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STATEWISE TRENDS IN RURAL INCOME, OUTPUT GROWTH AND INPUT USE IN INDIAN AGRICULTURE

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ABSTRACT

India has recorded fairly high growth rates in its agricultural output during the post green revolution period, but the achievement has been restricted to selected pockets and crops. Consequently, the level of income from agriculture sector, per capita of rural population, showed an increase in the states which were better endowed to adopt the new technology, and it declined or remained stagnant in the states where the new technology could not spread. This has led to sharp increase in inter-state disparities in rural incomes, contrary to our national goal to attain growth with equity. Growth rates achieved in area, production and yield of major crops in different states explain, to a large extent, the variation in inter-state rural incomes, and enables us to assess the performance of agriculture sector of each state. The spatial and temporal variations in the use of critical farm inputs, viz., fertilizer, irrigation, high yielding varieties seed and electricity, was found to be an important factor in explaining the regional imbalances in the level of agricultural development.

The living standard of a vast majority of India's rural population is dependent on the prosperity of its agriculture. The growth of agricultural output is seen to be the major determinant of the proportion of population living below poverty line. Since the onset of green revolution in late sixties, Indian agriculture at aggregate level has witnessed a fairly high increase in output, but the growth has been confined to selected pockets and crops, leading to widening of regional imbalances and disproportionate growth among various crops. This has serious implications for harmonious development of various regions and crops.

This study provides indicators of regional and crop imbalances in terms of growth in per capita income of rural population and growth rates in area, productivity and output of the important crops, in major states of the country, in post green revolution period. Further, the factors underlying the growth in agricultural output in various states are analysed for the period since 1970. The results of the study can be used as a basis for delimiting agricultural efficiency regions having similar pattern of growth of agricultural output and to analyse the factors underlying

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different growth patterns. In particular, it focuses on spatial and temporal variations in use level of important inputs, viz., fertilizer, irrigation, high yielding varieties seeds and electricity, to find out use of which inputs should be augmented in different regions to promote the growth and development of hitherto underdeveloped regions to reduce regional imbalances.

Per capita rural income

The net state domestic product from agriculture sector, per capita of rural population, can be appropriately used in assessing the living standard of rural population. This measure was computed at constant prices, using 1980-81 as the base year, for the selected states, at three points of time between 1970-71 to 1989-90, to examine the over time and across states trends in economic well being of the rural populace. The results showing inter-temporal and inter-state variations in per capita real rural income are portrayed in Table 1.

Punjab, followed by Haryana, remained at the top and Bihar continued to be at the bottom in terms of per capita rural income during 1970-71, 1980-81 and 1987-88 to 1989-90.

Among other states, value of agricultural output per capita of rural population was higher than the national average in Gujarat, Karnataka and Andhra Pradesh, while Orissa, Himachal Pradesh, Madhya Pradesh, Kerala and Assam remained below the national average in all the three periods during the past two decades. The per capita output in real terms showed a decrease in 11 states out of 17 major states in 1980-81 as compared to 1970-71, and during the eighties the decrease was observed in case of four states. In majority of the states, the growth rate of output of agricultural sector was lower than the growth rate of rural population between the period 1989-90 and 1970-71. Thus, if income from agriculture sector is taken as a measure of economic well-being of rural population, then in most of the states the living standard in the late eighties has worsened compared to 1970-71. The states of Bihar, Orissa, West Bengal, Madhya Pradesh, Gujarat, Tamil Nadu, Andhra Pradesh, Himachal Pradesh and Rajasthan, which produced low level of farm output per capita of rural population during 1970-71, showed further deterioration in level of the per capita output in late eighties. The coefficient of variation in net state domestic product from agriculture sector per capita of rural population among the selected states rose from 0.35 in 1970-71

Table 1. Trend in Net State Domestic Product from Agricultural sector, Per Capita of Rural Population During 1970-71 to 1980-81 and 1989-90 at 1980-81 Prices (Rupees).

Region/State	1970-71	1980-81	Average of 1987-88 to 1989-90
Northern			
Haryana	1458	1614	1845
Himachal Pradesh	760	682	723
Jammù & Kashmir	732	815	755
Punjab	1730	1780	2405
Rajasthan	1012	751	862
Eastern			
Assam	713	665	735
Bihar	527	498	456
Orissa	696	705	656
West Bengal	862	618	808
Central			
Madhya Pradesh	683	632	672
Uttar Pradesh	698	770	809
Western			
Gujarat	1149	1036	820
Maharashtra	634	919	971
Southern			
Tamil Nadu	672	547	604
Karnataka	933	906	1061
Andhra Pradesh	843	770	826
Kerala	698	625	721
All India	775	762	806
C.V.	0.35	0.40	0.50

Note : 1970-71 figures based on that years prices adjusted to 1980-81 prices using implicit price index of GDP (100 of 1980-81 = 46.82 in 1970-71) by shifting base from 1970-71 to 1980-81.

Sources : Compiled from :

1: Government of India; Estimates of State Domestic Product, Central Statistical Organisation, Department of Statistics, Minstry of Planning, New Delhi, Various issues.

2: Government of India; Economic Survey, Ministry of Finance, New Delhi, Various issues.

3: Centre for Monitoring Indian Economy; Basic Statistics Related to Indian Economy, Vol 2: States, Bombay, Various issues.

to 0.40 in 1980-81 and to a still higher level during the triennium ending 1989-90, which indicates rising inter-state disparities in rural income during the past two decades.

Growth in Area, Yield and Production of Major crops

The inter-state and regional imbalances in agricultural incomes arise mainly due to the differences in the level of crops' productivity, crop mix and the differences in growth rates of area, yield and production of the crops grown in these areas. In this section, we discuss the growth rates in area, production and yield of important crops, achieved by major states of India, during 1967-68 to 1988-89. Year 1967-68 represents the threshold in Indian agriculture as at that time the green revolution technology started spreading on Indian soils. Thus, the study period represents post green revolution scenario.

The growth rates in area, production and yield of the selected crops were computed from estimated simple linear trend equations expressed as : $y = a + bt + e$; where 't' represents time or year and 'y' represents the dependent variable. The choice of linear trend equation for computing the growth rates was dictated by the fact that it gave a better fit to the data, compared to exponential and semi-log trend equations in most of the cases. The results are presented in Tables 2 and 3. The crops selected for the study covered more than four-fifths of the total cropped area of the country and, thus, represent a large segment of the agriculture sector of the economy. Productivity of cereals as well as foodgrains (which comprises cereals and pulses) exhibited positive growth rates in all the states. However, pulses witnessed negative growth rate in area, productivity and production in all the four states of northern India. Similarly, production of foodgrains and cereals showed a rising trend in all the states except in Kerala. There was wide inter-state variation in growth rates of output and yield of cereals and foodgrains. Annual rate of growth of output of foodgrains ruled more than 3.50 per cent in Haryana, Punjab and Uttar Pradesh, and less than one per cent in Himachal Pradesh and Tamil Nadu, and negative in case of Kerala. Except in Rajasthan, Bihar, Gujarat and southern states, the increase in output of foodgrains resulted from both an increase in area as weli as productivity. In all the high growth states, growth rates in foodgrains yield were substantially higher than the growth rates in area under foodgrains, and the same holds true in case of cereals. Area and production of pulses showed rising trends in Orissa, Madhya Pradesh, Assam, Maharashtra, Gujarat and all southern states except Kerala which had negative growth in area. The annual trend rate of growth in pulses output ranged between 4.48 and 6.12 per cent in Andhra Pradesh, Tamil Nadu, Orissa and Gujarat. Despite the lack of

Table 2: Annual Linear Trend Rate of Growth in Area (A), Production (P) and Yield (Y) Per cent, of Selected Crops for Period 1967-68 to 1988-89 in Major states

States	Food Grains			Cereals			Pulses			Rice			Wheat		
	A	P	Y	A	P	Y	A	P	Y	A	P	Y	A	P	Y
Haryana	0.22	3.96	3.87	1.25	5.05	3.91	-3.10	-4.35	-1.15	4.86	7.06	2.91	3.26	6.02	2.87
H. P.	0.46	0.56	0.11	0.70	0.72	0.03	-2.78	-6.30	-4.82	-0.41	-0.69	-0.29	1.25	1.64	0.39
J & K	0.59	1.57	1.01	0.68	1.64	0.99	-0.94	-1.09	-0.15	0.95	2.10	1.19	1.04	0.82	0.23
Punjab	2.15	5.48	3.48	2.70	5.72	3.21	-4.77	-5.39	-0.57	7.80	10.28	4.06	2.36	5.15	2.90
Rajasthan	-0.06	1.74	1.84	0.18	2.21	2.01	-0.61	-0.09	0.50	0.67	1.39	0.63	1.67	4.77	3.39
Assam	1.06	1.76	0.67	0.97	1.73	0.73	2.81	3.15	0.29	0.85	1.66	0.81	4.36	3.38	-0.84
Bihar	-0.32	1.24	1.61	-0.07	1.49	1.60	-1.84	-1.34	0.74	-0.09	0.83	0.89	2.14	3.97	2.03
Orissa	1.04	1.56	0.51	0.01	0.95	0.96	4.89	5.75	0.88	-0.34	0.61	0.93	3.96	4.59	1.39
West Bengal	0.05	1.85	1.82	0.41	2.09	1.68	-3.63	-3.82	0.10	0.36	2.11	1.70	1.01	1.11	0.70
M. P.	0.45	2.17	1.76	0.27	2.27	2.02	0.93	1.74	0.87	0.80	2.01	1.17	0.76	3.78	3.03
Uttar Pradesh	0.35	3.69	3.33	0.73	5.58	4.96	-1.56	-1.05	0.63	1.07	4.94	3.88	2.61	5.83	3.33

Gujarat	-0.80	1.14	1.69	-1.39	0.72	1.82	3.61	6.12	2.52	0.26	2.04	1.64	-0.03	2.14	2.24
Maharashtra	0.55	2.69	2.25	0.35	2.68	2.43	1.35	2.83	1.48	0.66	2.47	1.88	0.07	3.07	3.41
Tamil Nadu	-0.91	0.66	1.57	-1.52	0.50	2.10	3.17	5.81	2.76	-1.19	0.67	2.16	-4.53	-3.68	2.78
Karnataka	0.05	1.11	1.02	-0.42	1.03	1.37	1.91	2.04	0.21	-0.06	0.56	0.60	-0.66	0.25	1.03
A. P.	-0.69	2.57	3.34	-0.91	2.48	3.50	0.47	4.48	4.03	0.78	3.46	2.71	-1.52	0.83	3.16
Kerala	-1.68	-0.73	1.01	-1.67	-0.76	0.96	-1.91	2.25	4.25	-1.63	-0.74	0.95	-	-	-
All India	0.21	2.54	2.35	0.23	2.82	2.61	0.48	0.60	-0.06	0.58	2.35	1.75	1.91	3.26	3.14

Based on the data taken from following sources:

1. Government of India : Indian Agriculture in Brief, Directorate of Economics and Statistics, Ministry of Agriculture, New Delhi, Various Editions.

2. Government of India: Agricultural Statistics at a Glance, Directorate of Economics and Statistics, Ministry of Agriculture, New Delhi, Various issues.

Table 3: Annual Linear Trend Rate of Growth in Area (A), Production (P) and Yield (Y) Per cent of Selected Crops for Period 1967-68 to 1988-89 in Major States

States	Groundnut			Sugarcane			Potato			Cotton		
	A	P	Y	A	P	Y	A	P	Y	A	P	Y
Haryana	-4.25	-3.98	-0.08	-0.79	-0.60	0.30	2.45	1.99	-0.05	3.41	4.30	1.02
Himachal Pradesh	-5.23	-7.41	-3.25	-1.58	-2.72	-1.63	-0.27	-1.60	-1.56	-3.08	-2.99	-1.23
Jammu & Kashmir	-	-	-	-6.23	0.58	6.54	1.40	-2.02	-4.03	-4.36	-4.11	-0.45
Punjab	-7.99	-8.20	-0.37	-2.25	0.03	2.05	3.46	5.05	2.16	2.46	3.59	1.25
Rajasthan	-0.91	1.31	2.20	-1.52	0.84	2.61	0.30	8.21	8.10	1.49	4.18	3.05
Assam	N.A.	N.A	N.A	1.32	2.92	1.63	5.15	7.24	2.40	-1.68	-0.97	0.63
Bihar	1.03	1.29	0.31	-1.24	-1.51	-0.22	1.56	2.33	0.75	-9.96	-6.03	2.32
Orissa	9.07	9.74	0.69	1.77	2.60	0.89	-1.35	-3.48	-0.17	7.06	7.30	-1.50
West Bengal *	28.75	33.28	7.55	-3.38	-2.45	1.55	4.46	8.03	4.02	-20.43	-7.87	8.59
Madhya Pradesh	-2.33	-1.94	0.54	-0.79	0.67	1.64	3.31	3.93	0.72	-1.79	-0.76	1.07
Uttar Pradesh	-4.71	-4.78	0.26	1.69	2.80	1.13	3.75	7.46	4.10	-4.55	-2.95	1.98
Gujarat	0.12	1.03	0.56	5.62	8.04	2.72	5.90	5.94	0.38	-1.85	-0.75	0.87
Maharashtra	-2.08	0.89	4.03	2.87	3.52	0.87	-0.33	0.84	1.19	0.11	1.53	1.38

Tamil Nadu	-0.01	0.73	0.76	2.92	3.68	0.82	-2.73	1.43	4.93	-2.04	1.00	2.92
Karnataka	1.35	2.85	1.51	4.05	3.88	0.75	5.61	7.50	2.35	-2.45	2.25	5.29
Andhra Pradesh	1.78	2.74	0.89	0.25	11.61	11.69	-0.67	3.56	3.91	3.31	7.99	5.65
Kerala	-1.73	-5.76	-4.84	-0.82	1.06	1.10	N.A.	N.A.	N.A.	-1.53	1.28	2.90
All India	0.12	1.38	1.20	1.43	2.52	1.14	3.16	6.13	3.17	-0.34	2.33	2.72

* Growth rate for groundnut and cotton based on 1980-81 to 1988-89 and 1971-72 to 1988-89 respectively for the state of West Bengal.
- Not a significant crop in the state.

N.A. Required data could not be obtained.
Source : Same as in Table 2.

breakthrough in technology for pulses production, its productivity in some states, namely, Kerala, Andhra Pradesh, Tamil Nadu and Gujarat, has risen at an impressive rate of 2.52 to 4.25 per cent per annum.

Among individual crops, green revolution technology, till late, was confined to rice and wheat. Where the favourable environment for adoption of this technology existed it led to large scale shift in area in favour of these two crops and spectacular growth in their output. In states of Punjab and Haryana, output of rice rose at the rate of 10.28 and 7.06 per cent per annum and output of wheat increased at the rate of 5.15 and 6.02 per cent per annum, respectively. In case of rice, the growth rates in area were quite high relative to the growth rates in productivity in these two states. Tamil Nadu was the lone state where output of wheat showed declining trend, attributable to the decrease in area under this crop. Kerala and Himachal Pradesh experienced decreasing trend in output of rice.

There was tremendous variation in the signs and magnitude of growth rates in area, production and yield of non-foodgrain crops across states. The area as well as production of groundnut decreased at a very high rate in Punjab, Haryana, Himachal Pradesh, Uttar Pradesh and Kerala while the same showed high rate of growth in eastern states. Karnataka and Andhra Pradesh were observed to attain modest growth rate in area and productivity and fairly high growth rate in production, of groundnut. The data for West Bengal indicated that during the eighties there has been a considerable shift in area in favour of groundnut and a distinct improvement in its productivity, which enabled that state to achieve an amazing growth rate of 33.28 per cent per annum in groundnut production. Barring Himachal Pradesh and Bihar, all the other states observed rising trend in sugarcane yield. Yield and production of sugarcane in Andhra Pradesh showed an impressive growth rate, exceeding the figure of 11 per cent per annum. Gujarat recorded an annual growth rate of 8 per cent in production and 5.6 per cent in area in respect of sugarcane. In the states of Maharashtra, Karnataka and Tamil Nadu the trend rate of growth of production of sugarcane exceeded 3.5 per cent per annum, owing largely to the increase in area.

Production of potato showed positive growth rate in all the states except Himachal Pradesh, Jammu and Kashmir and Orissa. The growth rate in its production was above five per cent per annum in Punjab, Rajasthan, Assam, West Bengal, Uttar Pradesh, Gujarat and Karnataka while the growth rate in its productivity ranged between 2 to 8 per cent in these states except Gujarat. Area under cotton showed positive growth

in Punjab, Haryana, Rajasthan, Orissa and Andhra Pradesh, and negative growth in all other states except Maharashtra, where it remained almost stagnant, during the period 1967-68 to 1988-89. Andhra Pradesh and Orissa achieved 7-8 per cent annual increase in production of cotton and in Punjab, Haryana and Rajasthan, the annual trend growth rate hovered between 3.6 to 4.2 per cent. There was a fall in the area and production of cotton to the tune of 9.96 and 6.03 per cent per year in Bihar and 20.43 and 7.87 per cent in West Bengal, respectively.

The major factors causing spatial variation in the growth rates in agricultural output were identified as i) fertilizer use, ii) irrigation, iii) area under high yielding varieties and iv) consumption of electricity in agriculture.

Spatial pattern of input use

The growth in per hectare use of plant nutrients at all India level was indeed impressive, but the bulk of this growth, achieved during the past two decades, remained concentrated in about one third of the states (Table 4). Most impressive growth in fertiliser use was observed in West Bengal which recorded more than 7.5 times increase in fertilizer consumption in a period of two decades which led to positive growth in productivity of all important crops in that state. Punjab ranked first throughout the study period in terms of fertilizer use, followed by Tamil Nadu and Andhra Pradesh. Assam, Orissa and Rajasthan remained the poorest users of fertilizer. The complementarity between fertilizer use and irrigation is well established in Indian context at overall level. However, the state-wise trends in fertilizer use vis-a-vis per cent of cropped area under irrigation present a mixed picture. For instance, fertilizer use showed remarkable growth without commensurate increase in area under irrigation in states of Maharashtra, West Bengal, Tamil Nadu and Kerala.

Proportion of cropped area under irrigation remained stagnant in West Bengal, Himachal Pradesh and Jammu and Kashmir; and in Assam and Kerala it indicated a sharp decline over the last two decades. Maharashtra, despite having minimum proportion of crop area in command of irrigation during 1971-72, did not make much headway to improve the status quo even in later period. Punjab seems to have exploited its irrigation potential to full extent extending irrigated crop production to 92.4 per cent of crop area in 1988-89 from 72.5 per cent during 1971-72. Haryana and Uttar Pradesh maintained second and third place, respectively, in terms of coverage of irrigation in 1971-72 and 1988-89 (Table 4).

Tabel 4: State-wise Fertilizer Consumption and Area Under Irrigation in Selected Years Between 1971-72 to 1988-89.

Region/State	Fertiliser (N+P+K) kg/Cropped ha					Per cent of Cropped Area Irrigated				
	1971-72	75-76	80-81	85-86	91-92	1971-72	75-76	80-81	86-87	88-89
Northern										
Haryana	16.3	17.8	42.3	65.4	100.9	43.9	50.3	60.6	69.1	67.8
Himachal Pradesh	8.9	9.4	17.1	24.4	35.0	16.6	16.6	16.5	17.4	17.4
J. & K.	6.1	10.1	21.3	35.7	52.9	40.4	40.2	40.2	39.4	41.8
Punjab	50.6	47.2	111.6	157.4	159.3	72.5	73.8	85.5	91.3	92.4
Rajasthan	3.5	4.6	7.8	11.7	25.0	14.2	17.1	21.6	24.7	23.2
Eastern										
Assam	2.8	1.7	2.7	4.7	10.6	25.6	18.0	16.6	15.7	15.7
Bihar	10.1	11.0	18.3	48.9	57.8	28.8	29.8	32.6	36.3	40.3
Orissa	7.2	6.7	8.7	14.7	23.4	18.8	19.2	19.6	22.5	25.6
West Bengal	13.1	16.3	37.1	52.1	101.7	26.1	19.4	20.2	23.3	23.0
Central										
Madhya Pradesh	5.9	5.3	9.2	19.3	37.9	8.9	8.9	11.5	15.6	16.7
Uttar Pradesh	20.1	21.0	46.8	78.7	93.2	40.4	40.0	46.3	51.0	55.9
Western										
Gujarat	17.4	14.7	33.4	40.4	71.5	14.4	15.1	21.8	24.6	N.A.
Maharashtra	13.3	13.1	20.8	31.6	60.9	8.0	11.0	12.4	12.4	12.1
Southern										
Tamil Nadu	45.3	39.5	35.9	96.2	141.9	42.7	46.7	50.9	43.7	44.5
Karnataka	15.2	18.3	32.3	48.4	75.0	13.3	15.3	15.7	19.0	22.0
Andhra Pradesh	23.5	25.4	46.9	66.3	124.0	26.6	34.9	35.4	37.7	41.4
Kerala	22.0	20.8	34.1	49.4	77.0	20.1	21.0	13.3	14.8	13.7
All India	16.1	16.9	31.8	48.4	72.2	22.7	25.1	28.6	31.4	32.9

Compiled from following sources:

1. Government of India : Indian Agriculture in Brief, Directorate of Economics and Statistics, Ministry of Agriculture, New Delhi, Various Editions.
2. Government of India; Agricultural Statisitics at a Glance, Directorate of Economics and Statistics, Minstry of Agriculture, New Delhi, Various issues.
3. N.A. : Not available.

Table 5: State-wise Area Under High Yielding Varieties and Consumption of Electricity in Agriculture Sector in Selected Years Between 1970-71 to 1988-89.

Region/State	Per cent of Cropped Area HYV				Electricity KWH/Cropped ha				
	1975-76	1980-81	1985-86	1988-89	1970-71	1975-76	1980-81	1985-86	1988-89
Northern									
Haryana	54	67	73	79	60	109	175	248	385
H. P.	46	51	59	63	1	3	6	21	24
J. & K.	44	55	64	70	12	24	26	44	155
Punjab	73	89	94	90	82	143	274	396	547
Rajasthan	13	21	31	32	7	21	58	79	117
Eastern									
Assam	18	25	43	55	ng	2	1	2	3
Bihar	29	38	61	70	6	40	39	78	130
Orissa	10	26	35	44	2	1	7	13	13
West Bengal	23	38	42	47	3	6	9	17	32
Central									
M. P.	18	24	37	44	3	8	16	34	64
Uttar Pradesh	39	50	65	71	31	74	114	149	241
Western									
Gujarat	41	55	68	66	39	83	125	169	458
Maharashtra	22	39	60	60	19	41	86	180	231
Southern									
Tamil Nadu	62	66	78	91	173	234	366	398	523
Karnataka	28	33	31	36	16	28	37	53	258
A. P.	39	48	56	74	31	48	80	227	381
Kerala	27	49	37	77	14	40	28	35	66
All India	31	41	53	60	27	51	84	128	219

ng. : Negligible

Sources : Same as in Table 4.

It is interesting to observe that high yielding varieties seed was widely used under unirrigated conditions also. This is evident from the fact that area under high yielding varieties (Table 4) far exceeded the area under irrigation (Table 5). Except in Rajasthan and Karnataka, the area under high yielding crop varieties was above 44 per cent in all the states. Since the area under HYV is reported only for cereal crops, the observed increase in this area reflects itself in positive rate of growth in productivity of cereals in all the states.

Electricity is relatively cheaper and operationally efficient source of energy for undertaking various mechanical operations in agriculture. Electrification of agriculture is observed to play the role of a catalyst in growth and modernisation of Indian agriculture. Consumption of electricity, per unit of crop area, in different states, showed tremendous variation ranging from miniscule use in Assam to 547 KWH use per hectare of crop area in Punjab. Tamil Nadu ranked at the top in electrification of agriculture sector till 1985 but subsequently lost its place to Punjab. Among other states, Gujarat, Andhra Pradesh and Haryana achieved noteworthy progress in provision of electricity to farm sector. After Assam, the poorest performance in supply of electricity to agriculture sector was observed in Orissa. Himachal Pradesh, West Bengal, Madhya Pradesh and Kerala also did not show much progress in providing electricity to agriculture sector.

Conclusions

The state wise trends in agricultural income, per capita of rural population, reveal that agricultural development in India has been characterized by rising regional disparities. The gap between rich and poor states, in terms of net state domestic product of agriculture per capita of rural population, has widened over the past two decades ending eighties. In majority of the states the growth of agriculture sector, in real terms, could not keep pace with the rise in population, making rural population of these states economically worse off in late eighties compared with the year 1970-71. The post green revolution period showed tremendous variation in growth rate of area, output and productivity across states and crops which led to severe crop imbalances and regional differentiations. The pattern of growth of agricultural incomes, output, area and productivity, largely resulted from spatial variations in use of

critical farm inputs. Investment in irrigation development, provision of electricity to farm sector, promotion of fertilizer use and spread of high yielding varieties, in agriculturally backward states, appear to be the potent measures to develop these states and to achieve the goal of growth with equity.