Agriculture Production in Uttar Pradesh: A Regional Analysis

Aloka Kumar Goyal, Assistant Professor, Dept. of Economics, D.D.U. Gorakhpur University

Abstract:**The vast agricultural factor of Uttar Pradesh is backbone of the state economy. In the state, population is large and economic condition is backward. Almost 50%of the districts are in the backward categories. Agriculture is the main occupation and source of livelihood for rural people. But here also, we find, large and inter regional, inter districts variations in agricultural development, which is not good for this sector, state economy and for rural population. In this light, the present paper is devoted to regional analysis of agriculture production in Uttar Pradesh in eight sections: I-Introduction, II Review of Literature, III -Interrelation between Agriculture Growth and State Growth, IV-Regions of Uttar Pradesh, V- Land Use Pattern in Different Regions, VI-Regional Status of Agriculture Production, VII -Regional Variation of Major Crops and lastly Concluded in section VIII.**

I. Introduction

Uttar Pradesh is the largest state of the country in terms of population and second largest in area in the country. The reporting area of the state is 24.2 million ha, out of which cultivated area is 16.68 million ha. The gross cropped area is 25.5 million ha. The cropping intensity in the state is 153 percent. Farming community is dominated by small and marginal farmers. Average size of holding is 0.83 ha per farmer. However, the average size of holding of marginal farmers is 0.40 hectare only. The state accounts for 11 percent of India's net sown area and contributes more than 41.1 million tonnes of foodgrain which is about 20 percent of the total foodgrain production of the country. The state produces 38% of India's Wheat, 20 % of Paddy, 21% of Sugarcane, 34% of Groundnut, 17.5 % of Rape-seed, 8% of Fruits and 16% of Vegetables. Uttar Pradesh is the largest potato producer in the country, contributing 43 per cent of the total production. The state is the largest milk producing state of the country with an annual milk production of 11.7 million kilo litres accounting for 16 percent of total milk production of the country. Keeping in view of vast potential, the state has major role to play in agriculture sector led economic growth of the country.

Agriculture sector is the prime mover of economic growth in Uttar Pradesh. A vast majority of the population in the state virtually relies on agriculture for its livelihood. As high as 65 per cent of the total workforce in the state depends on agriculture, most of whom are below poverty line. The state has significant bearing upon the agricultural performance at the national level. It shared about 13 per cent in the agricultural gross domestic product of the country . The state has immense significance in the context of food security of the country. It is contributing about one-fifth of the total foodgrain production in the country, which is highest among all the states.

Despite largest contribution to agriculture produce of the country and achieving some improvement in the State's growth rate in the Tenth Five Year Plan, it is still lagging behind the national average and consequently, the gap in per capita income is increasing with the passage of time. There is tremendous scope for further development in every sub-sector of the agriculture sector including crops, horticulture, animal husbandry and pissiculture**.**

II.Review of Literature:

A number of research papers have been carried out to identify disparity at state level using different methods and indicators. Their finding has been conflicting- We have on the one hand the works of Dholakia (1994), Cashin and Sahay (1996), Nagaraj, et al. (1998 and 2000) and few others who have tested for conditional and absolute convergence by including a number of alternative variables and have observed that there has been conditional convergence for the states of the Indian ecAonomy. We on the other hand have works of Bajpai and Sachs (1996), Rao et.al (1999), Dipankar et.al (2000), Aiyar (2001), Trivedi (2002), Singh, et al. (2003), Bhattacharya & Sakthivel, (2004) who claim that there has been divergence between states in the post independence era. Nayyar (2008) in his generalised methods of moment method confirms that there is no evidence of any convergence in growth of Indian states. These authors have attempted to identify factors that have caused divergence and are seems to be in unison so far as the negative impact of structural reforms and liberalisation on disparity is concerned.

The important works include the one by Nair (1971), Gupta (1973) Chaudhury (1974) Majumdar and Kapoor (1980),Cashin and Sahay (1996), Rao, Shand and Kalirajan (1999), Ahluwalia (2000), followed by Bhattacharya and Sakthivel (2004), Sabyachi kar and Sakthivel etc. Almost invariably all the works have found that disparity between states no matter which inequality concept is used has increased since independence and has intensified since the launching of reforms.

Shastri (1988) has examined the regional disparity for the state of Rajasthan which covers a period of 23 years (1961-1984). The study delineates the 'developed' and 'underdeveloped' districts and within the districts, the 'developed' and 'underdeveloped' sectors which require the attention of the policy makers. It clearly brings out the existing inter-district imbalances in the economic development of Rajasthan and makes the need for greater emphasis on regional approach to development planning obviously

Mishra, (2007), Reddy and Mishra, (2008) emphasise that crisis in agriculture was well underway by the 1980s and economic reforms in the 1990s have only deepened it. Decline in the supply of electricity to agriculture has been regarded as major cause of distress by Chand et. al (2007); Chand (2005); and Chand and Kumar (2005).

Patnaik (2005) examined how neo liberal policies introduced in the 1990's affected peasant community by examining the fund allocation to the rural development and concludes that fund allocation has come down from 4 per cent of NNP in 1990-91 to 1.9 per cent of NNP by 2001-02. Gulati and Bathla, (2001), Chand and Kumar, (2004) have studied the impact of capital formation on Indian agriculture and have found that growth in capital formation in Indian agriculture has been either stagnating or falling since the beginning of 1980s. Vyas (2001) examined the impact of economic reforms on agriculture and claimed that Indian farmers mostly consists of small and marginal farmer who mainly depend on agricultural price policies such as Minimum Support Prices (MSP) subsidies on inputs and irrigation, however, after reforms the MSP has not been properly regulated by the government leading to farmers distress. A recent study, by Diwakar examine the regional disparity at disaggregate level, using district as a unit for the state of Uttar Pradesh and find that no district in the Eastern and Bundelkhand regions were in the most developed category. At the same time, many districts in the Western and Central regions were also on the lower ranks.

A review of the studies reveals that the studies have highlighted major reasons for agricultural distress. These reasons include vagaries of nature (primarily, inadequate or excessive water), lack of irrigation facilities, market related uncertainties such as increasing input costs and output price shocks, emphasis on commercial and plantation crops due to agricultural trade liberalisation, unavailability of credit from

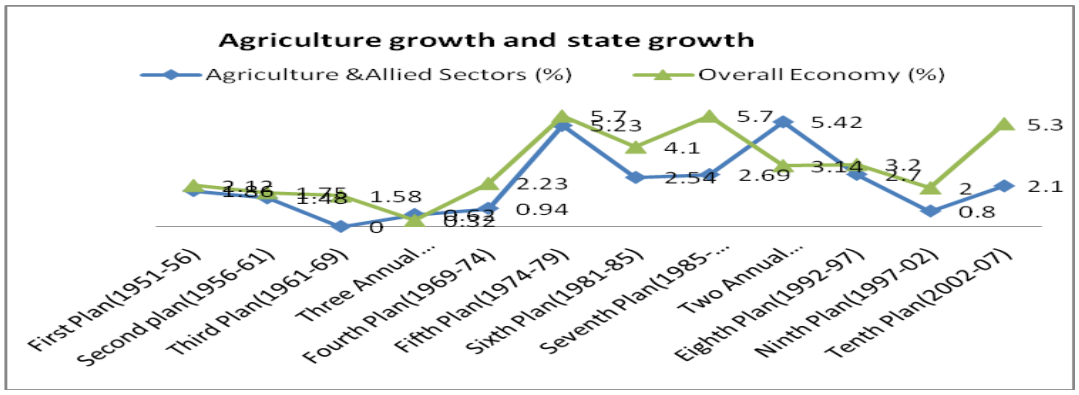
institutional sources or excessive reliance on informal sources with a greater interest burden and new technology among other. In addition, decline in the area under cultivation, which seems to be a result of expanding urbanization and industrialisation, deterioration in the terms of trade for agriculture, stagnant crop intensity, poor progress of irrigation and fertiliser have also been stressed. Most of existing studies do not highlight inter-region variation in agricultural development. The present study gets hints from the study done so far in identifying the appropriate variable and bridging the gap in the literature pertaining to comprehensive treatment of agricultural disparity. It makes an attempt to identify the backward regional variation of Uttar Pradesh especially for rice, wheat and sugarcane.

III. Interrelation between Agriculture Growth and State Growth

The growth rate in agriculture sector above 5% has been recorded during the fifth plan and two annual plan periods. The growth rate in the X th plan was 2.10% in the state where as the national growth rate is 1.10% in the same period. The variation of the growth of economy depends upon the rate of growth of agriculture & allied sector due to major contribution of this sector in gross state domestic product.

Table: 1 Agriculture and Allied Sectors Growth Rate

	Plan	Agriculture &Allied Sectors (%)		Overall Economy (%)	
		U.P.	India	U.P.	India
1	First Plan(1951-56)	1.86	2.71	2.12	**3.60**
2	Second plan(1956-61)	1.48	3.15	1.75	3.95
3	Third Plan(1961-69)	(-)0.09	(-)0.73	1.58	2.32
4	Three Annual Plan(1966-69)	0.62	4.16	0.32	3.69
5	Fourth Plan(1969-74)	0.94	2.57	2.23	3.25
6	Fifth Plan(1974-79)	5.23	3.28	5.70	5.30
7	Sixth Plan(1981-85)	2.54	2.52	4.10	4.10
8	Seventh Plan(1985-90)	2.69	3.47	5.70	5.80
9	Two Annual Plan(1990-92)	5.42	1.01	3.14	2.47
10	Eighth Plan(1992-97)	2.70	3.90	3.20	6.80
11	Ninth Plan(1997-02)	0.80	1.90	2.00	5.60
12	Tenth Plan(2002-07)	2.10	1.10	5.30	7.70



IV. Regions of Uttar Pradesh

Before the division the State of Uttar

Pradesh had been divided into five broad regions Eastern region, Hilly region, Bundelkhand region, Western region and Central region. The Eastern region was situated in the eastern part of the State having about 86 thousand square kIm. of area (29.16%) and about(37.09%)of population. The Hilly region was situated in the north western hilly part of the State consisting of an area of 51 thousand square km. (17.36%) and about (4.3%) of population. Bundelkhand region was situated in the southern part of the State with an area of 29 thousand square km. (9.99%) and about (4.8%)of population. The Western region was situated in the western part of the State. The area and population of the region are 82 thousand square km. (27.92%) and (35.6%) respectively. The Central region was situated in the central part of the State having an area of about 46 thousand square kIn. (15.57%) and of (17.4%) population. After separation of Uttar Pradesh in 2000, it has four regions without any change in its location and name i.e. –Western, Central, Eastern and Bundelkhand. The different regions of the state in terms of some important indicators, It has been noticed that Bundelkhand is the most backward region in almost all the agricultural and allied indicators except road length (infrastructure indicator). In contrary, Western region is the most advanced region in several same indicators only except road length. The Bundelkhand followed by Eastern region of Uttar Pradesh are less developed regions compared to Western followed by Central region of the state in agricultural parameters. The reasons behind backwardness of these states are the low financial assistance, high indebtedness of farmers, crisis of agriculture and most concrete problem is colonial policy of development. Eastern and Western have more districts as compared to Central and Bundelkhand regions

V. Land Use Pattern in Different Regions

Agriculture was dominating in land use pattern in all the regions. The share of agriculture in the total reporting area ranged from less than 70 per cent in the Central, Eastern and Bundelkhand regions to 75 per cent in the Western region. Area under forest was ranging from around 5 per cent in Western to 9 per cent in the Eastern region in the TE 2001/02. Historical trends in the land use pattern did not demonstrate any significant area shift in favour of agriculture. With rapid urbanisation and growing land degradation, future scope for area expansion in favour of agriculture would be restricted. Whatever area may be brought under cultivation would be marginal and ecologically fragile, which unambiguously cannot compensate for the land being removed from cultivation due to urbanisation and land degradation. Therefore, future agricultural supplies and growth must be targeted primarily from raising biological yields and intensifying land use instead of area expansion.

VI. Regional Status of Agriculture Production

(a) Western Region

Western region is characterised as the food and sugar basket of Uttar Pradesh. Relative share of foodgrain crops the GCA was around 80 per cent in the TE 1999/2000. Sugarcane accounted for about 12 per cent area in the GCA. This region contributed about 45 per cent of all foodgrain production and nearly 60 per cent of sugar production in the state during the same period. Rice and wheat were the main foodgrain crops. Their performance during 1980-2000 was quite impressive. Production of rice increased from about 1.5 m tonnes in TE 1982/83 to 3.4 m tonnes in the TE 1999/2000 (Table2). Similarly, wheat production went up from 6.4 m tonnes to 9.8 m tonnes during the same period. Area expansion contributed more (about 60%) in production increase of rice during 1990s, while it was yield increase during 1980s. In case of wheat, yield enhancement was responsible for production increase in 1980s as well 1990s. Wheat yields went up from about 2042 kg/ha in TE 1982/83 to 3027 kg/ha in TE 1999/ 2000. These yields were still lower than the

neighbouring state of Haryana. Sugarcane used to be the most important cash crop in the Western region. Production of sugarcane rose from about 55 m tonnes in TE 1982/83 to 75 m tonnes in TE 1999/2000. Annual compound growth rate of sugarcane production was slightly higher (1.94%) during 1990-99 than the 1980-89 period (1.64%). Increase in sugarcane production was mainly attributed to yield augmentation during 1990s, while area growth during 1980s. This was because most of the sugarcane (97%) was having irrigation facilities in TE 1997/98.Maize production was also showing rising trend inthe Western region. Maize production increased in the region during 1990s, from 0.82 m tonnes in TE 1991/ 1992 to 1.5 m tonnes in TE 1999/2000. A large increase was noted in Bulandshahr district owing to a starch factory. Maize yields increased rapidly which was possible due to rapid adoption of HYVs of maize.Potato and onion also gained in the Western region. During the last two decades, potato area doubled from 126 thousand ha in TE 1982/83 to 231 thousand ha in TE 1999/2000.Oilseeds production has marginally increased in theregion. Area and production of pulses, particularly chickpea and pigeon pea, on the other hand, was showing a declining trend. To some extent, green gram and black gram replaced chickpea and pigeon pea.

Table-2 Area Production and Yield of Different Crops in Western Region

	TE 1982/1983			*TE 1991/1992*			*TE 1999/2000*		
Crop	*Area*	*Prod.*	*Yield*	*Area*	*Prod.*	*Yield*	*Area*	*Prod.*	*Yield*
Rice	1108.84	1535.37	1384.66	1184.77	2596.62	2191.67	1419.06	3396.87	2393.75
Wheat	3148.28	6427.66	2041.64	3320	8619.59	2596.26	3250.42	9840.26	3027.38
Sorghum	117.63	75.18	639.1	75.67	66.44	877.98	27.96	24.5	876.03
Pearl Millet	733.27	539.7	736.02	622.24	678.54	1090.48	660.5	922.33	1396.41
Maize	626.83	592.93	945.92	554.27	820.59	1480.48	615.52	1508.39	2450.58
Other Coarse Cereals	226.07	337.1	1491.15	173.23	411.62	2376.17	1080.84	3018.12	2732.98
Chickpea	262.14	224.5	856.43	144.4	146.54	1014.77	56.86	64.69	1137.65
Pigeon Pea	104.43	141.96	1359.42	96.25	107.57	1117.54	77.49	69.2	892.98
Other Pulses	325.04	210.68	648.18	312.14	259.11	830.09	429.62	559.3	1301.85
Groundnut	150.97	113.68	752.98	60.5	52.8	872.73	25.35	21.44	845.74
Sesamum	17.35	1.49	86.05	23.6	3.43	145.46	21.64	3.47	160.48
Rapeseed and Mustard	239.88	153.24	638.8	446.26	438.65	982.96	392.56	355.13	904.66
Linseed	3.41	1.11	326.17	1.1	0.39	355.62	24.83	24.75	996.64
Sunflower	1.3	0.8	615.38	7.13	6.86	962.15	29.4	49.61	1687.3
Soybean	1.53	1.5	978.26	0.22	0.25	1151.52	0.44	0.3	684.21
Other Oilseeds	1.53	1.5	978.26	0.22	0.25	1151.52	22.72	57.53	2531.91
Sugarcane	1125.38	54945.38	48823.84	1246.52	66755.51	53553.65	1167.39	74524.15	63838.08

Source (Basic Data): *Uttar Pradesh Ke Krishi Ankare* (Agriculture Statistics of UP) (Various issues) and ICRISAT Database compiled by NCAP.
Note: Area = '000 ha; Production = '000 tonnes; Yield = Kg/ha

(b) Central Region

Foodgrain crops accounted for about 75 per cent of the total GCA in TE 1999/2000. It used to be 84 per cent in TE 1982/83. The region dispensed 26 per cent of all foodgrains produced in the state in TE 1999/2000. Rice and wheat, the main

foodgrain crops, accounted for about 59 per cent area in the GCA in TE 1999/2000 (Table 3). Their production has in- creased rapidly between 1980 to 2000. Production of rice, which was about 1.03 m tonnes in TE 1982/83, reached to 2.2 m tonnes in TE 1999/2000. Rise in yield levels was an important source of production increase of rice. Wheat production also went up in the re- gion during the last two decades, mainly due to yield augmentation. Maize is another foodgrain crop, which has come up in the region. Its production has remarkably increased from 71 thousand tonnes in TE 1982/83 to 324 thousand tonnes in TE 1999/2000. Annual compound growth rate of maize production was exceptionally high at 8.34 per cent during 1980s and 6.90 per cent during 1990s. Area under pulses was shrinking while expanding under commercial crops, namely oilseeds, sugarcane and potato. Rapeseed and mustard were the principal oilseed crops, their production has increased during 1990-2000 through area expansion. Ironically, their yields have almost stagnated mainly due to their spread in marginal areas and high infestation of insect pests.

Table-3 Area Production and Yield of Different Crops in Central Region

	TE 1982/1983			TE 1991/1992			TE 1999/2000		
Crops	Area	Prod.	Yield	Area	Prod.	Yield	Area	Prod.	Yield
Rice	937.7	1028.5	1096.83	985.75	1721.72	1746.61	1070.33	2199.48	2054.95
Wheat	1369.13	2248.2	1642.06	1451.28	3138.6	2162.65	1522.46	3780.89	2483.41
Sorghum	159.51	115.83	726.14	147.9	174.34	1178.75	117.86	102.52	869.85
Pearl Miller	75.84	40.47	533.62	38.99	36.8	943.91	35.41	35.94	1015.16
Maize	152.34	70.95	465.77	167.47	182.85	1091.8	204.56	323.89	1583.37
Other Coarse Cereals	218.42	222.64	1019.31	125.54	198.43	1580.59	53.28	89.72	1683.98
Chickpea	281.7	241.81	858.41	209.86	178.1	848.66	135.81	137.85	1015.05
Pigeon Pea	112.55	161.46	1434.53	117.65	154.47	1312.99	85.14	110.75	1300.84
Other Pulses	152.54	70.32	460.98	203.71	177.98	873.7	172.31	298.29	1731.11
Groundnut	82.66	65.23	789.1	56.97	43.58	764.91	37.04	39.55	797.95
Sesamum	4.62	0.46	98.77	17.31	3.89	224.68	33.42	6.09	182.23
Rapeseed and Mustard	97.37	48.17	494.69	129.33	101.77	786.88	167.74	118.45	706.12
Linseed	3.99	1.08	271.74	4.51	1.69	375.74	7.96	7.38	927.55
Sunflower	0.9	0.5	555.56	1.7	1.88	1108.06	22.17	32.4	1461.43
Other Oilseeds	6.36	2.12	333.33	0	0	0	17.81	39.84	2236.95
Sugarcane	198.03	7909.22	39939.49	274.69	12161.85	44274.29	305.34	16438.84	53838.42
Cotton	0.5	0.05	107.38	0.06	0.01	222.22	12.11	13.27	1095.76
Potato	46.95	676.6	14412.1	58.11	919.65	15826.93	78.01	1450.27	18590.82
Onion	3.04	25.66	8439.69	4.32	64.71	14990.73	3.38	36.6	10818.72

Source (Basic Data): *Uttar Pradesh Ke Krishi Ankare* (Agriculture Statistics of UP) (Various issues) and ICRISAT Database compiled by NCAP

(c) Eastern Region:

Eastern region of Uttar Pradesh is flood prone. Poverty is acute in this region. Therefore, household food security is the primary concern of the farm households in this region. To meet the household food security, as high as 91 per cent of all agricultural land was allocated to food grain crops. Rice and wheat shared about 75 per cent of the GCA. Their production

went up significantly during the last two decades mainly due to rise in yields (Table 4). Rice yields, which were less than 1 t/ha in the TE 1982/83, reached to 2.03 t/ha in TE 1999/2000. The corresponding increase in wheat yield was from 1.5 to 2.35 t/ha. These yield levels are, however, lower than the state average. This region witnessed late green revolution as adoption of HYVs, chemical fertilisers and irrigation picked up during 1980s and continued during 1990s. Chickpea and pigeon pea were the main pulses in the region. Their area and production was declining but other pulses, like lentil and green gram were spreading in rice-fallow areas. Among oilseeds, rapeseed and mustard and castor seed were the major ones. Their production rose largely due to area expansion. These crops were cultivated in areas which were earlier kept fallow. It could possibly be due to the availability of short duration varieties and irrigation

Table-4 Area, Production and Yield of different Crops in Eastern Region

	TE 1982/1983			TE 1991/1992			TE 1999/2000		
Crops	Area	Prod.	Yield	Area	Prod.	Yield	Area	Prod.	Yield
Rice	2860.77	2701.83	944.44	3063.83	5003.14	1632.97	3044.56	6182.36	2030.63
Wheat	2617.43	3958.23	1512.26	3085.79	6020.96	1951.19	3295.05	7735.27	2347.54
Sorghum	79.68	64.64	811.25	73.06	71.56	979.51	73.46	68.96	938.83
Pearl Miller	134.98	104.92	777.28	119.13	128.61	1079.55	119.55	126.48	1057.97
Maize	368.81	202.63	549.42	349.6	350.7	1003.14	276.79	430.31	1554.63
Other Coarse Cereals	473.35	381.78	806.55	103.72	133.43	1286.37	61.64	104.7	1698.53
Chickpea	429.43	340.72	793.43	293.5	261.02	889.35	208.19	172.77	829.9
Pigeon Pea	198.17	224.58	1133.31	198.17	214.04	1080.12	211.24	234.33	1109.29
Other Pulses	254.44	162.7	639.42	281.51	257.65	915.27	432.42	889.12	2056.16
Groundnut	21.09	16.09	762.64	11.55	10.62	919.75	13.44	12.75	949.14
Sesamum	7.19	0.64	88.59	8.49	1.5	176.36	12.37	2.6	210.13
Rapeseed and Mustard	54.13	21.88	404.19	62.57	40.59	648.68	88.14	55.24	626.67
Linseed	40.68	9.84	241.81	25.53	7.76	303.87	45.36	37.89	835.32
Sunflower	2.4	1.7	708.33	0.64	0.53	833.33	15.97	31.95	2000.42
Other Oilseeds	0.04	0.02	636.36	24.17	9.16	379.03	27.17	58.45	2151.15
Sugarcane	308.98	12677.65	41030.65	305.53	14817.6	48497.48	358.77	16618.36	46319.95
Potato	89.66	1222.54	13634.82	99.7	1668.02	16730.39	118.91	1237.9	10410.37
Onion	8.27	79.05	9555.2	8.78	130.67	14887.96	16.04	119.94	7479.11

Source (Basic Data): *Uttar Pradesh Ke Krishi Ankare* (Agriculture Statistics of UP) (Various issues) and ICRISAT Database compiled by NCAP.

Note: Area = '000 ha; Production = '000 tonnes;

Yield = Kg/ha

(d) Bundelkhand Region:

This region is characterised as low rainfall and dry with vast marginal lands. A sizeable area (84%) was allocated to foodgrain crops in this region. Unlike other regions, pulses occupied large share (about 43%) in the GCA in the TE 1999/2000 (Table5). Among cereals, wheat was the important crop. Although its area almost remained static, the production rose as a result of yield enhancement. Yet the yield levels were too low. Pulses production during the decade of 1990s did not show

much change. Other pulses conspicuously substituted chickpea and pigeon pea, which were traditionally important pulses. Peas and lentil largely replaced them. In this region, additional area under pulses was also brought from marginal and less fertile areas. Area and production of oilseed crops also increased rapidly in this region. Area of all oilseed crops increased phenomenally from about 79000 ha in TE 1982/83 to 159000 ha in TE 1999/2000. This region due to scanty rainfall and scarcity of surface and groundwater is naturally specialising in favour of pulses and oilseed crops. Introduction of improved, high yielding and short-duration varieties of pulses and oilseed crops would go a long way in boosting their production and augmenting farm income.

Table-5 Area, Production and Yield of Different Crops in Bundelkhand Region

Crops	TE 1982/1983			TE 1991/1992			TE 1999/2000		
	Area	Prod.	Yield	Area	Prod.	Yield	Area	Prod.	Yield
Rice	92.11	63.5	689.36	85.95	71.16	827.96	74.87	79.85	1066.45
Wheat	537.02	672.72	1252.69	558.19	844.98	1513.78	580.04	1099.63	1895.77
Sorghum	257.33	152.31	591.59	212.62	170.96	804.07	153.3	131.16	855.6
Pearl Miller	33	13.77	417.17	27.35	20.49	749.21	23.75	24.2	1018.95
Maize	17.13	12.47	727.82	24.76	29.13	1176.47	17.39	16.7	960.38
Barley	41.63	43.33	1040.83	27.7	39.04	1409.1	19.01	33.24	1748.76
Other Coarse Cereals	41.63	43.33	1040.83	102.65	99.99	974.02	26.05	34	1305.3
Chickpea	521.05	401.95	771.41	510.52	345.88	677.52	411.92	276.18	670.45
Pigeon Pea	88.77	122.46	1379.52	71.38	90.99	1274.67	52.62	77.32	1469.55
Other Pulses	123.54	51.11	413.72	283.74	289.61	1020.71	485.72	410.72	845.59
Groundnut	2.69	2	742.26	17.2	13.88	807.13	34.02	31.69	931.35
Sesamum	14.41	1.19	82.83	14.77	2.02	136.99	24.36	3.41	140.16
Rapeseed and Mustard	21.38	9.2	430.46	21.93	13.41	611.34	30.64	17.42	568.53
Linseed	24.21	8.18	337.97	42.35	16.78	396.19	47.86	20.96	437.83
Other Oilseeds	15.89	7.73	486.47	39.33	18.26	464.28	22.17	13.79	621.99
Sugarcane	3.3	108.48	32840.57	3.96	150.14	37946.93	5.34	221.95	41543.94
Cotton							1.07	21.74	20260.66
Potato	1.57	26.34	16814.89	1.25	22.68	18098.4	0.64	7.99	12510.86
Onion	0.4	3.88	9628.1	0.6	6.88	11525.14	2.02	5.2	2575.91

Source (Basic Data): *Uttar Pradesh Ke Krishi Ankare* (Agriculture Statistics of UP) (Various issues) and ICRISAT Database compiled NCAP.

Note: Area = '000 ha; Production = '000 tonnes; Yield = Kg/ha

VII.Regional Variation of Major Crops

The agriculture area for rice under central and western region increased during 1982-83 to 1999-2000 while it decreased in both eastern and bundelkhand region. The cropped area under rice is highest in eastern and lowest in bundelkhand region as shown chart1. The productivity of this crop is highest in western region and lowest in bundelkhand region. The productivity has increased all three regions except western during 1999-00 to 2008-09(chart 2).

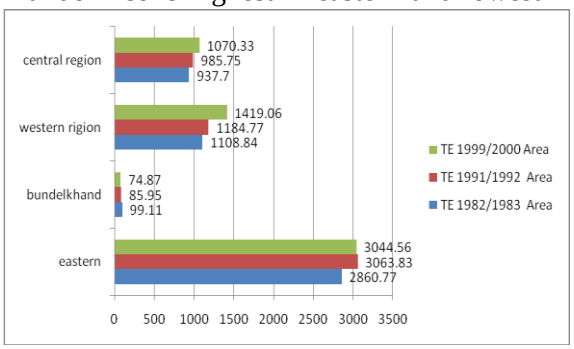


Chart-1:Regionwise area of rice

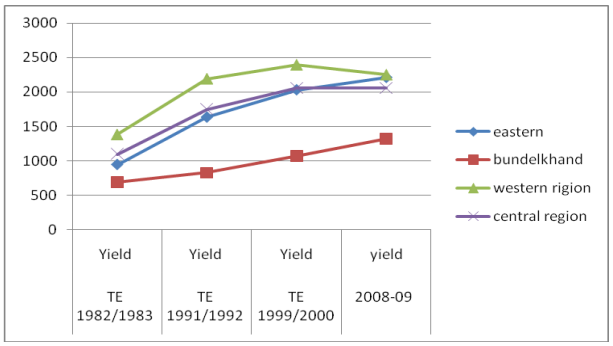


Chart-2 Regionwise productivity of rice

The area under wheat is increased in eastern, central and bundelkhand regions but it decreased in western during the same period. Western region has highest covered area of wheat and lowest in bundelkhand (chart 3).

The productivity of this crop is increasing in all regions due to intensive agriculture technique. Regionwise ranking of wheat is same as rice (chart 4).

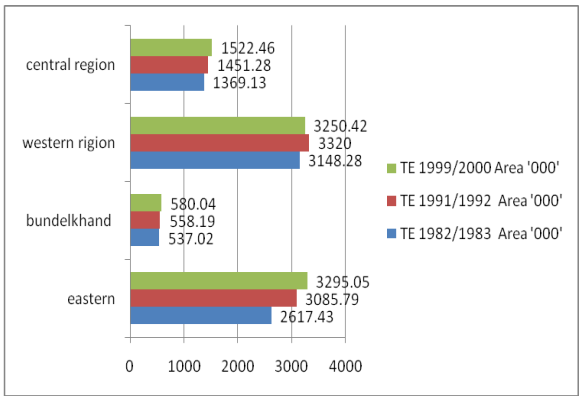


Chart-3 Regionwise area of wheat

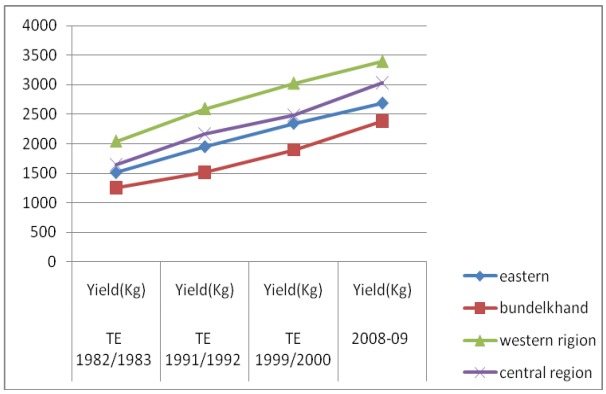


Chart- 4 Regionwise productivity of wheat

The area under sugarcane in western region is much more than other three regions. But it is decreasing in western and increasing in rest of the regions.

Bundelkhand region has poor cropped area of wheat as like other crops(chart 5). The trend of productivity is not clear but western region has highest in productivity and bundelkhand at lowest level (chart 6).

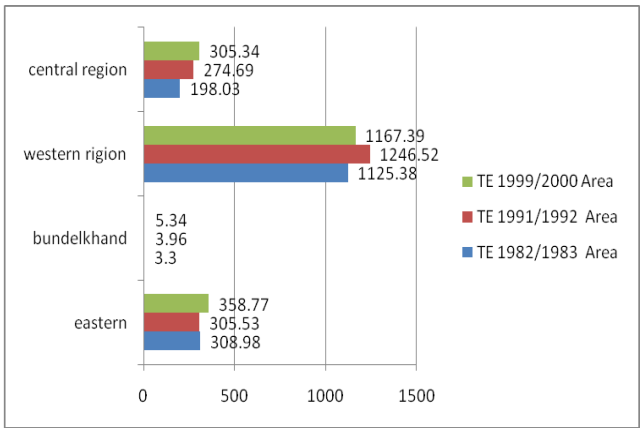


Chart-5 Regionwise area of sugarcane

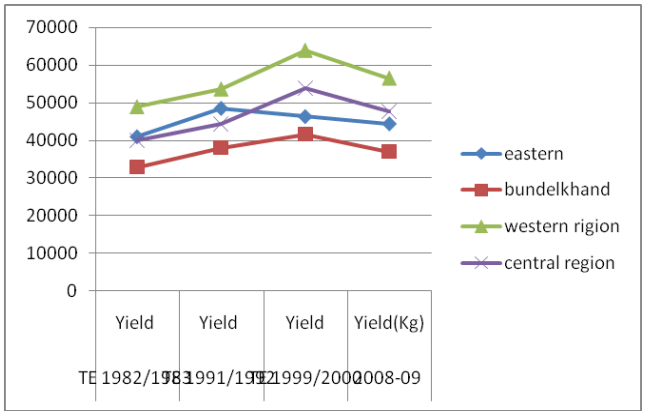


Chart-6 Regionwise productivity of sugarcane

VIII.Conclusion

The Western region was far ahead in adoption of improved technology as compared to other regions in Uttar Pradesh. Almost entire wheat (99%) and rice (97%) were cultivated in irrigated environment. Similarly, all rice and wheat was under high-yielding varieties (HYVs). Fertiliser application was also too high (141 kg/ha) in the region. An impressive performance of central region was mainly on account of irrigation development, which facilitated adoption of HYVs and application of chemical fertilisers. About 83 per cent of rice and 93 per cent of wheat was cultivated in the irrigated environment. Almost the entire area (99%) of these crops was under HYVs. yield levels of eastern region are, however, lower than the state average. This region witnessed late green revolution as adoption of HYVs, chemical fertilisers and irrigation picked up during 1980s and continued during 1990s. Bundelkhand region is characterised as low rainfall and dry with vast marginal lands. This region is lagging far behind in adoption of improved varieties and application of fertilisers. Irrigation facilities are sparse in the region. Average fertiliser consumption (in terms of NPK) was only 36 kg/ha in 1999/2000 as compared to 141 kg/ha in the Western region. Area under HYV of wheat was only 80 per cent, which was near 100 per cent in Western, Central and Eastern regions. This region due to scanty rainfall and scarcity of surface and groundwater is naturally specialising in favour of pulses and oilseed crops

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