
C H A P T E R - V I I I

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DISCUSSION

A well developed agricultural economy is an essential element for sustained economic development. It has been the source and foundation of prosperity for every industrially advanced country in the world. Agricultural development leading to self-sufficiency in food has been one of the basic objectives of economic planning in India. In this respect, Uttar Pradesh, with its vast natural resources, can play a prominent role. Raising agricultural production and productivity is a key element to economic growth of this State as well as the country as a whole. Keeping in view the importance of agriculture in the economy of the State, priority had been given to agricultural programmes all through the plan periods.

Agriculture occupies the place of utmost importance in the economy of the State. It is providing employment to about 78 per cent of its working population and contributing about 55 per cent of total State income. Through a multidimensional approach adopted to boost agricultural production in the State; potentials have been created to achieve higher production in each successive year. However, actual production has been much below the potential due to the vagaries of weather, resulting in draught, floods or untimely rains, etc.

There has been an alround growth in agriculture in the State during the last 26 years of Planning Period. However, rate of growth of the State's agricultural economy over the years has been very low as compared to other developed States of the country. As a result of this, economy of the State could not make the desired headway. One of the major factors for this stagnant economy has been low per capita outlay during all the Plan Periods. This has resulted in a general realization that Uttar Pradesh is an economically backward State. The extent and nature of its backwardness is, however, not so widely known.

The realization of the fact that the slow rate of growth of agricultural production has been one of the limiting factors of overall economic growth in the State, has led to the adoption of a new agricultural strategy for raising agricultural production through increased land yields. The introduction of modern farm technology on the one hand, and creation of modern resource potentials on the other, in recent years, have changed the face of agricultural economy of the State and it has become of prime importance in the current discussion on economic planning. It has wider repercussions to the whole process of growth. The agricultural economists have attempted to analyse this changing picture of agriculture in the State under the following three categories:

- (i) rate of growth in respect of resources utilization and

area, production and productivity of important crops.

(ii) Imbalanced growth

(iii) Growth and equity

8.1 Rate of growth

The increasing land yields in the State have been mainly maintained by the extension of irrigation facilities, greater use of fertilizers, improved seeds and improved farming practices, and to some less extent by the extension of farm lands. However, the potentiality of fertilizers, manures and seeds depends much upon proper and regular water supply. The application of increased fertilizers and improved seeds, unless they are accompanied by adequate water supply, may produce adverse rather than favourable effects on land productivity. Irrigation, thus being one of the most important inputs for raising agricultural production and productivity, has been accorded a very high priority in the Five Year Plans of the State. By the end of 1977-78, the irrigation potential created through major and medium works is likely to go up to 54.22 lakh hectares. In addition, minor irrigation programmes have also been accorded priority during the recent years, providing assured water to high yielding varieties and also to maintain a balance between surface and ground water by boring tubewells in command areas of canals and feeding the canals with pumped underground water.

even from the view point of source wise contributions, minor irrigation plays an important role besides being the quickest and surest source of irrigation. It is expected that by the end of 1977-78, total irrigation potential through private tubewells and pumping sets would be 65.54 lakh hectares. State tubewells are particularly important for small and marginal farmers and for areas with difficult underground water conditions. As a result of all the measures mentioned above, total irrigation potential from all sources would increase around 144.84 lakh hectares by the end of 1978-79.

Agriculture even now in the State is mostly rainfed and consequently suffers from the vagaries of weather, despite considerable efforts to stabilise cultivation by extending irrigation facilities. By 1974-75, only 40 per cent of the cropped area had been brought under irrigation. It is true that the level of irrigation in the State has been quite high as compared to most of the States in the country, but it is still much below the level attained by Punjab, Haryana and Tamil Nadu, where the corresponding coverage of cropped area under irrigation is 80.8, 53.6 and 45.7 per cent, respectively. In Uttar Pradesh, area under irrigation showed a considerable increase during the last 26 years. It rose from 48,39,696 hectares during 1950-51 to 79,33,368 hectares during 1975-76, thereby showing an increase of 61.03 per cent. But this increase in area under irrigation was not uniform in all the regions of the State. The increase was

more pronounced in agriculturally developed Western region where area under irrigation increased from 20,14,864 hectares during 1950-51 to 37,68,157 hectares during 1975-76.

Corresponding increase during the same period in Eastern, Bundelkhand, Central and Hill Regions was from 18,80,086 to 24,76,499, 2,03,628 to 4,08,028, 6,68,015 to 11,26,922 and 73,103 to 1,53,762 hectares, respectively.

The linear growth rates in the net irrigated area in different regions of the State during the period 1950-51 to 1975-76 were worked out to 3.71, 2.63, 1.18, 4.95 and 4.70 per cent per annum for western, Central, Bundelkhand, eastern and Hill Regions, respectively. It was the lowest in eastern region which needed special attention. Irrigation intensity which depicts the percentage of sown fields irrigated also varied widely in different regions. In 1975-76, it was 53.73 per cent in Western region, 34.26 per cent in Central region, 35.11 per cent in Bundelkhand region, 21.42 per cent in Eastern region, and 21.74 per cent in Hill region.

Above analysis clearly reveals that there had been imbalanced growth as regards irrigation in different regions of the State. As to the future pattern of irrigational development, emphasis should be laid on removing these regional disparities. The regions deficient in irrigation facility should be developed to enable them to catch up with developed parts of the State, whereas irrigation in the State as a whole,

should be brought at par with the neighbouring States of Punjab and Haryana. Taking into account the requirements of new cropping patterns, consequential to the introduction of high yielding varieties, substitution of traditional varieties by their high yielding and short duration varieties is a must. Extension of assured and dependable irrigation to meet these ends cannot, therefore, be over-emphasized. Intensive cropping on as wide an area as possible, is the emerging imperative of the Green Revolution that can be consolidated by adequate and timely supply of water.

An analysis of the causes of low level of productivity in agriculture in the State suggests that the present state of affairs is largely attributable to low application of fertilizers. Consumption of fertilizer per hectare during the year 1975-76 in the form of nutrients was only 17 kg of nitrogen, 2.7 kg of phosphate and 1.6 kg of potash, which were much lower as compared to Punjab and Tamil Nadu. As the application of fertilizers is significantly relatable to the availability of irrigation facilities, which affects also the cropping pattern, it would be reasonable to compare the performance of Uttar Pradesh with States like Andhra Pradesh, Punjab, Haryana and Tamil Nadu. The fact that Andhra Pradesh and Tamil Nadu are also ahead of Uttar Pradesh reflects the strides made by these States in modernising agricultural production. One of the reasons for comparatively

lower level of application of fertilizers appears to be the lack of adequate credit facilities. Another reason may be the high price of fertilizers and yet another reason may be in the defective system of its distribution.

A regional analysis of fertilizer consumption conducted in chapter V has shown that it was the highest in Western region and lowest in Bundelkhand Region. Per hectare consumption of fertilizers in Western, Central, Bundelkhand, Eastern and Hill regions in 1976-77 was 40.66 kg, 22.28 kg, 5.77 kg, 34.60 kg and 20.03 kg, respectively. It was also seen that consumption of fertilizers considerably increased in precisely all the regions of the State. However, this increase in the use of fertilizers was mainly due to increased use of nitrogenous fertilizers. The use of phosphatic and potassic fertilizers had been very low, although these have also shown increasing tendency over the period of time.

In case these conclusions are read with the irrigational pattern, presented in a previous chapter, one will not fail to notice that regions facilitated by intensive irrigation, consumed more of fertilizers. Therefore, for boosting fertilizer consumption in backward regions in particular and in the State as a whole, in general, increase in irrigation facilities on the one hand and timely and adequate supply of fertilizers at reasonable price through

efficient distribution system on the other, should be aimed at.

As regards the adoption of high yielding varieties, encouraging trend was witnessed over the last decade. In Uttar Pradesh, percentage of area under high yielding varieties to total cropped area rose from 2.10 during 1966-67 to 37.20 during 1974-75. However, adoption of these varieties was restricted mainly to wheat and paddy crops and to a lesser extent to maize crop. Regional pattern revealed that the percentage of area under HYV of wheat to the total area under this crop during 1974-75 was the highest in western region being 84.0 and the lowest in Hill region being 28.5 against the State average of 67.5. In the case of HYV of paddy also, the level of adoption was the highest in western region being 35.8 per cent against corresponding figures of 34.7, 25.8, 25.5 and 19.2 per cent in case of Eastern, Central, Hill and Bundelkhand regions, respectively. This clearly shows the ~~progressiveness~~ of the farmers of the western region in respect of adoption of new agricultural practices and technology. The slow growth of area under HYV of wheat and paddy in Hill and Bundelkhand regions was due to inadequate irrigation facility and consequential low level of fertilizer consumption in these regions. An adequate and timely supply of quality seeds of high yielding varieties and efficient

distribution system may go a long way in increasing the area under high yielding varieties. Efforts are needed to increase the area under HYV to exploit the irrigation facilities to fullest extent on the one hand, and raising yield level on the other, through the introduction of modern farm technology and strengthening the effective extension service.

During the first two Five Year Plans, although the importance of improved implements was stressed, but in terms of investment and efforts by the Government, effective steps were not taken for introducing improved implements on a large scale. However, considerable attention has been paid to introducing improved tools and implements and more efficient agricultural equipment so as to achieve a break-through in traditional practices. The need for improved tools and implements was emphasized for preparation of seed bed, proper placement of seed and fertilizers, control of weeds and plant protection measures. But due to the limitation of resources, techniques and qualified personnel, only a selective approach had to be adopted, and since the bulk of power was obtained from animals, special attention was given to the development of bullock-driven implements. Nonetheless, there was appreciable development in the use of power driven machines during the seventies. The number of electric and diesel

pump sets in use increased from 11,766 in 1961 to 6,37,362 in 1978, whereas the number of persian wheels used for irrigation purposes increased from 1,40,186 in 1961 to 2,49,054 in 1972 and then slightly declined to 2,26,081 in 1978. Plant protection equipment also registered substantial increase during the above period. Remarkable increase was observed in the use of four-wheel tractors. There were only 7,340 tractors in the State in 1961. Their number increased to 67,684 in 1978.

When we look at the regional profile of mechanisation of agriculture, the disparities again become evident. Western region is highly mechanised as compared to other regions, whereas Bundelkhand and Hill Regions are poorly mechanised. Central and Eastern regions are only moderately mechanised.

After discussing some of the important input resources, we now examine the agricultural growth with regard to area, production and productivity of principal crops and crop-groups during the last 26 years. Uttar Pradesh is a major producer of food-grains, producing about 18 per cent of the national production. Production of food-grains which, after achieving a record yield of 195 lakh tonnes in 1970-71, slumped to 163 lakh tonnes in 1974-75, staged a remarkable recovery during 1975-76 when the production again touched the 195 lakh tonnes level. In 1976-77, production further increased and was 199 lakh tonnes. Productivity of total food-grains which was only

7.90 q/ha during 1960-61 also increased appreciably to 10.40 q/ha during 1975-76. Considerable increase in food-grain production was mainly associated with the increase in production of wheat and rice due to introduction of their high yielding varieties. Increasing use of modern farm inputs like irrigation and fertilizers also aided increase in food-grain production.

The area under rice which was only 38.52 lakh hectare in 1950-51 has gradually increased to 48.28 lakh hectare and the production has also improved from 19.99 lakh tonnes in 1950-51 to 51.40 lakh tonnes in 1977-78. Productivity of rice has also increased from 5.19 q/ha to 10.65 q/ha in 1977-78. In case of wheat, on the other hand, increase in area and production has been spectacular. The area under wheat, which was only 33.16 lakh hectare in 1950-51, rose to a level of 66.54 lakh hectare in 1977-78. Production also bounced from 27.41 lakh tonnes in 1950-51 to 95.11 lakh tonnes in 1977-78. The productivity of wheat in 1950-51 was only 8.21 q/ha, while in 1977-78, it improved to 14.29 q/ha. The share of rice and wheat in the total food-grain production was only 17.02 and 23.11 per cent which in 1977-78 has increased to 24.0 and 45.7 per cent, respectively. Growth rates in the productivity of wheat and rice indicate increase after 1965-66 with the introduction of high yielding strains. Yet it is

evident that per hectare yields are quite low as compared to their potentiality.

While the production of cereals has registered an increasing trend, the production of pulses could not keep pace with the demand. Total pulse production registered a steep decline because of decreased area while the productivity remained more or less static. The area under pulses declined from 43.45 lakh hectare during 1950-51 to 31.55 lakh hectare during 1975-76. Corresponding decrease in production was from 30.23 lakh tonnes in 1950-51 to 26.57 lakh tonnes during 1975-76.

Potato, sugarcane and oilseeds are the major cash crops of the State which are also of commercial value. In spite of the importance of oilseeds, there has been no breakthrough in their production- mainly due to uncertain and adverse weather conditions. The maximum production of oilseeds was obtained in 1974-75 when the production level was 19.07 lakh tonnes. However, in 1977-78, the production decreased to a level of 14.64 lakh tonnes. The production of sugarcane, on the other hand, reached a production level of 583.6 lakh tonnes during 1975-76 against a production level of only 29.50 lakh tonnes during 1950-51. Production of potato during 1976-77 reached a level of 30 lakh tonnes as against the production of only 6.40 lakh tonnes during 1950-51.

region-wise analysis of growth rates of area, production and productivity of principal crops and crop-groups has been dealt with in detail in chapter VI. It revealed that compound growth rates of production of food-grains, during the period under study, was the highest in western region (2.56% per annum), followed by Hill region (2.21% per annum). In other regions, growth rate was found to be round about 1.50 per cent per annum. In case of productivity also the western region was at the top with a compound growth rate of 2.05 per cent per annum. Lowest compound growth rate in food-grains, during this period, was recorded in Bundelkhand region, being only 0.16 per cent per annum. The rates of growth of Central and Eastern regions were not substantial.

The area, production and productivity of rice grew at a rapid rate during the period 1950-51 to 1960-61. The compound rates of growth, during this period, varied from 2 to 9 per cent per annum with western region recording the highest rate of growth. During the entire period under study; viz., 1950-51 to 1975-76, western region showed the highest growth rates in production and productivity, being 4.77 and 2.52 per cent per annum, respectively. Bundelkhand region showed the lowest growth rates during this period. Central and Eastern regions showed compound growth rates of production

of about 2.50 per cent per annum, whereas compound growth rates of productivity in respect of these regions were 1.44 and 1.77 per cent per annum, respectively.

In case of wheat, area under the crop increased at the compound rate of growth of about 1.00 to 2.34 per cent per annum in all the regions except Bundelkhand during the first-two Five-Year Plans. In Bundelkhand, it was 4.27 per cent per annum which, however, during the period 1960-61 to 1975-76 dwindled to 1.60 per cent per annum. In other regions, growth rates ranged between 3.5 and 5.0 per cent per annum during this period. Compound growth rates of production varied between 3.49 per cent per annum in Bundelkhand and 5.38 per cent per annum in eastern region during the period 1950-51 to 1975-76. As against this, productivity grew at a compound rate of growth ranging between 1.20 per cent per annum in Bundelkhand region and 2.53 per cent per annum in western region.

Trends in compound growth rates of area and production of total pulses in various regions, except Bundelkhand, showed a negative tendency. Productivity, which maintained a positive trend, showed only nominal rates of growth. Similarly, growth rates in productivity of oilseeds showed a declining trend in one or the other period, in all the regions excepting Bundelkhand. The increase in productivity of oilseeds was significant in Bundelkhand during the first two

Five-Year Plans.

Growth rates of area and production of sugarcane were the highest in Bundelkhand region. However, growth rates in productivity were more or less similar in the western and eastern regions except during the period 1960-61 to 1975-76 when the growth rates in productivity in the eastern region were negative. During the period 1960-61 onwards, growth rates in productivity in none of the western, eastern and Central regions was found to be more than 1.5 per cent per annum.

A critical examination of the above analysis reveals that, although, there had been alround in resources utilization, on the one hand, and in the area, production and productivity of principal crops, on the other, yet the rate of growth in agriculture in the State as a whole, was not at par with the agriculturally developed States of the country like Punjab, Haryana and Tamil Nadu. Therefore, massive efforts are needed to improve the socio-economic structure of the State and to bring it to a level proximate to the national average. These efforts demand huge investments in different sectors of the economy. In particular, gigantic efforts are required in the field of power generation and development of irrigation facilities to boost agricultural production. In spite of investments made in the agriculture, irrigation

and power sectors in various five-Year plans, the State has still low agricultural yields and this situation cannot obviously be remedied unless, within the frame work of a well thought out strategy incorporating intensive agricultural practices, substantial investments are made in agriculture.

8.2 Imbalanced growth

A detailed analysis of uneven growth of agriculture in different agro-economic regions of the State leading to regional imbalances, crop imbalances and socio-economic imbalances has already been made in chapter VII. A brief discussion, highlighting the crux of the problem is being made in the following lines:

In a State of the size of Uttar Pradesh, it is undoubtedly inevitable that intra-state variations should develop on account of uneven occurrence of natural resources and variations in topography, climate, economic structure, unfavourable man-land ratio and the socio-cultural milieu and traditions. The regional imbalances arising out from these factors were further accentuated due to historical events which led to the establishment of a favourable net-work of communications and other infra-structural services and social facilities in some areas. Unfortunately, the last 25 years of planned development have not resulted in the reduction of

these disparities. Instead, the introduction of modern farm technology and high yielding varieties programme in the recent years have further widened the gap of regional imbalances.

It is obvious from the physical characteristics of the regions, discussed earlier, that the sharp inter-regional differences have inevitably resulted in variations in the pattern of agricultural activities and the accrual of incomes to the people inhabiting them. wide regional variations were marked in respect of net area sown, intensity of cropping, facilities of irrigation, consumption of fertilizers and the use of electricity for agricultural purposes. The percentage area under non-food crops and high yielding varieties to total cropped area varied widely in different regions. The western region, which is well developed as compared to other regions had the highest percentage of area under non-food crops as well as under high yielding varieties of paddy and wheat. As the area under commercial or non-food crops and under the high yielding varieties reflects the extent of agricultural diversification and economic advancement of a region, the western region has become more prosperous and an agriculturally advanced region.

The regional contrasts can very well be pin-pointed by the past performance of different regions in respect of production and productivity of different crops and crop-groups.

The agricultural productivity of an area depends on soil fertility, availability of irrigation water, application of inputs and technology, alongwith human efforts employed in agricultural operations. Compound growth rates of production and productivity of major crops like wheat, paddy, sugarcane, etc., were the highest in western region and the lowest in Bundelkhand region. It is, therefore, necessary to take a fresh look at the existing frame-work for regionalisation and consider the measures necessary for more effective action for the optimal utilization of the potentials of various areas and the speedy reduction of inter-state disparities.

As regards crop imbalances, there had been imbalanced growth in area under different crops. A critical review of cropping pattern over last 25 years reveals that there had been a marked shift in favour of more productive and remunerative crops like wheat, paddy and sugarcane, etc. The area under paddy and wheat had registered substantial increases while that of jowar, bajra, barley and pulses declined considerably. The high yielding varieties of paddy and wheat substituted the less remunerative crops in kharif and rabi seasons, respectively. This uneven growth in area under different crops contributed towards imbalanced growth in production of different crops. There had been considerable increase in the production of rice and wheat, but the production

of the other crops either remained static or declined due to reduction in area. The decline in the production of pulses and oilseeds causes great concern. Suitable measures are, therefore, needed for a balanced crop growth. The search for high yielding strains in pulses and oilseeds and suitable production technology may go a longway in increasing the area under these crops. This would help in reducing crop imbalances to a larger extent.

8.3 Growth and equity

The traditional setting of the State has been disturbed by the recent technological break-through in agriculture. There has been a rapid agricultural growth in recent years. Large scale social and egalitarian reform policies have also taken place. However, the gains of new technology have not been shared equally by all the areas of Uttar Pradesh. Governmental efforts to bring about economic growth with equity have proved fruitless. However, the rising inequality has caught the attention of the Sociologists and Social workers more as compared to Economists, who till recently failed to realise the precarious and transitory nature of the developmental efforts. Myrdal Gunnar¹ hypothesized

¹ Myrdal Gunnar (1969). "The challenge of world poverty- A world anti poverty programme in outline". Penguine Book Ltd. England. pp. 63-64.

that whenever development takes place, it should percolate down to the bottom stratum of the society.

In a democratic system, like ours, tolerance for economic inequalities is quite large. Members of traditional society are typically tied to each other by a network of obligations. When some members of the society advance, their obligations are apt to expand and many of those who trail behind expect to be benefitted in due course because of their claims on the former. There is, therefore, urgent need for creating conditions for achieving greater equality both in economic and social spheres. Economic equality is a precondition for achieving social equality, which in turn, is a must for steady development of a nation.

When we examine the extent of inequality and the trend towards rising inequality, the problem assumes greater dimension. Several economists have time and again pointed out towards dire poverty in which millions of our fellow citizens are living. This disparity is a cumulative effect of key factors of growth comprising of technology, organization and institutional changes and different policy variables set forth from time to time since the very inception of planning process in the country. An attempt has, therefore, been made in the present study to ascertain as to how far the gains arising out of the growth in agriculture have been unevenly

distributed among different regions of Uttar Pradesh and what were the factors associated with it?

An examination of the growth rate of production and productivity revealed that the disparities existed between various regions and they further widened in the green revolution period due to variation in the growth of productivity of high yielding varieties of crops, specially wheat. Imbalances developed between different regions, between large and small farms and also between land owners on the one hand, and landless labourers and tenants, on the other.

Regional (horizontal) disparities in incomes seem to have increased more than (vertical) disparities between different income groups within regions experiencing technological change. Apart from the differences in factor endowments-natural as well as man made-inherited from the pre-independence period, public investments in major and medium irrigation projects, which have a greater potential for reducing regional disparities have lagged behind private investments in well-irrigation, which have a potential for widening the regional disparities. Besides, in a large and diversified State like Uttar Pradesh, factors determining the adoption of innovations differ more between different regions than between different holding size groups. Nature of technology, availability of irrigation, development of credit institutions, human attitudes and motivations for

change seem to differ more between different regions than with respect to different individuals within any region. Moreover, participation in the modernisation process is usually greater in regions which have shed the feudal and semi-feudal structures and attitudes and where the inequalities in wealth and status are not conspicuous, so that the transformation-lag between different sections within a region experiencing change would be smaller than between different regions. Therefore, the area of highest concern during the coming year would be to ensure that the delivery system for inputs and technology gets reoriented towards the beneficiaries, particularly weaker sections, the dis-advantaged communities and the backward areas.

The question of equity social and spatial has come now to the forefront in our development policy. Greater emphasis is being laid on achieving balanced regional development. A balanced development of all the regions with particular emphasis on bringing the less developed regions to the level of relatively more developed regions has become an important task of planned development. This is sought not only as a means of rendering economic justice to the people of under-developed regions but to provide suitable conditions for proper utilization of natural resources, local skills and capital resources of

those regions so that they contribute more effectively to the overall economic progress of the State.

8.4 Test of hypothesis

As to the hypotheses outlined in chapter II, we have seen that:

(1) there has been an allround growth in agriculture in the State. In chapters V and VI, we observed that there had been substantial growth in resources utilization as well as in area, production and productivity of major crops and crop-groups. Hypothesis number one, thus, stands confirmed, and

(2) there has been imbalanced growth in agriculture. Chapter VII clearly indicates that there had been imbalanced growth in terms of regional disparities, crop disparities as well as socio-economic disparities. This supports hypothesis number two.