (Kg.)	22.8(72.5) *	12.1(16.5) *	6 .0 (18.16) *
17.	% of area under com crops to gross sown area	20.07(30.37) *	22.8(25.19) *	9.84(18.95) *
18.	Prod. of Fish in dpt. area of Fisheries (Kg.)	4379(3728)	4387(3986)	4401(4473) *
19.	Per Capita Milk availability (Kg.)	0.07(0.02)	0.10(0.02)	0.09(0.02)
20.	Percentage share of area under Kharif crops	41.60(31.93)	45.40(39.33)	44.61(46.96) *
21.	Percentage share of area under Rabi crops	55.5(67.9) *	50.6(60.4) *	53.2(52.9)
22.	Distribution of Phosphate per hectare of gross area sown (Kg.)	41.02 (39.7)	43.18(35.3)	39.21(38.55)

however, among the districts disparities in agricultural development has declined as indicated by decrease in the coefficient of variation.

2.2 Classification of districts

A simple ranking does not provide a meaningful picture of the difference between the levels of development in districts. Following Iyengar and

Sudarshan (1982) a meaningful characterization of different levels of development may be obtained through fractile classification from an assumed distribution of the mean of the normalized indices (N.I.) which are given in Table 1. This index has Beta distribution of first kind and is generally skewed which is relevant to characterize the positive valued random variables lying in the interval (0,1). Based on the levels of development, we divide the interval (0, 1) into five sub-intervals. Here subintervals are chosen in the sense that each interval has the equal probability level to characterize the various stages of development. Following in this way, the districts are categorized into five categories *viz,* highly developed, developed, developing, less developed and least developed districts.

In the present study the classification of districts into highly developed, developed, developing, less & least developed categories of agricultural development are presented in Table 2.

The above Table 2 gives quite interesting results and need a deeper contemplation by the respective districts. It is observed that most of the districts that were classified developed, remained in the same category continuously throughout the period under study. The districts of Chitrakoot and Sonbhadra has fallen in least development category in period-I and the district of Sonbhadra has fallen in the least developed category in period-II. While, Chitrakoot remained in the least developed category of agricultural development in Period-III. It is also observed that Mirzapur, which was in the developing stage has fallen down in the less developed category in the period- III. The districts which remained in lower stage of development throughout the period under study are Chitrakoot, Sonbhadra. Clearly these districts need immense attention, planning, and most importantly political will make improvement in agricultural sector.

2.3 Identification of model districts for fixation of potential targets

The most important feature of the present study is that we have determined the model district for all least and less developed districts of latest time period so that the suitable attention be given by the planners and policy makers to these districts keeping in mind the model districts. This is done by using the approach given by Bhatia and Rai (2004). Now, for setting up the potential targets, for particular least/less developed districts, the average value of the indicators of 'model' districts will be referred to as potential target for district for a given indicator and is repeated for all the indicators separately.

2.3.1 Model districts for less/least developed districts

Model districts for less and least developed districts have been identified for agricultural sector on the basis of composite index of development and the developmental distances between different districts for the latest period (2017-18). The list of model districts identified for various less and least developed districts is given in Table 3.

2.3.2 Potential target for less/least developed districts

Potential targets are the extent of improvement required in different indicators of least/less developed districts. It will also provide direction to bring out uniform regional agricultural development in UP. The potential target for all the twenty-two indicators for agricultural development in respect of less/least developed districts have been calculated as the average value of the indicator of model districts and are presented in Table 4.

Note that in the Table 4, the figures within brackets denote actual achievement and the asterisk (*) marked values depict the cases where actual achievement is better than the potential target. It has been observed that some of the indicators have the actual value is more than that of potential targets.

3. Conclusion and Policy Implications

The important conclusions and policy implications emerging from the present study are as follows.

- Wide disparities in level of overall agricultural development is seen among all districts.
- Though, in all 63 districts of UP ranked in either developed or highly developed category, the values of C.I. for most of the districts are found to be closer to 1 clearly indicating that the agricultural sector still needs a more attention to achieve higher development.
- It was noticed that the districts of Bulandshar, Ghaziabad, Farrukhabad, Meerut, Baghpat, Shamli, Saharanpur, Mathura, Varanasi, Etawah, Kasganj *etc* are found to be highly developed/ developed in all the time periods under study. The

performance of these districts are found to be remarkably high as compared to other districts.

- The saddest state of affairs is that of Chitrakoot, Mirzapur and Sonbhadra which remained in less and least developed category in agricultural sector. However, Mahoba which was in Less/ Least Developed category has jumped to developing category in the latest period (2017-18).
- As Chitrakoot, Mirzapur and Sonbhadra are the Less/ Least developed districts in Uttar Pradesh, the study has also attempted to find few Model districts on the basis of the developmental distances between different districts. This will certainly help the planners and policy makers to give appropriate attention keeping in mind the indicators in the model districts.

Acknowledgement

Authors would like to thank the Editor and the referee for their insightful comments that led to much improvement of our article.

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