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RESEARCH NOTES

A STUDY OF THE IMPACT OF GREEN REVOLUTION ON THE REGIONAL DEVELOPMENT OF AGRICULTURE IN UTTAR PRADESH*

Introduction

The so-called Green Revolution in India has been mainly ushered in by the high-yielding varieties, particularly of wheat. The coverage of these varieties spread very fast since 1965-66. There has been, no doubt, a marked change in the production of foodgrains since 1964-65. It is also often said that the new technology is size-neutral, *i.e.*, its adoption does not depend on the size of holding. This has also been proved by empirical evidences which have shown that in a given area it is being adopted by all types of cultivators irrespective of their holdings. The technology, however, depends very heavily on the resources of a cultivator, particularly on irrigation and chemical fertilizers. Irrigation is much more limiting factor than the other resources.

The purpose of this paper is to examine whether the benefits of the new technology have been shared by all the areas or its impact has been uneven. An attempt has been made in this paper to identify the areas in Uttar Pradesh which have appreciably benefited.

Methodology Adopted

For studying the impact of green revolution in Uttar Pradesh, we have employed the linear growth rates for two periods, namely, Period I, from 1950-51 to 1964-65 and Period II, from 1950-51 to 1970-71. Linear growth rates (per cent per annum) have been worked out by fitting regression equation of yield (or area, or productivity, as the case may be) indices as dependent variable (y) and year as independent variable (t). The regression coefficient 'b' in the regression equation $y = a + bt$ represents the linear rate of growth of y in per cent per annum. A comparison of the growth rates in these two periods enables us to judge the impact of the green revolution in the State as a whole and on the various districts of the State in respect of various items of food production.

Results

As stated earlier, the growth rates have been employed for judging the impact of the green revolution in Uttar Pradesh. To begin with, the impact would be studied for the State as a whole. The linear growth rates (per cent per annum) of production of rice, wheat and total foodgrains for these two periods are given in Table I.

* The statements made and opinion expressed in this paper are wholly of the author in his personal capacity.

TABLE I—LINEAR GROWTH RATES OF PRODUCTION OF RICE, WHEAT AND TOTAL FOODGRAINS

(Base 1950-53 = 100)

Crops	Period I		Period II	
	1950-51 to 1964-65		1950-51 to 1970-71	
Rice	6.61	3.64 (5.17)*
Wheat	2.43	6.72
Total foodgrains	1.51	2.29

* This relates to the period 1950-51 to 1970-71 excluding the drought years 1965-66 and 1966-67.

The above data clearly indicate a significant departure of production of total foodgrains from 1965-66 and onwards. It would be seen that the linear growth rate of production of foodgrains upto 1964-65 was only 1.51 per cent per annum which increased to 2.29 per cent per annum for the entire period. It would also appear, however, that this increase during Period II over Period I has been mainly contributed by the corresponding increase in the production of wheat crop. Rice, on the other hand, could not even maintain the growth rate in production of Period I, after 1964-65. The main reason for the dampening of growth rate of production of rice is an unprecedented drought during the period 1965-67. However, even after giving due allowance to this unusual phenomenon and working out growth rates excluding these two years, the picture is not a happy one although somewhat improved.

Inter-district Comparison

The above account gives a picture at the State level. As there are great variations from district to district, it would be desirable to have a deeper study of the progress made in various districts. Consequently, linear growth rates for these two periods have been worked out at the district level for rice, wheat and total foodgrains and are given in Appendix 1. The study of total foodgrains would be taken up first. It would be seen from Appendix 1 and the Map that excepting the 13 districts, the growth rates in the production of total foodgrains during Period II over those during Period I are appreciably higher, indicating that a major portion of the State experienced an upward trend in agricultural production after 1964-65. But a disturbing feature is that all the districts of Jhansi Division, three districts of Varanasi, four of Faizabad and two districts of Allahabad Divisions have, on the other hand, shown a decrease in the growth rates since 1964-65. All these 13 districts combined had a linear growth rate of 2.53 per cent per annum during the period 1950-51 to 1964-65 which turned out to be 1.64 during the period 1950-51 to 1970-71. This indicates that whereas the farmers of the 35 districts have reaped appreciable profits from the new technology, the farmers of the remaining 13 districts could not do so.

TABLE II—LINEAR GROWTH RATES OF AREA, PRODUCTION AND AVERAGE YIELD OF RICE, WHEAT AND TOTAL FOODGRAINS

Crop	Group of districts	Period I (1950-51 to 1964-65)			Period II (1950-51 to 1970-71)		
		Area	Production	Average yield	Area	Production	Average yield
Rice	Group of 13 districts	1.83	7.66	4.07	1.12	2.92	0.84
	Rest of the State	1.98	8.15	4.93	1.41	5.09	2.84
Wheat	Group of 13 districts	3.33	5.07	0.79	3.42 (4.03)	6.04 (7.51)	1.61 (2.09)
	Rest of the State	0.98	2.00	0.87	2.64 (2.97)	7.23 (8.09)	2.96 (3.23)
Total foodgrains	Group of 13 districts	1.17	2.53	1.27	0.90	1.64	0.69
	Rest of the State	0.51	1.33	0.33	0.49	2.66	1.94

N.B.: The figures in parentheses indicate the growth rates during 1950-51 to 1970-71 excluding the years 1965-66 and 1966-1967.

A critical examination of Table II reveals the following facts :

- (i) The growth rates of area and average yield and consequently those of production of total foodgrains obtained during the period 1950-51 to 1964-65 could not be maintained after 1964-65 in these 13 districts. On the other hand, although in the rest of the State there was no increase in the growth rate of area, the average yield marked a definite improvement after 1964-65 and hence the production of total foodgrains also showed significant increase in the growth rate.
- (ii) Cropwise examination indicated that in the case of wheat, these 13 districts have also been benefited by the new technology, although not to the extent as the rest of the State has been. The districts of Jhansi Division have been least benefited. But in the case of rice, these 13 districts have registered a slower rate of area and productivity as compared to the rest of the State. The growth rate and average yield of rice were almost of the same order in these two areas upto 1964-65 but for the entire period the growth rate in the average yield of rice in these 13 districts (0.84 per cent per annum) was about one-third of that in the rest of the State (2.84 per cent per annum). The poor performance in the average yield of rice has been duly reflected in the overall food production.

Even if we exclude the years 1965-66 and 1966-67 from calculating the growth rates during the period 1950-51 to 1970-71 the picture, though slightly different, remains substantially the same.

The above account clearly indicates that the green revolution has benefited only a certain area of the State. In fact, for the triennium ending 1964-65, the average yield of foodgrains, rice and wheat production in these 13 districts was as good as in the rest (Table III) but for the triennium ending 1971-72, there was a difference of about 20 per cent in the average yields of foodgrains of these two parts of the State.

TABLE III—LEVELS OF AGRICULTURAL PRODUCTIVITY

Item			(quintals/hectare)	
			Group of 13 districts	Rest of the State
Total foodgrains				
1964-65*	..	..	7.32	7.37
1972-73*	..	..	8.40	9.93
Rice				
1964-65	..	..	7.62	7.30
1972-73	..	..	7.67	7.86
Wheat				
1964-65	..	..	8.22	8.47
1972-73	..	..	10.91	13.22

* The figures are averages for the triennium ending 1964-65 and 1972-73 respectively.

Effect of Drought on Agricultural Production during 1964-65 and 1966-67

The years 1965-66 and 1966-67 were characterized by severe drought in the State which largely affected 13 districts. The index numbers of total foodgrains production of 13 districts given in Appendix 2 reveal that the main reason for decline in the growth rate is a sharp fall in production during 1965-67 when the index number fell from 137.18 in 1964-65 to 113.67 during 1965-66 and which further declined to 77.43 during 1966-67.

The figures of production of rice, wheat and total foodgrains during 1964-65 and 1966-67 are given in Table IV.

TABLE IV—PRODUCTION OF RICE, WHEAT AND TOTAL FOODGRAINS DURING 1964-65 AND 1966-67

Group of districts			(lakh metric tonnes)					
			Rice		Wheat		Total foodgrains	
			1964-65	1966-67	1964-65	1966-67	1964-65	1966-67
1. Group of 13 districts	..	..	9.08	3.56	8.93	5.84	40.51	22.87
2. Districts of Meerut and Agra Divisions			2.27	2.37	11.43	14.13	30.58	30.27
3. Rest of the State (excluding 13 districts and districts of Meerut and Agra Divisions)	..	..	21.12	12.32	19.07	20.93	77.05	60.83
4. Total State	..	..	32.48	18.25	39.43	40.90	148.14	114.00

A study of the data presented in Table IV leads to the following conclusions :

- (i) There was a shortfall of 34.14 lakh tonnes in foodgrain production during the year 1966-67 as compared to 1964-65. More than 50 per cent of the shortfall was accounted for by these 13 districts. There was practically no shortfall in the foodgrain production in the districts of Meerut and Agra Division.
- (ii) The production of rice in these 13 districts fell from 9.08 lakh tonnes during 1964-65 to 3.56 lakh tonnes during 1966-67. The shortfall in the rest of the State was not so bad.
- (iii) Even the production of wheat in these 13 districts fell from 8.93 lakh tonnes to 5.84 lakh tonnes during 1966-67 whereas the rest of the State produced more wheat.

Physical Progress in the Various Districts

To investigate the reasons for the unbalanced development, the data relating to the spread of the high-yielding varieties, extent of irrigation and fertilizer consumption have also been studied as given in Table V.

TABLE V—INDEX OF PROGRESS IN AGRICULTURE IN UTTAR PRADESH

Items						Group of 13 districts	Rest of the State (Plain)
1. Irrigated area (percentage of gross cropped area)							
	1964-65	..	..	..	..	24.0	29.4
	1970-71	..	..	..	..	27.4	39.8
2. Percentage of area under exotic							
(a) Wheat	1966-67	..	..	..	..	75.0	3.6
	1970-71	..	..	..	..	28.9	36.7
(b) Rice	1956-57	..	..	..	..	0.5	1.1
	1970-71	..	..	..	..	17.0	14.7
3. Consumption of fertilizer in kg. per hectare of gross cropped area							
	1964-65		N			3.2	4.5
			P			0.4	0.5
			K			—	—
Total						3.6	5.0
	1970-71		N			9.3	16.1
			P			2.4	4.1
			K			1.7	2.4
Total						13.4	22.6

In regard to the spread of high-yielding varieties particularly of wheat, it has been observed that the cultivators have adopted the high-yielding varieties in the State where they had better irrigation facilities. As irrigation facilities in these 13 districts are less as compared to the rest of the State, this has naturally resulted in relatively less areas being grown under exotic varieties in these 13 districts. During 1970-71, the percentage of irrigated

area in these 13 districts was 27.4 as compared to 24 during 1964-65, a nominal increase of 3.4 per cent. As against this, in the rest of the State the percentage of irrigated area increased at a much faster rate, namely, from 29.4 during 1964-65 to 39.8 per cent during 1970-71. Accordingly, during 1970-71 the percentage of area under exotic wheat in these 13 districts was only 29 as compared to 37 in the rest of the State.

Similarly, these 13 districts are far behind the rest of the State in regard to the consumption of fertilizers. During 1970-71, the consumption of N+P+K per hectare of cropped area was 13.4 kg. in these 13 districts as compared to 22.6 kg. in the rest of the State.

Conclusions

The foodgrains production figures during the period 1950-51 to 1970-71 clearly establish the fact that the progress has not been uniform in all the districts as well as in various crops. Wheat has accounted for a major rise in agricultural production whereas rice has not shown any increase. As regards the districts, the increase in the foodgrain production has been accounted for by the districts of Meerut, Agra and Rohilkhand Divisions and to some extent by Gorakhpur Division. On the other hand, the districts of Jhansi Division, Fatehpur and Allahabad districts of Allahabad Division, districts of Mirzapur, Varanasi and Ghazipur districts of Varanasi Division and Faizabad, Pratapgarh, Sultanpur and Barabanki districts of Faizabad Division have not been benefited by the new technology introduced after 1964-65. This has created an imbalance in the agricultural economy of the State for which concrete steps need to be taken to push up the growth of agricultural production in the vulnerable areas of the State. Of the total decline of 34 lakh tonnes in agricultural production during 1966-67 as compared to 1964-65 on account of successive droughts of 1965-67, more than 50 per cent was in these 13 districts. The drought did not affect foodgrains production in Meerut Division and some districts of Agra Division.

It is evident that the new high-yielding varieties programme has not been successful in these parts of the State where irrigation facilities are meagre. These districts did show improvement in agricultural production upto 1964-65 but thereafter on account of absence of any new technology suitable for these areas, the area and production became static and thus the overall growth rates for the entire period came out to be less than those for the period 1950-51 to 1964-65. There was hardly any difference in the per hectare productivity of foodgrains in these 13 districts as compared to the rest before the green revolution era, but the green revolution brought with it a disparity of appreciable dimensions.

B. N. TYAGI*

* Joint Director of Agriculture (Statistics), Directorate of Agriculture, Uttar Pradesh, Lucknow.

APPENDIX 1(a)

LINEAR GROWTH RATES (PER CENT PER ANNUM) OF PRODUCTION OF TOTAL FOODGRAINS,
RICE AND WHEAT

(Base : Average of 1950-51 to 1952-53=100)

District	Linear growth rates (per cent per annum)					
	Total foodgrains		Rice		Wheat	
	Period I	Period II	Period I	Period II	Period I	Period II
Dehradun	1.11	2.18	3.68	2.57	-1.43	2.77
Saharanpur	1.00	3.03	13.28	9.73	-0.38	4.40
Muzaffarnagar	0.50	2.85	7.70	10.98	0.73	4.45
Meerut	0.39	3.72	11.31	26.45	1.43	6.34
Bulandshahr	0.36	3.75	6.51	13.14	1.90	10.24
Aligarh	1.81	4.86	7.85	11.85	4.60	15.46
Mathura	1.09	4.39	9.44	58.59	5.15	12.90
Agra	0.96	1.71	65.08	88.28	5.26	10.04
Mainpuri	1.21	2.98	18.97	9.35	0.61	6.91
Etah	1.67	3.03	9.19	7.07	3.11	8.10
Barcilly	2.75	2.78	15.49	9.45	-1.03	3.99
Bijnor	1.49	3.41	8.16	7.05	2.19	5.90
Badaun	-0.23	1.06	6.23	10.28	0.37	2.88
Moradabad	0.97	3.84	7.83	8.97	1.18	5.90
Shahjahanpur	0.98	2.49	16.74	8.17	-1.85	4.17
Pilibhit	3.02	4.92	11.70	7.58	0.27	8.66
Rampur	5.23	6.97	8.42	6.97	33.75	12.81
Farrukhabad	2.24	2.57	9.66	2.38	4.15	8.41
Etawah	2.16	3.07	17.36	9.58	6.70	15.05
Kanpur	1.15	1.46	10.43	5.08	5.63	7.98
Fatehpur*	1.65	1.53	5.51	1.01	2.81	6.79
Allahabad*	2.37	1.14	5.40	2.08	5.55	6.81
Jhansi*	2.78	2.31	10.43	2.91	13.36	9.44
Jalaun*	2.84	1.73	76.80	60.37	7.09	5.75
Hamirpur*	1.05	1.03	3.68	1.83	3.82	3.91
Banda*	3.38	1.75	11.52	4.30	7.99	5.66
Varanasi*	3.24	2.10	11.03	3.85	4.25	11.74
Mirzapur*	4.36	2.97	7.72	2.82	3.99	8.34
Jaunpur	0.94	1.61	10.60	2.86	2.92	7.95
Ghazipur*	3.02	2.03	9.18	3.04	3.94	14.71
Ballia	1.43	1.80	2.43	1.45	7.51	12.31
Gorakhpur	3.25	3.48	5.92	4.48	4.97	12.81
Deoria	1.51	3.26	4.42	4.12	4.53	13.28
Basti	2.44	2.69	5.57	3.36	1.59	7.13
Azamgarh	1.01	1.22	6.24	3.29	-0.66	5.74
Nainital (Plains)	12.26	13.38	16.95	13.82	6.73	13.36
Lucknow	1.36	2.49	4.49	3.13	4.26	6.81
Unnao	1.14	2.25	10.70	8.22	2.79	7.16
Rae Bareilly	1.40	1.52	5.93	2.42	2.54	5.36
Sitapur	0.32	1.10	8.62	2.25	0.17	3.30
Hardoi	-1.02	1.35	12.45	7.35	-1.16	3.57
Kheri	0.92	1.24	7.31	2.38	2.30	4.41
Faizabad*	1.67	1.31	4.83	2.73	2.26	4.19
Gonda	1.07	1.48	7.06	3.22	0.84	4.18
Bahraich	0.86	1.93	6.36	3.31	1.55	4.83
Sultanpur*	1.97	0.87	6.70	2.46	0.47	1.95
Pratapgarh*	1.60	1.02	7.34	4.13	0.10	1.71
Barabanki*	3.38	2.93	8.15	5.99	4.44	5.53

Note : Period I refers to the years 1950-51 to 1964-65. Period II refers to the years 1950-51 to 1970-71.

* Districts showing lowest growth.

APPENDIX 1(b)

LINEAR GROWTH RATES (PER CENT PER ANNUM) OF AREA OF TOTAL FOODGRAINS,
RICE AND WHEAT

(Base: Average of 1950-51 to 1952-53=100)

Districts	Linear growth rates (per cent per annum)					
	Total foodgrains		Rice		Wheat	
	Period I	Period II	Period I	Period II	Period I	Period II
Dehradun	0.40	0.65	0.78	0.14	-0.29	0.92
Saharanpur	0.11	0.18	4.12	2.95	-0.17	1.10
Muzaffarnagar	-0.70	-0.10	2.84	4.85	-0.16	1.42
Meerut	-0.57	0.08	2.82	7.76	0.31	1.98
Bulandshahr	-0.22	0.55	0.24	5.67	1.05	4.54
Aligarh	0.30	0.80	6.36	11.07	1.16	4.92
Mathura	0.67	0.87	9.28	53.32	3.68	6.81
Agra	0.59	0.54	52.42	74.46	3.30	5.87
Mainpuri	1.31	1.21	9.09	5.45	0.53	3.47
Etah	0.39	0.52	8.64	7.13	-0.83	1.36
Bareilly	-0.46	0.37	3.17	2.16	-0.11	1.21
Bijnore	0.25	0.47	1.49	2.00	0.76	2.13
Badaun	-0.45	-0.45	5.24	4.19	-0.46	-0.25
Moradabad	0.09	0.66	1.65	2.53	0.47	1.70
Shajahanpur	0.80	0.44	4.76	2.60	-1.36	0.92
Pilibhit	2.26	1.66	4.43	2.83	1.36	2.99
Rampur	2.09	1.84	3.16	2.73	1.12	3.23
Farrukhabad	0.69	0.61	3.95	1.71	0.88	2.51
Etawah	1.65	1.35	8.47	6.19	2.93	6.26
Kanpur	0.98	0.65	5.92	3.60	3.17	3.71
Fatehpur*	1.11	0.80	2.44	1.06	2.19	4.22
Allahabad*	1.12	0.92	1.46	0.77	5.36	6.76
Jhansi*	2.12	1.80	6.33	2.77	6.50	5.43
Jalaun*	1.07	0.94	54.71	60.58	2.20	2.19
Hamirpur*	1.70	1.52	2.25	2.53	2.86	2.40
Banda*	2.53	1.87	5.26	2.11	4.48	3.01
Varanasi*	0.34	0.45	1.49	1.02	4.76	5.96
Mirzapur*	2.10	1.08	2.02	1.02	5.29	4.17
Jaunpur	0.13	0.31	2.10	0.97	2.28	3.94
Ghazipur*	0.27	0.61	0.34	0.35	2.71	6.47
Ballia	0.35	0.21	0.09	0.03	2.67	5.06
Gorakhpur	0.33	0.12	0.39	0.55	3.26	5.59
Deoria	-0.16	0.54	0.34	0.58	3.11	8.17
Basti	0.11	0.10	0.28	0.42	0.81	2.59
Azamgarh	0.24	0.25	0.83	0.73	0.54	3.68
Nainital (Plains)	5.15	4.38	3.08	2.08	4.60	6.20
Lucknow	0.85	0.72	3.48	1.88	0.96	2.31
Unnao	1.80	1.29	7.40	4.43	2.52	3.46
Rae Bareilly	1.23	0.73	2.18	1.12	2.36	2.57
Sitapur	0.66	0.08	1.94	0.02	1.51	2.24
Hardoi	0.64	0.08	8.52	4.20	-0.15	0.82
Kheri	0.89	0.39	3.10	1.24	1.90	2.37
Faizabad*	0.36	0.13	1.06	0.92	1.87	2.72
Gonda	0.52	0.34	1.04	0.69	1.12	1.52
Bahraich	0.63	0.22	1.05	0.12	1.19	1.43
Sultanpur*	0.65	0.47	1.54	1.23	1.18	1.74
Pratapgarh*	0.64	0.82	1.79	2.33	1.36	1.01
Barabanki*	0.59	0.25	1.87	1.24	1.52	2.42

Note : Period I refers to the years 1950-51 to 1964-65. Period II refers to the years 1950-51 to 1970-71.

* Districts showing lowest growth.

APPENDIX 1(c)

LINEAR GROWTH RATES (PER CENT PER ANNUM) OF PRODUCTIVITY OF TOTAL FOODGRAINS,
RICE AND WHEAT

(Base: Average of 1950-51 to 1952-53=100)

Districts	Linear growth rates (per cent per annum)					
	Total foodgrains		Rice		Wheat	
	Period I	Period II	Period I	Period II	Period I	Period II
Dehradun	0.66	1.29	2.55	2.23	-1.13	1.51
Saharanpur	0.88	2.61	6.13	4.32	-0.19	2.62
Muzaffarnagar	1.28	2.85	3.58	3.22	0.86	2.38
Meerut	1.05	3.50	6.05	7.66	1.04	3.05
Bulandshahr	0.63	2.85	6.17	3.67	0.68	2.78
Aligarh	1.44	3.53	1.11	0.37	2.88	5.54
Mathura	0.39	3.01	0.45	0.40	1.01	2.75
Agra	0.34	1.04	2.26	0.99	1.39	2.13
Mainpuri	-0.07	1.45	4.50	1.64	0.08	2.12
Etah	1.20	2.22	0.83	0.26	4.13	5.15
Bareilly	2.13	2.14	8.69	4.79	1.14	2.07
Bijnor	1.84	2.67	5.94	3.93	1.25	2.54
Badaun	0.26	1.61	14.72	3.62	1.02	3.16
Moradabad	0.87	2.75	5.92	5.03	0.68	2.97
Shajahanpur	0.15	1.79	7.57	3.54	-0.71	2.63
Pilibhit	0.56	2.31	4.91	2.96	-0.89	3.23
Rampur	2.41	3.63	4.26	2.99	2.15	5.41
Farrukhabad	1.43	1.74	3.65	0.26	2.89	3.82
Etawah	0.44	1.36	4.07	1.17	2.76	4.13
Kanpur	0.20	0.75	2.64	0.78	1.86	2.67
Fatehpur*	0.45	0.59	2.13	-0.21	0.41	1.46
Allahabad*	1.10	0.15	3.46	1.08	0.14	-0.04
Jhansi*	0.49	0.29	2.34	-0.09	3.93	1.92
Jalaun*	1.57	0.63	1.89	-0.40	3.74	2.31
Hamirpur*	-0.60	-0.49	1.33	-0.66	0.52	0.81
Banda*	0.60	-0.16	4.13	1.53	2.09	1.49
Varanasi*	2.78	1.54	8.55	2.55	-0.30	2.84
Mirzapur*	1.79	1.51	4.75	1.42	-0.82	2.84
Jaunpur	0.84	1.30	6.95	1.38	0.46	2.47
Ghazipur*	2.67	1.29	8.63	2.57	0.90	3.52
Ballia	1.01	1.49	2.26	1.43	3.48	4.06
Gorakhpur	2.75	3.18	5.21	3.48	1.17	3.61
Deoria	1.70	2.48	3.75	3.28	1.10	2.32
Basti	2.31	2.54	5.13	2.74	0.72	3.01
Azamgarh	0.75	0.92	4.88	2.24	-1.07	1.33
Nainital (Plains)	3.98	4.48	9.58	7.84	1.18	2.85
Lucknow	0.47	1.55	0.45	0.75	2.98	3.25
Unnao	-0.48	0.82	1.44	1.75	0.25	2.38
Rae Bareilly	0.17	0.70	2.87	0.96	0.23	2.00
Sitapur	-0.27	0.97	5.59	2.47	-1.09	0.65
Hardoi	-1.50	1.18	1.36	1.32	-1.11	2.16
Kheri	0.03	0.79	3.04	0.87	0.35	1.29
Faizabad*	1.25	1.14	3.32	1.53	0.36	1.09
Gonda	0.52	1.07	5.31	2.24	-0.26	2.32
Bahraich	0.21	1.59	4.62	3.19	0.33	2.61
Sultanpur*	1.24	0.37	4.44	0.97	-0.58	0.27
Pratapgarh*	0.85	0.14	4.49	0.91	-1.03	0.66
Barabanki*	2.57	2.47	5.08	3.84	2.37	2.11

Note : Period I refers to the years 1950-51 to 1964-65. Period II refers to the years 1950-51 to 1970-71.

* Districts showing lowest growth.

APPENDIX 2

INDEX NUMBER OF TOTAL FOODGRAINS PRODUCTION

(Base : Average of 1950-51 to 1952-53=100)

Year	Group of 13 districts		Rest of the State
1950-51	..	98.43	102.63
1951-52	..	97.22	92.85
1952-53	..	104.35	104.52
1953-54	..	106.66	109.17
1954-55	..	122.16	112.42
1955-56	..	110.61	101.61
1956-57	..	114.68	106.96
1957-58	..	94.13	99.04
1958-59	..	124.77	108.30
1959-60	..	124.52	113.48
1960-61	..	141.12	120.37
1961-62	..	138.22	117.57
1962-63	..	128.42	113.46
1963-64	..	113.01	99.35
1964-65	..	137.18	132.25
1965-66	..	113.67	118.13
1966-67	..	77.43	111.93
1967-68	..	143.13	146.36
1968-69	..	123.65	143.57
1969-70	..	144.05	153.49
1970-71	..	149.89	176.05

**A NOTE ON THE NATURE OF DEMAND ELASTICITIES OF POULTRY,
POTATO AND BRINJAL : USING PANEL DATA IN
MYMENSINGH TOWN, BANGLADESH***

Introduction

Price, cross-price, and income elasticities of demand for a commodity are termed as demand elasticities. Demand elasticities define the nature of the products from the standpoint of consumer preferences : whether the products are more or less important in consumers' 'market basket,' whether the products are complements or substitutes, superior or inferior, necessary or luxurious. An understanding of such nature of demand for commodities is essential as guide for decision-making and programme operations by producers, traders, and other public or private agencies.

Time-series and family budget data are generally used for estimating demand equations and demand elasticities. Budget data, however, are inadequate for estimating price and cross-price elasticities; while detailed time-series data are not often available and accurately maintained particularly in the less developed countries. In fact, due to the dearth and inadequacy of necessary data, the computation of price and cross-price elasticities of demand, especially for agricultural commodities has been a long standing problem in these countries.

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