
CHAPTER - IX

SUMMARY, CONCLUSIONS AND SUGGESTIONS

9.1 Summary and conclusions

The present study, "A critical appraisal of agricultural growth in Uttar Pradesh during the plan-periods", was conducted with the main purpose of describing the trend, pattern and rate of agricultural growth during the plan periods, i.e., from 1950-51 to 1975-76, in the regional framework of the State. The rationale for undertaking such a study was to evaluate and explain the economic behaviour of the agricultural sector at the micro level for different agro-economic regions of the State. It aimed at measuring the growth rate of different components of agricultural development as well as the disparities created thereof in different regions. As a diagnosis, it does not claim to produce specific cures for unhealthy economic situations nor it attempts to forecast the course of development in the economic system. That is really the function of a prognosis. This is only a study of what has happened and ends with indicator for future policy formulation with a view to formulating a more realistic agricultural development programme, keeping in view the sub-state level economic under-currents. This study has

also put-forth suitable suggestions for removing regional disparities and accelerating the growth rate of agricultural development, particularly of the backward regions.

The study is based on the secondary data of different agro-economic regions; viz., western, Central, Bundelkhand, eastern and Hill, of Uttar Pradesh. Various sources were tapped for procuring data relating to utilization of resources, i.e., land, irrigation, fertilizers, high yielding varieties, plant protection and agricultural implements, etc., and area, production and productivity of major crops and crop-groups. The methodology adopted was the time-region analysis of agricultural trends over the last 26 years beginning from 1950-51 to 1975-76. The linear and compound growth rates were worked out to measure the agricultural growth in respect of resources utilization as well as area, production and productivity of major crops and crop-groups during various Five Year Plans. The indices of area, production and productivity of important crops were worked out for the period 1950-51 to 1975-76 treating 1950-51 as the base year.

A critical analysis of the agro-economic features of the State showed that Uttar Pradesh, being the fourth largest State in the country in terms of area, stood first in terms of population. In 1971, it covered an area of 1,13,654

square miles and had a population of 88.3 millions with a population density of 300 persons per square kilometre. The State comprises of a relatively larger rural sector with about 86 per cent of its population living in villages. Physiographically, the State is divided into four regions- the hill areas in the north along the Himalayas, the sub-mountainous tract comprising of Shabar and Tarai, the Yamuna-Gangetic plain with fertile alluvial soil, and the hill plateau region lying to the south of Gangetic plain. The State, in the north and the north-east, is drained by the Ganga, Yamuna and their tributaries. The drainage, in the south-west, is through the rivers Chambal, Betwa and Ken, etc. The entire State has tropical monsoon climate except in the Himalayan region where the climate is temperate. The annual rainfall varies from 50" in the east to 27.5" in the north-west. In the outer Himalaya it varies between 97" and 102". More than 80 per cent of the annual precipitation is received during the four months from June to September. The State, excepting the Bundelkhand and Hill regions, is rich in the matter of water resources, both in surface as well as underground water.

The State has been divided into five well defined geo-physical and agro-economic regions for resources development. There is a marked variation in the natural

features and economic development of these regions. Economic maladies like the population explosion or the lack of natural resources can best be encountered through a process of macro-micro level planning.

The economy of the State is mostly agrarian with 55 per cent of the State's domestic product originating from agriculture and about 78 per cent of the working force being employed in it. The pressure on land is quite heavy which has resulted in small and fragmented holdings. About two-thirds of the holdings in the State are below one hectare and account for only 20.6 per cent of the total area. The rate of growth of the State's economy over the years has been very low. It grew at an average rate of 1.9 per cent during the period 1960-61 to 1974-75 as against the average rate of growth of three per cent for the country as a whole. Consequently, the per capita income of the State is also very low, standing at Rs. 268/- during 1975-76 as against the all India average of Rs. 365/- at 1960-61 prices.

The State though most populous, has remained economically most backward in the country. Its hierarchical backwardness, in the regional context, has been passed on to the more densely populated areas. Inter-regional variations in the level of economic development are very high with potency to negate the entire process of development. The

Central region of the State has the highest level of per capita income because of the localisation of industries and services rather than due to its agricultural efficiency. This region suffers from poor irrigation facilities, poor productivity, serious unemployment and low agricultural income. Western region is better off than all other regions because of the developed infra-structure in agriculture. Bundelkhand region is backward due to low agricultural productivity. This region suffers from poor soil, low rainfall, paucity of road and transport facilities, vast area under culturable waste, lack of irrigation facilities and poor industrial development. Eastern region, on the other hand, is the most backward region of the State having the lowest per capita income. The economic crisis, in this region, is aggravated by draughts and floods and lack of non-agricultural employment opportunities. The Hill region faces the biggest problem of transport and communication. The region also lacks in industrial development, although it is rich in mineral resources. In-adequate irrigation, poor soil fertility and the typical topography of the region are some of the handicaps which account for the low productivity in the region.

The agricultural economy of the State has been recovering fast during the recent years with the introduction

of modern farming techniques and hybrid seeds. But in the all India context, Uttar Pradesh is still under-developed in regard to agriculture. Massive efforts are, therefore, needed to improve the agro-economic structure of the State and to bring it to a level proximate to the national average. In spite of investments made in agriculture, irrigation and power sectors during the earlier plans, the State has still a low agricultural productivity as compared to other States, and this situation obviously cannot be remedied unless, within the framework of a well thought out strategy incorporating intensive agricultural practices, substantial investments are made in agriculture. The assured supply of water through artificial irrigation and selectivity in agriculture planning, linking of targets to the national needs and potentiality should be the core of future planning. These are the minimal for a planned economic growth of the State that emerged out from the present research study.

When we look towards the growth in resources utilization, we find that during the last 26 years, there has been considerable increase in the net area sown as well as gross cropped area in practically all the regions of the State. The area under culturable waste, pastures, fallows, etc., have declined over this period. The net area sown was higher in case of western and eastern regions. However, area under double or multiple cropping was found to be the lowest in case

of Bundelkhand region and low in case of eastern region. As the possibility of bringing more land under cultivation have, more or less, exhausted themselves, expansion of gross cropped area can be brought about only by an increase in cropping intensity. The area under double crop has shown a significant rise from 37,28,872 hectares during 1950-51 to 58,97,137 hectares during 1975-76, thereby showing an increase of 50.91 per cent. This is an encouraging trend and with the increase in irrigation facilities, the position may improve further.

In the Western region, about 72 per cent of the reported area was under cultivation. As against this Eastern and Central regions accounted for only 65 per cent of cultivated area. In Bundelkhand, area under cultivation was 60 per cent, whereas in Hill region the percentage was only 13.33. Forests constituted only 5 per cent of the reported area in Western and Central regions. In Eastern and Bundelkhand regions, this percentage was 8 and 10, respectively. In Hill region, the percentage of area under forests was as high as 66 per cent. Culturable waste was the highest in Bundelkhand being 12 per cent of the reported area. In other regions, its share varied between 3.4 to 5.6 per cent. Fallows accounted for about 5 to 8 per cent of the reported area. Their proportion was also highest

in Bundelkhand region, closely followed by Central and Eastern regions. With the provision of adequate irrigation facilities, needed know-how of cultivation practices, more area may be brought under cultivation in Bundelkhand, Central and Eastern Regions. There is also considerable scope of bringing usar land under cultivation in Central, Eastern and Bundelkhand regions.

The cropping intensity of the State showed a rising trend from 122.97 per cent during 1950-51 to 134.28 per cent during 1975-76. Rising trend was also observed in the regions. During the above period, cropping intensity rose from 122.05 to 141.46 per cent in Western region, 129.58 to 133.88 per cent in Eastern Region and 122.54 to 129.76 per cent in Central region. In Bundelkhand region, there was practically no increase in cropping intensity which stood at 109.32 per cent in 1975-76. The Hill Region had the highest cropping intensity during 1975-76 being 161.87 per cent as compared to only 116.91 per cent during 1950-51. Linear growth rate in cropping intensity was observed to be the highest in Hill Region being 1.93 per cent per annum, followed by 0.65 per cent per annum in Western Region and 0.26 per cent per annum in Central region. It was only 0.16 per cent per annum in Bundelkhand and 0.13 per cent per annum in Eastern Region. Special efforts are, therefore, needed to raise the

cropping intensity in eastern and Bundelkhand regions. In Bundelkhand region, dry farming practices should be intensified, whereas in eastern region, cultivators should be trained to adopt the practice of double cropping as a matter of routine.

One of the most important inputs for agriculture is irrigation. The potentiality of fertilizers, manures and seeds depends much upon proper and regular water supply. There has been marked increase in the gross irrigated area in practically all the regions of the State. However, Western Region registered the highest increase in gross irrigated area where, as compared to only 2261 thousand hectares irrigated in 1950-51, 4534 thousand hectares were irrigated in 1975-76. Rise in gross irrigated area in Central and Eastern Regions was from 725 to 1331 thousand hectares and from 1922 to 2704 thousand hectares, respectively during the corresponding period. There was only moderate rise in the gross cropped area in Bundelkhand and Hill Regions during this period. In case of former, it rose from 212 to 426 thousand hectares and in the case of latter, it rose from 89 to 236 thousand hectares.

More or less similar trend was observed in case of net irrigated area also. Highest increase in net irrigated area was registered by the Western Region, whereas the lowest increase was observed in Bundelkhand region. The

linear growth rates in net irrigation during the period 1950-51 to 1975-76 in western, Central, Bundelkhand, Eastern and Hill regions were worked out to 3.71, 2.63, 1.18, 4.95 and 4.70 per cent per annum, respectively. The State, as a whole, recorded a linear growth rate of 2.55 per cent per annum, during the above period. It was observed that in matters of irrigation facilities, Bundelkhand and Eastern Regions were lagging far behind other regions and needed special attention.

An analysis of growth in source-wise irrigation revealed that irrigation through canals and tubewells had increased considerably during the last 25 years. Irrigation from wells and other sources, on the other hand, declined during the above period. This was mainly due to better methods replacing the old and primitive methods. Only in Bundelkhand region, irrigation from wells continued to be the main source. Irrigation through canals in the State, as a whole, increased from 18.47 lakh hectares during 1950-51 to 27.43 lakh hectares during 1975-76. Significant increase from this source of irrigation was observed in the Eastern Region where it rose from 0.93 lakh hectare during 1950-51 to 5.36 lakh hectare during 1975-76. Tubewell irrigation in the State showed spectacular increase during this period, in as much as, it rose from only

2.76 lakh hectares during 1950-51 to 31.89 lakh hectare during 1975-76. Marked increases from this source of irrigation were observed in Western, Eastern and Central regions where it rose from 2,68,137; 7,521 and 535 hectare during 1950-51, to 18,97,643; 9,44,532 and 3,14,792 hectare, respectively, during 1975-76. Irrigation from tubewells did not show any significant increase in Bundelkhand and Hill Regions, apparently due to their typical topography.

Irrigation intensity also showed appreciable rise in all the regions of the State. It increased from 32.05 to 53.73 per cent in Western region, 27.37 to 35.11 per cent in Eastern region, 20.11 to 34.26 per cent in Central region, 13.45 to 21.42 per cent in Bundelkhand region and 10.19 to 21.74 per cent in Hill Region during the period from 1950-51 to 1975-76. The compound growth rate in irrigation intensity during this period in Western, Central, Bundelkhand, Eastern and Hill Regions was worked out to 2.48, 2.09, 2.50, 0.93 and 2.88 per cent per annum, respectively.

It has always been emphasized that Uttar Pradesh is most suited for tubewell drilling operations. It is, therefore, of utmost importance that extensive-intensive programmes of tubewell development are undertaken to provide assured irrigation and also for exploiting the

regional potentiality in full and with smaller outlays. Private irrigational system predominant in the Eastern Region should be encouraged through large scale financial assistance from Farm Financing Institutions.

The consumption of total fertilizers has considerably increased in the State over the period under study. It was only 17.98 kg/ha during 1974-75 which reached 31.57 kg/ha during 1976-77. Consumption of nitrogenous fertilizers increased from 14.45 kg/ha to 24.77 kg/ha during the same period. Region-wise analysis showed that use of nitrogen per hectare of cropped area was the highest in western region. It increased from 18.39 kg/ha in 1974-75 to 31.69 kg/ha in 1976-77. Next came the eastern region with an average application of 27.17 kg/ha. Central and Hill Regions used nitrogenous fertilizers at the rate of 18.37 and 13.24 kg/ha, respectively in 1976-77. In Bundelkhand region, the rate of application was the lowest being only 3.83 kg/ha. The rate of use of potassic and phosphatic fertilizers was relatively very low as compared to nitrogenous fertilizers in all the regions. It was specially so in Central and Bundelkhand regions.

Fertilizer distribution in the State also showed a marked rise. It rose from 20,495 tonnes during 1956-57

to 7,29,469 tonnes during 1976-77. More or less, similar trend was observed in all the regions of the State. The proportional share in the distribution of total fertilizers in the form of NPK was observed to be the highest in Western Region being 47.03 per cent. It was 36.52 per cent in Eastern Region, 11.86 per cent in Central Region and 3.01 per cent in Hill Region. It was lowest in Bundelkhand Region being only 1.58 per cent. If the consumption of fertilizers is correlated with the availability of irrigation, it will become evident that regions having higher irrigation facilities consumed more of fertilizers. Thus, to boost up the application of fertilizers in backward regions, it is imperative to increase irrigation facilities in these regions.

The average size of holdings in the State was found to be only 1.05 hectare. It is the lowest in Eastern Region being 0.79 hectare, because of high density of population. The average size of holdings for Western, Central and Hill regions was 1.27, 1.00 and 0.96 hectare, respectively. Inequality of distribution of land among cultivators persisted throughout the State, although it was more marked in Eastern Region. Out of the total operational holdings of 169.71 lakhs, marginal farmers accounted for as much as 69.30 per cent, followed by small farmers 22.92

per cent. The number of large holdings above 10 hectare was very few. Similar trends were observed in all the regions of the State. Eastern region had the highest, while Bundelkhand region had the lowest number of marginal farmers.

The rapid agricultural growth, particularly after 1966-67, had been brought about due to the introduction of high yielding varieties of various cereals, particularly of wheat and paddy. There had been an appreciable and steady increase in the area under HYV paddy and wheat. The area under high yielding varieties, which was only 2.10 per cent of the total cropped area in 1966-67, rose to 37.20 per cent in 1975-76. Still there is large scope for increasing the area under HYV to achieve desired growth in agriculture in the State.

Coverage under plant protection measures in the State increased from 4.67 lakh hectare during 1961-62 to 115.34 lakh hectare during 1975-76. Coverage in Western, Central, Bundelkhand, Eastern and Hill regions was from 2,07,922 to 43,75,589; 84,569 to 18,27,200; 22,591 to 9,59,786; 1,40,417 to 39,89,188 and 11,522 to 3,82,175 hectare, respectively during the above period. There has also been considerable increase in the use of farm equipments and machineries. Oil and electric pumps used for irrigation purposes registered an increase from only 11,766 during 1961 to 6,37,362 during 1978.

Number of tractors increased from only 7,340 to 67,684 in the corresponding period. In this respect also western region was observed to be far ahead of other regions. Number of oil/electric pump sets and tractors in this region was 3,24,627 and 39,543, respectively, during 1978. Corresponding figures for other regions were 1,13,793 and 6,707 in Central region; 11,123 and 4,710 in Bundelkhand region; 1,77,236 and 13,422 in Eastern region and 10,583 and 3,302 in the Hill region.

As regards growth in agriculture, the trend was observed towards higher production and productivity, particularly after 1966-67. Area under rice, a principal kharif crop, increased from 38.52 lakh hectare during 1950-51 to 46.22 lakh hectare during 1975-76. Corresponding increase in production and productivity was from 19.99 lakh tonnes to 42.94 lakh tonnes and from 5.19 q/ha to 9.29 q/ha, respectively. Rising trend in area, production and productivity of rice was observed in all the regions of the State but the quantum of rise varied widely in different regions. Western region showed the highest compound growth rates in area, production and productivity of rice being 2.38, 4.77 and 2.52 per cent per annum, respectively for the period from 1950-51 to 1975-76. Corresponding growth rates for other regions during the same period were 1.03, 2.47 and 1.43 per cent per annum in case of Central region; 2.24, 2.50 and 0.25 per cent per annum in case

of Bundelkhand region; 0.59, 2.36 and 1.77 per cent per annum in case of eastern region and 0.22, 0.51 and 0.30 per cent per annum in case of Hill region.

The area, production and productivity of wheat showed considerable increases during the period 1950-51 to 1975-76. Area increased from 33.16 to 63.02 lakh hectare, production increased from 27.21 to 85.22 lakh tonnes and productivity rose from 8.21 to 13.57 q/ha. The rising trend was observed in all the regions but the rate of growth varied widely. The compound growth rates of area, production and productivity during the above period, respectively, were 3.32, 8.91 and 3.25 per cent per annum in case of western region; 3.36, 7.14 and 2.14 per cent per annum in case of Central region; 2.26, 3.49 and 1.21 per cent per annum in case of Bundelkhand region; 4.96, 9.48 and 2.29 per cent per annum in case of eastern region and 3.01, 5.28 and 1.43 per cent per annum in case of Hill region. The introduction of high yielding dwarf varieties of wheat was responsible for this rising trend in wheat production but lack of adequate irrigation facilities in the Hill and Bundelkhand regions was responsible for poor growth rates in these regions.

The growth in area, production and productivity of pulses in the State has been most discouraging. The area under pulses during the period from 1950-51 to 1975-76 went

down from 43.45 lakh hectare to 31.55 lakh hectare, whereas production, during the same period, went down from 30.23 lakh tonnes to 26.57 lakh tonnes. Productivity, during this period, had shown only a moderate growth as no high yielding strain in pulses could be developed. Compound growth rates in area and production of pulses showed negative trends in practically all the regions of the State excepting Bundelkhand region. Productivity, however, showed a moderate rise in growth rate.

Total food crops, which occupy about 82.11 per cent of the total cropped area, showed improvements in the growth of area, production and productivity. Area during the period 1950-51 to 1975-76 increased from 170.89 lakh hectare to 189.67 lakh hectare. Production and productivity, during this period, increased from 117.75 lakh tonnes to 194.56 lakh tonnes and from 7.26 q/ha to 12.08 q/ha, respectively. However, there was wide variation in the growth rates of area, production and productivity of total food-grains in different regions of the State. Compound growth rates of area, production and productivity for the period 1950-51 to 1975-76, respectively, were 0.51, 2.56 and 2.04 per cent per annum in case of western region; 0.28, 1.42 and 1.14 per cent per annum in case of Central region; 1.05, 1.22 and 0.16 per cent per annum in case of Bundelkhand region; 0.30, 1.53 and 1.22 per cent per annum in case of Eastern region and 0.79, 2.21 and

1.41 per cent per annum in case of Hill region. Growth rates of production and productivity of total food-grains were inadequate both in regard to potentiality as well as the requirement to meet the growing demand of a rising population.

There has been considerable increase in the area under oilseeds in the State which rose from 3.84 lakh hectare during 1950-51 to 8.83 lakh hectare during 1975-76. Corresponding increase in production was from 1.82 lakh tonnes to 5.07 lakh tonnes. Productivity remained, more or less, static during this period. In case of oilseeds also, wide variations in production and productivity were observed in different regions. Compound growth rates of area and production were positive in all the regions, whereas Central and Eastern regions registered negative growth rates in productivity.

The growth in area, production and productivity of sugarcane in different regions as well as in the State, as a whole, had been considerable during the plan periods. During the period from 1950-51 to 1975-76, the area under sugarcane rose from 10.4 to 14.41 lakh hectare, the production from 295 to 584 lakh tonnes and the productivity from 291.04 to 405.08 q/ha. However, growth rates in area, production and productivity were not uniform in all the regions of the State. Compound growth rates of area, production and productivity for the period 1950-51 to 1975-76, respectively, were 1.47, 3.47 and 2.23 per

cent per annum in case of western region; 1.14, 2.64 and 1.49 per cent per annum in case of Central region and 0.79, 3.12 and 2.31 per cent per annum in case of eastern region. Hill region registered compound growth rates in area, production and productivity of 6.49, 8.82 and 2.19 per cent per annum, respectively.

The area under potato increased from 0.82 lakh hectare during 1950-51 to 1.91 lakh hectare during 1975-76. Corresponding increase in production and productivity, during this period, was from 6.41 to 25.03 lakh tonnes and from 78.08 to 131.29 q/ha, respectively. Compound growth rates of area, production and productivity, during 1950-51 to 1975-76, respectively, were 2.22, 5.86 and 3.57 per cent per annum in case of western region; 3.11, 4.77 and 1.61 per cent per annum in case of Central region and 3.10, 5.24 and 2.07 per cent per annum in case of eastern region.

It may thus, be concluded that the growth rates for food-grains, particularly those of paddy and wheat and cash crops like sugarcane and potato have shown appreciable rise. The greater use of modern farm inputs, on the one hand, and improvement in the farming techniques, on the other, had contributed a lot in increasing the growth rates in these crops. However, the depressingly insufficient growth in pulses and oilseeds, and resultant deficit has to be viewed with great

concern. It is also worth-mentioning here that there had been an imbalanced agricultural growth in different regions as well as in different districts of a region in the State.

9.2 Suggestions

The present situation of agricultural growth in the State calls for a radical change in the context of national policies for decentralization of planning process. It is necessary to optimise the overall growth rate by taking appropriate measures on the basis of the scope for functional specialization provided by intra-state variations in resource endowments, infra-structure and agro-climatic conditions, and also develop sequential, location-specific strategies which would, through a dynamic exploitation of local potentials, reduce the existing disparities in the levels of inter-regional development.

The nature of problem and impediments to rapid growth in particular fields have to be carefully studied for each region and appropriate measures devised for accelerated development. It should be ensured that potentialities of different regions are exploited to the maximum. To achieve an effective rate of growth in agriculture, it would be desirable that adequate resources, inputs and other facilities

required for rapid growth in agriculture must be made available according to the potentiality of the State. Greater emphasis is needed for increasing per hectare yields, bringing more area under double/multiple cropping and application of balanced inputs. This would involve adequate supply of fertilizers, pesticides and farm credit; rural electrification, intensive development of irrigation and a long term price policy to ensure incentive to the farmers. Efforts are needed to develop optimum land use pattern on each acre so that the land is put to its best economic use for achieving the highest rate of growth of the agricultural productivity. Besides, the following suggestions may be put forth to achieve an accelerated rate of growth in the State, as a whole, as well as in different regions of the State:

- (i) Increase in double cropped area: The cropping intensity of the State as well as different regions is needed to be increased through introduction of short duration high yielding varieties in different crop sequences and also by substituting long duration varieties by short duration ones. Greater emphasis should be laid on companion cropping, relay cropping and other techniques to augment the intensity of cropping in the State.
- (ii) Increased use of irrigation: Efforts are needed to bring more area under irrigation through intensification of

minor irrigation works and medium irrigation projects. Timely and adequate supply of credit for the private minor irrigation works like installation of tubewells, pumping sets, etc., would go a long way in bringing more and more area under irrigation.

(iii) Increased use of fertilizers: The level of fertilizers consumption per hectare is needed to be raised substantially by (a) isolating potential area (b) strengthening supplies by increasing number of sale points, (c) using micro-planning techniques for rational use of scarce resource, like fertilizers, (d) timely and adequate supply of fertilizers through cooperatives, Government and other institutions, and (e) provision of adequate credit facilities.

(iv) Increased use of high yielding varieties: Adequate and timely supply of good quality seed of high yielding varieties is needed to bring more area under HYV. It should be ensured that these seeds are made available to marginal and small farmers also. The strengthening of State Seed Corporation on the pattern of National Seeds Corporation would go a long way in meeting the growing demands for quality seeds.

(v) Increased plant protection coverage: The increased

coverage under plant protection measures is required in the context of increasing use of high yielding varieties which suffer from the inherent problem of diseases and pests. Besides, many obvious weeds are becoming a menace resulting in heavy reduction of crop yields. Thus, the plant protection measures should include the control of weeds also, besides control of diseases and pests.

(vi) Raising the production and productivity of pulses: To increase the growth of pulse production in the State, the area and productivity of pulses are needed to be raised. The area receiving one irrigation should be sown with gram. Area under summer Moong should be taken up under irrigated condition, mainly after harvesting wheat and other rabi crops. Area under early Arhar should be increased where assured irrigation is available in order to fit into rotation with HYV wheat in rabi season. Mixed cropping of pulses with cereals should be adopted. The productivity of pulses should be raised by use of phosphatic fertilizers and Khyzobium culture, and by adopting plant protection measures. Adequate supply of certified quality seeds may go a long way in raising productivity of pulses. Bundelkhand Region has great potentiality for producing pulses, which should be exploited in full. Research for

evolving high yielding strains of pulses should also be accorded top priority.

- (vii) Raising the production of oilseeds: emphasis should be given to increase the area under pure oilseed crops so that suitable agronomic practices and disease and pest control measures could be undertaken effectively. Large scale production and supply of quality seed of improved varieties and balanced use of NPK fertilizers should be ensured.
- (viii) Popularising dry land technology: The agricultural production can be raised tremendously, if the farmers are educated in dry land farming. Simple techniques like deep placement of fertilizers, seed treatment and timely sowing may result in appreciable increase in production in rainfed areas.
- (ix) Integration of all agricultural schemes: All agricultural schemes, like I.A.D.P., I.A.A.P., D.P.A.P., A.A.P., etc., should be integrated into one intensive agricultural development project in order to fully utilize the man-power and other resources available under different schemes and also to ensure judicious crop planning.
- (x) Increased credit facilities: Adequate and timely

supply of cheap credit through farm financing institutions and cooperatives would go a long way in accelerating agricultural growth in the State.

- (xi) Removing regional imbalances and development of backward areas: The imbalanced growth in different regions of the State calls for a radical change in the national policies for decentralization of the planning process. It is necessary to optimise the overall growth rate by taking appropriate measures on the basis of scope for functional specialization provided by intra-state variations in resource endowments, infra-structure and agro-climatic conditions, and also develop sequential, location-specific strategies which would, through a dynamic exploitation of local potentials, reduce the existing disparities in the levels of inter-regional development. A new approach to regional planning will have to be evolved. The term regional planning is an economic plea calling for geographical specialization in tackling the agricultural problems in the State. The need for a balanced regional growth can not be denied and should be given greater weightage in future plans.

The immediate need of the less developed regions is to increase their agricultural output and productivity

commensurate with their population growth. Improvement in their capacity to use such increase for general economic growth is vital for diffusing the benefits. Hence, with the agricultural development programmes, as discussed earlier, complementary facilities of electrification and agro-based small scale and cottage industries should also be adequately planned. Identifying the weaker spots at micro level and accepting the basic principles of selectiveness, accompanied with a general plan for socio-economic development will be a step in the right direction. The measures proposed to be adopted for the balanced growth of the different regions of the State have been dealt-with in the following lines: .

In the eastern region, where the density of population is high, leading to low man-land ratio, steps should be taken to divert the population from agriculture to rural industries. In an integrated rural development programme, the priority should be given to establish such industries. Labour intensive programmes both in agricultural and non-agricultural sectors should be emphasized. As far as possible, capital intensive programmes should be given low priority. This will help in creating employment opportunity in the region. The marketable surplus, if it could be created, will go a long way in increasing income of the rural people. To achieve this objective, the adoption of modern

farm technology should be given preference. This will help in increasing production per unit of area of which the assured irrigation facilities should be increased. The use of farm inputs like fertilizers, high yielding varieties, seeds, pesticides, etc., is imperative. The rural financing facilities at a reasonable rate of interest should be made available to the farmers. The extension agencies should be strengthened and incentives provided to good workers. Financing institutions should adopt the policy of supervised credit. Diversification of agriculture is one of the most important steps for the development of this region. emphasis should be given to animal husbandry, poultry and sheep rearing programmes, for the success of which the development of marketing is essential. Development of infra-structure is an important link in any development programme. This region needs programmes of extensive development of infra-structure. Flood control measures should receive top priority in this region to save large area of crops from the devastation for which soil and water conservation and afforestation programmes, and construction of bridge and roads on a large scale should form the part of development programmes. With the development of transport and communication, the hinter land will be opened, leading to rapid development of the region.

Highest priority in the Hill region should be given

to the development of roads and communications. This programme has a very high potential for the development of hinter land. In this region, there is very high potential for the development of horticulture and vegetables. Vegetable seed production and ornamental flowers also have a good scope in increasing the per capita income. Storage and marketing facilities, if provided on reasonable standard, will help in solving the employment problem of the people. This will improve the quality of produce as well. Live-stock development, particularly in the areas of poultry, fishery and milk products has a large scope in this region. There is immediate need for strengthening the afforestation and pasture development programmes. emphasis should be laid on the development of forest based industries. Credit facilities should be made available to the farmers for undertaking high yielding varieties programme and adoption of modern farm technology in the field of agriculture and live-stock rearing. Soil and water conservation programmes need be given due place in developing new terraces and renovating the old ones. Irrigation facilities by way of constructing dams and creating reservoirs should be emphasized. Fruit preservation and dehydration industries with better marketing facilities have a high employment and income potential.

The development of Bundelkhand region should be

need based. Accordingly, the region should receive top priority in the field of soil and water conservation. Emphasis should be laid on developing large water reservoirs in which rain water may be collected for utilization in winter season. There is considerable scope of double cropping and increasing the production of oilseed crops and pulses in this region. Production of cotton should receive top priority. Special programmes of dry farming agronomy should be introduced. Afforestation and pasture development have a big scope for increasing employment and income. This will help in developing live-stock rearing programmes, as well. The region has also big scope for the development of animal husbandry and fisheries. Single cropping (rabi sowing) is the common practice of the region because of stray cattle menance. Efforts should be made to bring the area under kharif cultivation in which paddy, in general, and cotton in some special areas have a good scope. In the field of agriculture extension, high yielding varieties programme and adoption of modern technology should be given priority. Market development is another area which needs planners' attention. Extension and training programmes should be strengthened at all levels with due incentive to good workers. Credit facilities should be made available to the farmers according to their needs at reasonable rate of interest and easy terms and conditions of repayments. Fodder development

is essential for the development of animal husbandry in this region.

The Central region suffers from poor irrigation facilities, poor productivity, serious unemployment and low income. Though, this region is not counted in the category of backward regions of the State, yet its socio-economic conditions, particularly in rural areas, are in no way better than the so-called backward regions of the State. In order to develop this region, top priority should be given to irrigation and reclamation of sick soils. Development of infra-structure needs priority in the region. Diversification of agriculture will help in providing employment and supplementing income. The development of transport and communication will expose the hinter land to new ideas and innovations. Live-stock development is another field to supplement income and employment of the rural people, for which development of a good market is equally essential. Agro-based rural industries and development of growth centres will go a long way in developing this region.

Western region is highly developed as far as the agricultural production is concerned. However, there are possibilities to develop it further, especially in non-food crops. There is large scope for the development of animal husbandry and industries related to it. To divert large agricultural population to industries is very necessary.

Paper-mill industries based on sugarcane bagasse and paddy husk have a good scope. Dairy industry, on a large scale, is another field of industrial development which needs immediate attention. Though this region is highly developed in productivity and production of cereals and high yielding varieties programmes have been adopted on a large scale, yet the region needs development of tubewell irrigation and power, not only for agriculture, but also for industries.

In conclusion, it may be said that the present study is mainly in the nature of an empirico-analytical description of the regional agricultural economy in which the vast majority of the farmers, in a dual society, like that of Uttar Pradesh, have had and still have to behave and perform. If agriculture is to be an active force in development, its rate of growth must be much faster and balanced in all the regions of the State. In the matter of evolving local strategies for the accelerated growth in agriculture, it has to be kept in mind that there is a predominance of small holdings in almost all the regions and districts of the State. Therefore, any effort for raising the agricultural productivity are not likely to succeed unless production per unit of area of the small holdings is raised to an optimum level.