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VARIATION STUDIES IN THE AGRICULTURAL DEVELOPMENT AND PRODUCTIVITY IN THE EASTERN & WESTERN REGIONS OF UTTAR PRADESH

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Physiographic Regional Variations in U.P.

The State of Uttar Pradesh is divided into three distinct physiographic regions, namely, the Hill Region in the north along the Himalayas, Yamuna-Ganges plain—the alluvial tract in the centre and the plateau Region of the Central Indian hills lying to the South West of the Yamuna-Ganges plain. The alluvial plain is agriculturally the most important tract of the State. It is further divided into three sub-regions, namely, Eastern Region, Central and Western Region.

The Eastern Region of Uttar Pradesh is characterised by high density of population, being 844 per square mile against 557 of the whole State and 287 for the country, low output per capita and extremely scanty resources. The soil suffers from low fertility though it is not basically defective. Rainfall is erratic and unequally distributed. Floods and droughts are the common features of this region. Often long breaks in rain create drought and heavy downpours bring in flood and the region is accordingly called 'Scarcity area'. The yield per acre is comparatively low and the per capita natural resources are poor.

The Western region on the other hand is fairly well developed, where the standard of cultivation is very high and irrigation facilities are adequate.

Objectives

The objectives of this study are : (1) to work out the trend of agricultural development in respect of total cropped area, gross irrigated area and foodgrain production in the district of Gorakhpur of Eastern region and the district Meerut of Western region of U.P. ; and (2) to work out the trend of productivity in respect of acreage, production and average yield per acre of three important crops, viz., rice, wheat and sugarcane in the above two districts of Eastern and Western regions.

Method of Study

The secondary data published in periodicals and Government reports have been sifted and analysed to work out the trend. The year to year comparison only between the figures of acreage or production does not reflect the long-term trends. The method of moving averages has, therefore, been employed to

N.B.: Detailed tables giving data on which this Paper is based have not been appended to save space.

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smoothen out the seasonal fluctuations. Comparable statistics of total cropped area, gross irrigated area, production and average yield per acre of three important crops, *viz.*, rice, wheat and sugarcane have been considered for working out the trends. Two districts of Gorakhpur in Eastern region and Meerut in Western region, representing the extreme conditions of agricultural development prevailing in the Eastern and Western regions of the State have been selected for comparison against the background of the overall figures of U.P. The decade covering the First and Second Five-Year Plans, *i.e.*, from 1951-52 to 1960-61 is the period of study. This broadly brings out also the achievements of the two Plan periods as reflected by the data under study. The data relating to the years prior to 1949-50 are not comparable with those of the following years due to the merger of princely States in 1949-50 with the State. Further, owing to the resignation en-masse tendered by the '*patwaries*' in 1952-53, the agricultural statistics could not be collected in that year.

Findings

The total cropped area in the State has increased from 474.97 lakh acres in 1951-52 to 501.80 lakh acres and 519.51 lakh acres at the end of the First and Second Plan periods respectively. During the decade there is an increase of about 45 lakh acres. This increase in the total cropped area is consistent but for the years 1957-58. This has been the direct outcome of the planned efforts of the officials and non-officials. In Gorakhpur the total cropped area ranges from 14.30 lakh acres to 16.07 lakh acres, while in Meerut it ranges from 15.68 lakh acres to 16.48 lakh acres. In the two districts the total cropped area constituted about 3 per cent of the total cropped area of the State. The two-year moving averages reflect an increasing trend in both the districts. That is to say, the efforts to bring the land under plough have yielded similar results in the two regions, Eastern and Western of the State.

The percentage of gross irrigated area to the total cropped area in the State has remained more or less steady at about 26 per cent. At the end of the First Plan it is 26.2 per cent while at the end of the Second Plan it is 26.3 per cent indicating thereby that the irrigation facilities have kept pace with the increase in the total cropped area. A comparison between the gross irrigated area of districts Gorakhpur and Meerut expressed as percentage of the corresponding area of the State shows that there is a wide disparity. In Gorakhpur it is 3.20 per cent in 1954-55 and 3.73 per cent in 1955-56 while in Meerut it is 7.08 per cent in 1951-52 and 7.96 per cent in 1954-55. In Meerut the extent of irrigation is almost double of what it is in Gorakhpur. It also points out the lack of irrigation potential in Eastern region of the State as compared to that of the Western region. The overall trend for the two Plan periods first shows an increase and then goes down.

The foodgrains group comprise of 18 food crops and include rice, juar, bajra, maize, *mandua*, *sawan*, *kodon*, *kutki*, *urd*, *moong*, *moth*, wheat, barley, gram, peas, *arhar* and *masur*. The total foodgrain production in the State has increased from 111.82 lakh tons in 1953-54 to 142.57 lakh tons in 1960-61 except for a decline during 1955-56 and 1957-58. This was due to adverse waterlogging conditions in 1955-56 and drought in 1957-58. But there is a gradual increase in the production of foodgrains. In both the districts of Gorakhpur and Meerut the food production

is almost steady. Also foodgrains production in respect of the two districts as percentage of the State's production fluctuates around the figure of 3 per cent. The contrast between the gross irrigated area of the two districts does not contribute anything towards the food production. It may be remembered, however, that the increased irrigation facilities in Meerut district have not affected the total food production. Instead it might have augmented the production of cash crops like sugarcane.

It may be noted that rice covered an area of 103 lakh acres in 1960-61, that is about 38 per cent of the total State *kharif* cropped area. During the last ten years from 1951-52 to 1960-61 it showed a gradual increase. Production also registered an increase from 15 lakh tons in 1951-52 to 31 lakh tons in 1960-61 in the State. The same is true of the average yield per acre which was 7 maunds per acre and 8 maunds per acre at the end of the First and the Second Plan respectively. The occasional decline in yield in 1957-58 and 1959-60 was due to the heavy rains, hailstorm and attack of *gundhi* bug, etc. There is a marked contrast in percentage acreage of rice in the districts of Gorakhpur and Meerut. It is on an average of 6 per cent and 0.3 per cent respectively. The Eastern region is more suitable for growing paddy than the Western region. So the contrast between the two representative districts is obvious. The same is true of the production in the two districts expressed as percentage of the State's production. It ranged from 5.09 per cent (1960-61) to 7.33 per cent (1954-55) in case of Gorakhpur and from 0.23 per cent (1955-56) to 0.54 per cent (1959-60) in case of Meerut. The figures of the average yield in the two districts do not show the same degree of contrast. It is about 6 maunds per acre in Gorakhpur and 8 maunds per acre in Meerut. The average worked out on a smaller area in district Meerut than that in district Gorakhpur is responsible for higher average yield per acre in district Meerut. Another remarkable conclusion is that paddy occupies a position of a major food crop in Gorakhpur district, while it is a very minor food crop for Meerut district.

Wheat is one of the most important food crops and covered an area of 97 lakh acres (1960-61) in U.P. constituting about 40 per cent of the total *rabi* cropped area. The acreage from 1951-52 to 1960-61 does not show any definite trend. Production has, nevertheless, gone up from 25 lakh tons (1951-52) to 39 lakh tons (1960-61). The average yield per acre fluctuated around 8 maunds per acre. During the two Plan periods the percentage area under wheat in Meerut was about double that of Gorakhpur, being 4 per cent and 2 per cent of the State's area respectively. Production, however, ranged from 0.42 per cent in 1957-58 to 0.65 per cent in 1959-60 for Gorakhpur while for Meerut it fluctuated from 4.40 per cent in 1953-54 to 5.89 per cent in 1959-60. The year 1959-60 recorded the highest percentage production in both the districts. The average yield in Meerut is definitely superior to that of Gorakhpur. The respective figures are on an average of 11 maunds per acre and 9 maunds per acre. Evidently wheat occupies a position of a major food crop in district Meerut.

Sugarcane is the most important cash crop of the State. It is particularly important in the agricultural economy because it gives ready money to the cultivators. Year after year there is an increasing trend in its acreage. In 1951-52 the first year of the First Plan it was 29.65 lakh acres while in 1960-61, *i.e.*, the

TABLE I—COMPARATIVE FIGURES OF AREA AND PRODUCTION OF RICE, WHEAT, SUGARCANE FOR THE TWO DISTRICTS OF GORAKHPUR AND MEERUT IN EASTERN AND WESTERN REGION OF U.P.

Years	Percentage Acreage of the State								Percentage Production of the State								
	Gorakhpur				Meerut				Gorakhpur			Meerut					
	Gross irrigated area	Rice	Wheat	Sugar-cane	Gross irrigated area	Rice	Wheat	Sugar-cane	Rice	Wheat	Sugar-cane	Rice	Wheat	Sugar-cane			
1950-51																	
1951-52																	
1953-54	3.68	6.33	2.09	2.44	7.11	0.42	4.58	11.45	6.90	1.44	2.16	0.53	4.40	12.40			
1954-55	3.20	6.22	1.96	2.02	7.96	0.36	4.43	12.22	7.33	1.93	1.65	0.37	5.66	14.32			
1955-56	3.73	6.55	2.16	1.98	7.38	0.26	4.08	11.25	5.61	2.08	1.83	0.23	4.96	10.74			
1956-57	3.43	6.05	2.01	1.64	7.24	0.28	4.15	10.46	5.50	1.64	1.55	0.45	4.78	12.33			
1957-58	3.24	5.84	2.06	1.97	7.61	0.34	4.16	10.49	5.34	1.58	1.83	0.50	5.14	12.84			
1958-59	3.40	5.72	2.10	2.11	7.20	0.38	4.08	11.39	5.39	1.80	2.37	0.52	5.30	13.00			
1959-60	3.16	5.50	2.00	2.10	7.22	0.41	4.08	11.04	6.18	2.01	1.97	0.54	5.89	11.97			
1960-61	3.32	5.61	2.10	1.91	7.47	0.39	4.05	10.63	5.09	1.64	2.14	0.53	5.38	11.64			

last year of the Second Plan it rose to 32.84 lakh acres. During the ten years of the two Plans there has been an increase of 3.19 lakh acres. At the end of the Second Plan the acreage under sugarcane formed 12 per cent of the total *kharif* cropped area of the State. Production also is on the increase. It was 316.92 lakh tons in 1951-52 and 536.54 lakh tons in 1960-61. The average yield per acre almost doubled from 291 maunds per acre to 446 maunds per acre. The percentage area in Gorakhpur and Meerut reflect a striking contrast. In the former it was about 2 per cent while in the latter it was about 11 per cent of the State's area. That is in Meerut it is more than five times of that in Gorakhpur. Sugarcane thus occupies an important place in the economy of the Western region as indicated by the area in Meerut district. The production of sugarcane also shows marked variation in the two districts. The respective figures for district Meerut and Gorakhpur are 11 per cent and 2 per cent of the State's production. There is not much difference in the average yield per acre in the two districts. It ranged from 254 maunds per acre (1953-54) to 541 maunds per acre (1960-61) in Gorakhpur and from 291 maunds per acre (1955-56) to 494 maunds per acre (1960-61) in district Meerut. In the last year of the Second Plan both registered the highest yield per acre. The Second Plan has definitely succeeded in improving upon the productivity in so far as the sugarcane is concerned.

Table I shows the comparative figures of gross irrigated area, area and production of rice, wheat and sugarcane expressed as percentage of the corresponding figure of the State. The percentage gross irrigated area in Meerut is almost two times that in Gorakhpur. While acreage under rice in Gorakhpur and wheat in Meerut constituted about 6 per cent and 4 per cent respectively of the State's figures, it can be said that the two crops of rice and wheat are important food crops in the Eastern and Western regions, respectively. However, rice appears to be the main staple crop of the Eastern and wheat that of Western region of U.P. Sugarcane covers about five times more area in Meerut than in Gorakhpur. It appears that sugarcane has received more attention and resources of cultivation than either rice in Gorakhpur or wheat in Meerut. Production of sugarcane in Meerut as compared to wheat lends support to the view that the former is utilising the facility of irrigation more than the latter. Production of sugarcane and wheat in Meerut is about 12 per cent and 5 per cent of the State's figures. It can be concluded from the above, that the farmer is interested more in raising cash crops than food crops in Western U.P. Further, the table shows that the acreage under wheat in Meerut district has shown a decline after 1956-57 and simultaneously there is an increasing trend in the acreage of sugarcane during the corresponding years. This establishes a fact that sugarcane is replacing wheat in Western region continuously without affecting its overall production. It is an encouraging feature in the sense that there is fuller utilization of resources and improved technology of farming in wheat production. However, the encroachment of sugarcane on wheat areas is not a very healthy sign of balanced development in the region.