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"Agricultural Policy in Uttar Pradesh and Uttaranchal- A Policy Matrix"

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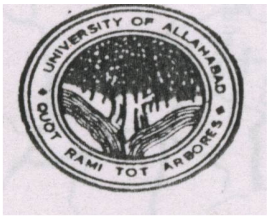

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PREFACE

Agriculture is the backbone for the economic development of Uttar Pradesh, the most populous state of the country. More than 80 per cent population of the state is directly or indirectly dependent upon agriculture for its livelihood. The economy of the state is agrarian. The state contributes 37% wheat and 14% rice to the total production in the country. The share of sugarcane and potato in the total production of the country has been estimated at 35% and 38% respectively. The fruits and vegetables accounted for 8% and 20% of the production of the country respectively.

Since the independence, state as well as central governments had launched the Five Year Plans from 1951-52 to develop the agriculture sector alongwith other sectors. Nineth Five Year Plan has already been completed and Tenth Five Year Plan is on to achieve 8% annual growth rate in food grains. Since the advent of Green Revolution, the production and productivity, particularly of paddy and wheat, have received significant jump at the cost of other crops viz. millets, pulses and oilseeds. The mechanization in agriculture is also in full swing. The flow of credit from financial institutions has also been increasing and expanding to the agricultural and allied sectors since nationalization of commercial banks. A number of programmes and schemes were launched to boost the production of crops. The result was, undoubtedly, very encouraging. From time to time different programme and schemes were also launched for the development of horticulture, livestock, fisheries etc. The poverty alleviation programme was also started simultaneously in the state.

On over all, the production and productivity of agricultural and horticultural crops have significantly increased during the plan periods. Now the state is not only producing foodgrains to feed its 16 crore people but it is also in a position to export foodgrains to foreign countries. It is an irony of fate that the maximum benefits of new strategies of green revolution, modern packaging practices and allocated funds in five year plans were concentrated on farms of only resourceful farmers.

There is acute uneven distribution of economic benefits accruing to different size of farmers from the programmes and schemes. The marginal

and small farmers were not so benefited as compared to large farmers. Instead of these, area and production of millets, pulses and oilseeds have received great set-back on account of paddy and wheat. In view of this, the state enjoys surplus status in paddy and wheat while there is actuate shortage of pulses and oilseeds. This could happen because of the wrong agricultural policy. On account of this, there was massive change in copping pattern in favour of paddy and wheat. The bumper production of paddy and wheat has also posed a serious problem of proper storing. The major share of available resources is being used in these crops. Therefore, there was imbalance in cropping pattern. It reflects that our polices and programmes were much favourable to the development of paddy and wheat while other crops were neglected. This was due to lack of vision on the part of the planners. There was no clear cut agricultural policy in the state. Only sporadic programmes and schemes of agricultural development were carried out during different plan periods.

The irrigation facilities have been developed in the state even through only 69.82% net area sown is irrigated. Of the net area sown only 50% area has assured irrigation. Uttar Pradesh has abundant ground water and surface water, but they are not being properly used. Over-use of water is a common phenomenon in the crops. Since the introduction of green revolution, the application of fertilizers has been increasing in unscientific manner just to get higher and higher yields in subsequent years. Over-use and unbalanced composition of N2, P205 and K20 of fertilizers is causing degration of land and polluting the air and water. On the contrary, the use of biological manure is not popular due to the weak extension net work.

As regards to horticultural crops the production and productivity have increased manifold but marketing facilities were net created at par with the production. More than 20% of the total production of horticultural crops gets spoiled and wasted annually after post harvesting. The schemes and programmes were totally concentrated to production rather than its proper marketing. Value Added Products are not getting popular due to lack of processing facilities.

As far as live stock is concerned, the production of milk per milch cattle is still extremely low in the state in comparison to that in Punjab and Hyarana States. The production of eggs, wool and other animal products is also not upto the mark. The annual growth of animal husbandry was 4.5% during IX plan period while it is targeted to achieve 8% during X plan

period. Thus, intensive efforts are needed to control diseases, improve breed, develop feed and fodder farms and proper management in rearing the live stock. The existing resources are also needed for optimum utilization to get sustainable growth. More than 9 lakh breedable cows and 8 lakh breedable buffaloes are suffering with problem of infertility which is a matter of serious concern. The poultry husbandry is not upto the mark in the state. There is huge gap between demand and supply of eggs and layers to fulfil the demand of consumers. Hence, the state needs the establishment of poultry farms in the private sector.

So far as the Fisheries Development Programme in the state is concerned, the inland fish farming is in practice. The average fish production of inland fish farms is quite low. Non availability of credit, poor infrastructural facilities, poor extension services and weak marketing network are the major constraints in fisheries development in the state. Since the introduction of FFDA, tangible achievement is in progress. Marketing network in relation to commodities, vegetables, fruits, flowers, milk, egg, meat, wool and fish is not so outstanding. Malpractices still persist in the markets. The storage capacity warehouses and coldstorages is quite insufficient against the huge production. The marketing functionaries are also inefficient to safeguard the interest of producers and consumers. The role of MSP is also ineffective to protect the interest of producers.

The cropping pattern and cropping sequence are not being adopted in a scientific manner. The farmers have very short vision in the allocation of area to different crops. On account of this, the area under sugarcane and potato has been increasing very fast since recent past decades. This has created imbalance in the cropping pattern. The absence of proper agricultural policy, undeveloped extension services and marketing infrastructural facilities etc. are major factors for the backwardness of the state. Thus the diversification in agriculture should get top priority.

The liberalization of economy and WTO could be only fruitful when export potential of agriculture and allied sectors increases. The export of agricultural produces is meagre because its share is only one per cent of the global market. The position of the state is very deplorable. At present the country faces much competition in global markets, therefore, the produce must be at par with the global standard. There is need to develop high class infrastructural facilities in accordance with the norm of global standard. In so far as the formulation of agricultural policy is concerned, the state Govt.

has framed agricultural policy at the end of 1990s in the context of domestic requirement. During the Five Year Plans and pre and post green revolution period, a number of programmes and schemes were launched to boost the agricultural production. The state has achieved grand success. The state Govt. has made very comprehensive policies to improve the crops production, horticultural crop production, live stock and fisheries production in the Tenth Five Year Plan documents in the wake of liberalization and WTO.

Thus the formulation of agricultural policy is very essential to meet the challenges of domestic and foreign markets. The agricultural policy should be framed through an integrated approach and by giving equal importance to all the sectors of agriculture. Since investment in agricultural sector has been decreasing from year to year, therefore, private investment such as in research, extension network, marketing infrastructural facilities, establishment of processing units, construction of godowns, coldstorage etc. should be encouraged if we aim at promotion of export. For the formulation of agricultural policy based on ground realities, the Director of Economics and Statistics, Ministry of Agriculture, Govt. of India has entrusted to Agro-Economic Research Centres to prepare a separate agricultural policy for the respective states in the context of WTO. It is to be based on the published data, plan documents, views and opinions of administrators, knowledge people, academics, farm leaders and stake holders. Our report is based on the facts and figures related to the two States of Uttar Pradesh and Uttaranchal, the jurisdictional area of AER Centre, Allahabad.

The study has been conducted under supervision of Prof. J.N. Mishra, Hon. Coordinator of the Centre. Dr. B.B. Tripathi, an eminent economist and Vice Principal, Allahabad Degree College, Allahabad has drafted the report. Sri D.K. Singh, Research Officer of the Centre has also assisted him in the drafting of report and in the process of analysis and interpretation of data. Sri R.A.G. Mahuley, Sri K.K. Rajput and Sri Hasib Ahmad have done hard task and efforts in collecting secondary data from different published sources and converting then into analytical tables. In process of collection of data, opinion and views from different directorates, departments and institutions, the research staff hare received full support and cooperation. I am very grateful to the Directors of Agriculture, Horticulture, Livestock and Fisheries and their supporting staff. Since most of literature and references were made available by the staff of State Planning Institute, for which they deserve our thanks.

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22th, February 2004

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CHAPTER-I

Agricultural Development Scenario of U.P.

Introduction

Uttar Pradesh is a culturally and historically rich State of the country. The State comprises four natural regions i.e. Himalyan region, (now Uttaranchal). Alluvial plain region, Bundelkhand region and Eastern plain region. All the four regions have their own characteristics and natural settings. Land and soil are the main natural resources of the state. Agriculture, therefore, occupies the important place in the economy of Uttar Pradesh. The plain region of Uttar Pradesh incorporating eastern plain region is among the most fertile plains of the world. Agriculture has been and still continues to be the main source of livelihood of the people of the State.

Location of State

Agriculture has comparative advantage over other businesses in the state due to favourable soil and water resources. The total geographical area of the state is 29.71 million hectares out of which 17.48 million hectares, around 56 percent of the geographical area of the state, is under crops; while at the national level only 46.60 per cent of the total reporting area is cultivated. Similarly 69 per cent of the net cultivated area is irrigated in the state, while only 40 per cent of the cultivated area is irrigated at the national level. The gross cropped area in the State is 26.1 million hectares and the cropping intensity is 149.5 per cent. The average size of holding in the state is 0.90 hectare. There is preponderance of small and marginal farmers, comprising 16 per cent and 74 per cent respectively, of total farmers. However, these groups own only 24 per cent and 31 per cent of the land area respectively. The total food grain production in the State was 45.2 million tonnes in 1999-00, which was about 22 per cent of the total food grains production of the country. The State produces around 26 million tonnes of wheat which is around 35 per cent of the national wheat production and highest among all the States. Sugarcane, is the main cash crop of the State with 46 per cent of total sugarcane production of the country and highest among all the States. Uttar Pradesh has the second highest production of rice among all the States and it accounts for around 15 per cent of the national

production of rice. Uttar Pradesh has very strong potentials for fruits production. The State produced about 8.8 Million tonnes of fruits in 1999-00 which was 18 per cent of the national production of fruits and this constitutes the highest production of fruits among all the States.

In 1998-99 the production of vegetables in the state was about 17.1 million tonnes, which was 20% of the country's total production. The State is also the largest producer of potato in the country with 38% of the country's production. The potato production was 9.6 million tonnes during 1999-00. The area covered under floriculture in the State is estimated to be around 2000 hectares. Some areas of different districts is under the cultivation of medicinal and aromatic plants. The State has 24% of the country's buffaloes and 15% of the cow population. The total milk production in the State (1999-00) was 14.34 million metric tonnes, the highest among other states. The egg production was 813.3 million and wool production has gone up to 2.25 million kgs. The annual fish production in the State is about 0.18 million tonnes. The Silk production in the State during 1997-98 was 43 tonnes.

Higher education in agriculture in the state is imparted though three State Agriculture Universities, two Institutes of Agricultural Sciences and 24 Degree Colleges. Every year 2,900 agriculture graduates and 1400 post-graduates pass out from these Institutions. The State Government has already started implementing the Agriculture Policy through two of its World Bank Supported Projects i.e. U.P. Diversified Agriculture Support Project and U.P. Sodic Soil Reclamation Programme. Both the projects focus on the participatory approach to agricultural development. Crop diversity also has been very high in Uttar Pradesh. Thus Uttar Pradesh is soil, water and crop rich state.

Objectives of the Study

1. To review the available material (including policy documents and Five Year Plan Documents of the Union and State Governments, at the State level dealing with policy interventions after the formation of the State.

2. To identify important constraints and review the efforts made by the State in the past to meet major challenges pertaining to agriculture and allied activities.

3. To record the State's response to the already formulated National Agricultural Policy, that is, to find out precisely how and where the State would like to suitably supplement, modify and re-articulate the National Policy in the local context.

4. To bring out the State's concerns as well as to record the State's view on the changing economic situation due to India's involvement with the World Trade Organization (W.T.O).

5. To document the State's initiatives to meet the problems and constraints arising out of India's WTO commitments and review in brief the effectiveness of government interventions in the form of technology adoptations, institutional adaptations, price policy changes (e.g., through changes in tax and subsidy regimes) and legal policy changes undertaken so far.

6. To discuss with the important stakeholders (as identified above) the requirements for formulation of a policy document at the State level, in response to the country's growing concerns in response to challenges arising from WTO or otherwise.

7. To elaborate on the initiatives taken to meet the challenge of diversification, technology, resource management and price policy at the State level (whether in response to WTO or otherwise).

8. To assemble these views in the form of a meaningful policy requirement matrix, relating problems/issues as well as to suggest a programme of action. The study intends to spell out the agencies, which should undertake such actions.

Research Methodology

The study intends to assess the agricultural resource base of the State alongwith highlighting the agricultural development scenario since recent past. The study analyses the measures, schemes, programmes and strategies launched in the state for agricultural development and their effect in the various sub sectors of the agricultural economy. Further, the study also endeavour to assess the weakness and threats for agricultural development particularly keeping in view the challenges posed by the WTO accord on agriculture. We have used secondary data from various plan documents of

the state as well as data from reports of the study groups, committees, and survey reports. These sources have been used to assess development performance. We have also contacted the stakeholders of agricultural economy, like agricultural labourers, farmers of the different holding size, officials of agriculture department, NGOs working actively for agriculture and rural development, the farm leaders units engaged in processing and trading units to get primary data and elicit their opinions. We have tried to collect facts related to strength of agricultural economy, weakness of agricultural economy, threats to agricultural economy and in the backdrop of which we have tried to propose a suitable agricultural policy of the State.

Review of Agricultural Development

Agriculture has shaped the outlook and living of the people of the state. During the colonial rule the agricultural sector suffered a lot due to exploitative policy of the then government. It has been estimated that agricultural productivity as well as production of cereals declined during the last 50 years of the British rule. The faulty land tenure system, institutional bottleneck, lack of scientific inputs and insufficient supportive services were the major factors behind the backwardness of agricultural sector in the State.

Soon after the attainment of independence it was realised that a very high priority should be given to agriculture. United Provinces Zamindari Abolition Committee, observed that land reform was urgently required for the development of agriculture of the State. Before the abolition of Zamindari system there were as many as forty different types of land tenure systems prevalent in Uttar Pradesh[1]. Although all agricultural land was owned and held by Zamindars yet the area under the direct cultivation of Zamindars was very small (only around 20 per cent of the agricultural land). The rest about 80 per cent was occupied and cultivated by tenants. Among the tenants the majority were the hereditary tenants. This was the situation after the enactment of U.P. Tenancy Act 1939.[2] The U.P. Zamindari Abolition Committee Report observed that the land system prevalent in Uttar Pradesh had retarded agricultural efficiency and made it impossible to initiate technological change in agriculture. It was substantiated by experts and economists also.[3] As the land systems determine the social attitude and

[1] Baljit Singh & S. Mishra: Study of Land Reforms in U.P., P. –21.
[2] Report of the U. P. Zamindari Abolition Committee (1948) Vol. – I, P-336.
[3] Report of the U. P. Zamindari Abolition Committee (1948) Vol.-II, P-340.

social satisfaction, the Committee recommended the abolition of all intermediaries. Thus the committee opined, "land can no longer be allowed to be treated merely as a source of income, that it is for use and therefore it should be regarded as a definite and limited means for supplying labour to a category of citizens whose occupation in life is the tilling of the soil"[4].

The U.P. Zamindari Abolition Act came into force in July, 1952. It was a landmark in the agricultural history of the state. It brought an end to the ruinous system of Zamindari and gave security of tenure to the cultivators. Gradually a system of ceiling on land holdings was also introduced. The imposition of ceiling on agricultural holdings is essentially a re-distributive measure. Although land-ceiling law was enacted in 1960 but it could not yield any radical change in land ownership as the unit of application of the ceiling on land holdings was person. Ceiling law could not yield much result as plantation of tea, coffee and rubber, orchards, sugarcane farms, dairy farms, wool raising farms and cooperative farms were exempted. All these factors defeated the basic ideology of the Ceiling Act. Similarly in the continuation of institutional reforms consolidation of scattered and fragmented holdings became operative. Consolidation programme has been successfully launched and consolidation work has been completed in the State.

It can be summarized that during the first 25 years since the attainment of independence the emphasis was laid on institutional changes in agricultural sector. Accordingly, programmes for abolition of intermediaries, regulation of rent, ceiling on land holdings and consolidation of holdings along with some efforts to establish cooperative farms and Bhoodan and Gramdan movements were initiated. But on the side of agricultural production the situation could not improve. Production and productivity of the state remained very low. A delegation from India was sent to China to study the Chinese agricultural practices. Accepting the recommendation of the delegation, the Chinese system of cultivation was introduced in Uttar Pradesh also. It gave a nominal success in wheat production[5]. The Ford Foundation Committee in 1957 recommended package programme to enhance the agricultural production. Government of India launched Intensive Agricultural District Programme (IADP) in 1960. Along with Pali

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[4] Baljit Singh: An Approach to State Taxes, Seminar on Mobilization of State Resources, in proceedings edited by M.D. Joshi, P.-10.

[5] Govt. of U.P. Agriculture Development of Statistics 1950-51 - 1971-72, P.-41.

(Rajasthan), Ludhiana (Panjab), Raipur (Chhatishgarh), Thanjavaur (Tamil Nadu), West Godavari (Andhra Pradesh) and Shahabad (Bihar) districts which were chosen for different crops, Aligarh district of Uttar Pradesh was chosen under Intensive Agricultural District Programme for wheat crop. But the success was limited. Agricultural production increased under the limits of traditional seeds sown in the district and in neighbouring areas.

A programme for soil conservation was launched in the second five year plan to check soil degradation as well as to bring degraded land under crops. Soil Conservation includes riverines, programmes for the betterment of saline and alkine land. Tree plantation or degraded land and contour bunding are the important programmes for soil conservation. During the second five year plan 31000 hectare of land was brought under soil conservation programme. The commulative growth of the soil conservation programme reached to 10,98,000 hectares at the end of the Fourth Five-Year Plan. The Soil conservation programme has been launched successfully in the state. A total 59,89,000 hectares of degraded land has been brought under Soil Conservation measures upto 1999-00.

Most of the agricultural strategies launched at the National level were introduced to the state also. Intensive Agricultural Area Programme was also launched in U.P. in 1964. During the first three plans no breakthrough could occur in the agricultural economy of Uttar Pradesh. The total foodgrain production was 11.8 million tonnes in 1950-51 and it increased to 13.3 million tonnes in 1965-66[6]. During the period though various programmes for institutional changes were launched in U.P. but it was realised in the mid-sixties during the severe drought (1965-66 & 1966-67) that the institutional changes were not competent enough to overcome the bottleneck of the agricultural economy of U.P. Therefore, in 1966 during the Kharif season, the new strategy of agriculture supported with high yielding varieties of seeds, fertilizer and irrigation was launched. Committee on Taxation of Agricultural Wealth and Income (Lakdawala Committee) for Uttar Pradesh, while studying the prospects of taxation in U.P. analysed the development scenario of agricultural sector. The Committee recommended that dispersion of new strategy was essential for the growth of agriculture[7].

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[6] Govt. of India, Report of the Committee on Agricultural Wealth and Income, 1972

[7] Report of Joint Study Team (Patel Committee) on Eastern Uttar Pradesh, Planning Commission Govt. of India, 1964.

Table-I.1
Growth Rates of Area, Production and Productivity

Period	Annual Growth Rates (In %)		
Food Crops	Area	Production	Productivity
1950-51 to 1970-71	0.65	2.55	0.95
1970-71 to 1990-91	0.23	3.05	2.88
1990-91 to 2000-01	(-) 0.14	1.78	1.91
1950-51 to 2000-01	0.33	2.59	2.26
Non-food Crops			
1950-51 to 1970-71	2.19	3.16	1.88
1970-71 to 1990-91	1.77	3.43	2.82
1990-91 to 2000-01	3.03	2.65	(-) 0.38
1950-51 to 2000-01	1.69	2.77	1.07
All Crops			
1950-51 to 1970-71	0.79	3.00	2.18
1970-71 to 1990-91	0.42	3.33	2.90
1990-91 to 2000-01	(-) 0.07	1.10	1.16
1950-51 to 2000-01	0.47	2.72	2.24

Source: Tenth Five Year Plan and Annual Plan 2002-03, U.P.

Similarly Joint Study Team (Patel Committee) on Eastern Uttar Pradesh constituted by Planning Commission, Government of India, suggested a package for the development of agriculture for eastern U.P. During the post green revolution period agricultural production and productivity increased manifold. The statistics related to agricultural production, productivity and area given in the table-I.1 show that there are three distinct phases. (Phase-I from 1950-51 to 1970-71, Phase-II from 1970-71 to 1990-91 and Phase-III from 1990-91 to 2000-01) in the agricultural development of the state.

During the First Phase (1950-51 to 1970-71) the annual growth rate of production of food grains was 2.55 per cent. The growth rate of productivity was slightly higher than the growth rate of area under crops during the period. The productivity growth rate during the period was 0.95 per cent per annum while the area growth rate was 0.65 per cent per annum. Here it can be said that during the first two decades of planning the increase in area played an important role in the increase of production of food crops. It was a period in which barren land and cultivable, waste-lands were brought under crops. But due to traditional mode of farming, low productive seeds and low

use of chemical fertilizers the increase in yield was very low. [8] Net cropped area was 15.6 million hectare in 1950-51 and it increased to 16.8 million hectare in 1970-71. Thus, there was substantial increase in area under crops.

During the second phase (1970-71 to 1990-91) the growth rate of agricultural production was higher than the growth rate of agricultural production in the first phase. The distinct feature of the second phase was the higher increase in productivity than that in the area under crops. The composition of the variables were reversed during the second phase. During the second phase the growth rate of productivity was 2.8 per cent per annum while the growth rate of increase in area was only 0.23 per cent per annum. During this period food grain production increased at the rate of 3.05 per cent per annum and the rate of increase in production of non-food crops was higher than that in the food crops.

During the third phase (1990-91 to 2000-01) increase in agricultural production was solely through increase in productivity. There has been no increase in area under crops in the state since 1990 but the production of food grains enhanced from 33.8 Million tonnes in 1990 to 44.3 million tonnes in 2000-01. The present scenario reveals that increasing demand for land in urban areas and environmental issues are creating a pressure on cultivated land. A clear trend of decline in net cropped area is emerging. Though some waste-land, reclaimed fallow land and cultivable waste land are being brought under the crops, but the shift of agricultural land for non-agricultural uses is more than the increase in the cropped area. Actually there was decline in area under food crops at the rate of 0.14 per cent per annum coupled with the increase in agricultural production.

The statistics reveals that during 1990-91 to 2000-01 the growth rate of agricultural production was 1.78 per cent and increase in productivity was 1.91 per cent per annum. During the period the area under foodgrain crops declined. The rate of decline in area under foodgrain crops was 0.14 per cent per annum. But the above conclusion regarding a continuous decline of the growth rate of area under food crops is not true in case of non-food crops. It shows that a shift is taking place in agricultural economy in favour of non-food crops from foodgrain crops. The Table-I-1 confirms the above trend of area under food and non-food crops.

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[8] C.H. Hanumantha Rao: Growth and Productivity in Agriculture, Allied Publishers, New Delhi.

Programmes for Sub-Sectors

Allied agricultural activities like animal husbandry, fisheries and forestry are also very popular in the state. Since the beginning of the five year plans a thoughtful programme for the development of allied activities was also launched. Key Village Programme, Integrated Cattle Development Programme and Fodder Development Programme were launched in the state. Operation flood programme and breed improvement programme has been quite successful in the state. Now dairying programme is expanding in the state at a faster rate on the lines of 'Amul Model' specially in the western region of the state. U.P. has the largest livestock population in the country. The livestock sector is labour intensive and provides employment to around 25 per cent of the labour force and to the majority of female labourers. Similarly inland fisheries programme has also been successfully launched. The Fish Farmers Development Agency (FFDA) and Inland Fisheries Development Programme are playing a crucial role in the development of fisheries in each district of the state.

Water is the crucial requirement for all the life forms. Except Bundelkhand region Uttar Pradesh is water rich state. Important rivers of the state like Ganga and Yamuna are snowfed hence the flow of water is perennial and massive even during the lean season. Few others parts of country enjoy a similar advantage. According to Accelerated Irrigation Benefit Programme (AIBP) 1995, India has 140 million-hectares ultimate irrigation potential, while it was only 113 million-hectare according to previous estimate. The gross cropped area in India is around 195 million-hectare. Thus it is clear that at national level we can not irrigate our total gross area even after using ultimate irrigation potential of 140 million hectares. The situation is entirely different in U.P. Uttar Pradesh has more irrigation potential than its gross cropped area. Irrigation potential in U.P. is 31.7 million-hectare while the gross cropped area is only 25 million-hectare (Table-I.2). It has been estimated that irrigation capacity for 24.4 million hectares in the state has been created and about 19.6 million hectares is being utilized.

Agriculture is the primary livelihood of the majority of the population in the state. At the beginning of the plan most of the farmers worked as per their traditional knowledge and technology. Gradually, like other economic sectors, agriculture has also become knowledge-based activity. Developed countries have extensively improved their agriculture by applying

knowledge and scientific inputs. In this direction a substantial emphasis was laid on agricultural research, education and extension. A number of agriculture universities and colleges along with Krishi Vigyan Kendra and Krishi Gyan Kendra have been established in the state.

Table-I.2
Irrigation Capacity and Utilization in U.P. 2000-01

(Thousand Hectares)

Item	Minor Irrigation		Major & Medium Irrigation	Total
	Govt.	Private		
Capacity	3872	19097	7834	30803
Utility	1880	11404	6372	19656

Source: Planning Department, Govt. of U.P., Annual Plan 2001-02.

Infrastructure occupies the key for progress in all the productive sectors of the economy. Agricultural development also depends upon a sound base of infrastructure. Agricultural infrastructure facilities like rural roads, warehouses, markets, adequate availability of power supply and availability of credit are important components affecting the agricultural production and productivity in the state. At present about 50 per cent of the villages are linked with all-weather roads. In order to provide easy credit to the farmers commercial banks and cooperative credit institutions have taken initiatives. The scheme of Kisan Credit Card has also been introduced in the state. Use of electricity is gradually increasing in the state in agricultural sector.

Sericulture and Floriculture

Agricultural scenario of U.P. is basically foodgrain dominated. Various policies and programmes after independence intended to raise the production and productivity of foodgrains. No serious programme was launched for sericulture and floriculture for which the state has good prospects. The Western and Hill areas of the state have a tradition of growing aromatic flowers. Similarly U. P. has a long tradition of silk reeling. It has been a major production centre of silk garments. It was only after 1991-92 that the development of floriculture and sericulture got central place for diversification of agriculture in U.P.

Supporting Services

Agricultural development is a dependent variable. It heavily depends upon quality of soil and other basic inputs like fertilizer, irrigation, seed, pesticides and credit. Supporting services like marketing, prices, information and trade promotion measures etc. facilitate the process of agricultural development.

Marketing is a crucial supporting service for agricultural development. It was defective marketing system, which took millions of life during colonial rule particularly in 1943. It has been mentioned that during the famine of 1943 food articles were available but due to faulty marketing system these were beyond the reach of common man. Marketing has twofold objectives: (I) It provides income opportunities to producers and; (II) Consumer gets agricultural produce at reasonable price on demand. After realizing the need and relevance of good market system, it necessitated the regulation of agricultural market. Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu had regulated markets since 1931, but U.P. initiated market regulations during 1961-66. Later on the number of regulated markets in U.P. increased sharply and now U.P. ranks 5^{th} in the context of regulated market.

The demand for storage increased sharply in late sixties at the national and state levels. Storage of food grain is managed by Food Corporation of India, State Warehousing Corporations and Central Warehousing Corporation. The total number of warehouses were 187 in 1980-81. The number increased to 301 in 1988-89. But here is declining trend in the number of warehouses managed by State Warehousing Corporation. As a result, the total number of warehouses declined to 225 in 1995-96. The Food Corporation of India contributed maximum storage capacity. Apart from warehouses managed by the above three agencies, at present there are 1060 cold storages in private, cooperative and government sector in the state. Out of these 1060 cold storages only 834 cold storages are operational.

As it has already been pointed out that the process of diversification was very weak upto 1980, and as a result, agricultural exports were low. Agricultural exports from the state includes the export of the fresh and processed produce. Agricultural exports are around 21 per cent of the India's total export, however the corresponding figure for the state is only 7 per cent. Commercialization and diversification is taking place in the agriculture

of the state. This is a new phenomenon which can enhance the income of farming community including small and marginal farmers. Diversification of agriculture can contribute to the export basket from the state. The medium and large farmers are capable to enter the trading business of agricultural produce and they are in a position to generate surplus by adopting agricultural diversification. Establishment of Agricultural Special Economic Zones at various places is boosting the diversification of agriculture. The area under horticulture crops such as fruits, vegetables and potato was 2.97 lakh hectares in 1950-51, which increased to 24.15 lakh hectares in 2001-02.

CHAPTER-II

Development Pattern of Agriculture in U.P.

Introduction

Change is inevitable. The basic ideology behind the change is gradual transformation unlike revolution. The society and its business also change. Accordingly, agricultural pattern also changes over the period of time. Settled agriculture started in India with the introduction of foodgrain crops. Under colonial rule East India Company and later on British Government, tried to change agricultural pattern of the country. They laid emphasis on the growth of commercial crops rather than the foodgrain crops. Popularization of Indigo (Neel) cultivation and tea plantation are the example of deliberate change in agriculture. Britishers enacted a law introducing 'Tinkathia' system, under which a cultivator in Bihar was forced to grow Neel upon 3/20 area of the cropped land. It was against the welfare of the common man and resulted into acute shortage of foodgrains. It was also one of the factors for frequent recurrence of famine in the country. It is worthwhile to mention that Mahatma Gandhi entered in the freedom movement as an opponent of Neel cultivation. The above brief narration testifies that the development pattern of agriculture has been changing from time to time. After the attainment of independence agricultural pattern has gradually changed. There has been some change in crop composition, horticulture, livestock and other activities.

Crop-Economy

During the first half of the 20^{th} century, there has been very poor growth of agricultural sector of the country. It was a phase of near stagnation in farming sector. It has been observed that during the period 1900-45 growth rate of agriculture was only 0.3 per cent per annum, but the growth rate of foodgrains was negative during the period. Index number of all agricultural produce at the base year 1904-05=100 increased to 117.6 in 1946-47, while index number of foodgrain production declined to 95.7 during the said period. Productivity of food grains declined more sharply

and it declined from 100 of 1904-05 to 84.0 in 1946-47[*1]. This indicates the neglect of foodgrain crops. The trend had been pervasive in almost all the regions of the country including Uttar Pradesh. At the dawn of independence there was acute food shortage and the crisis became worst due to inflow of refugees. Therefore, after independence more emphasis was laid on foodgrain crops.

Rural economy of U.P. is crop dominated. Net sown area in Uttar Pradesh is around 168 lakh hectares which is about 70 per cent of the total geographical area (242 lakh hectares) of the state, while only 46 percent of the geographical area of the country is under crops. Percentage of area sown more than once is also higher in the state in comparison to the national average. It shows that crop economy is dominant in U.P. The table-II.1 related to land utilization in U.P. confirms the above finding:-

Region-wise Land Utilization

The region-wise land utilization as analysed in Table-II-2 shows that the proportion share of area under barren lands, cultivable waste lands, non agricultural land uses etc. of reporting area were the maximum in Bundelkhand region while area under water logged and sodic lands were the maximum in Eastern and Central regions of the state. The cropping intensity was the highest being 156.77 per cent in Western region against lowest of 114.55 per cent in Bundelkhand region during 1992-93. There was marked enhancement in cropping intensity during 1999-2000 (117.56%) from 114.55 per cent during 1992-93 in Bundelkhand region. However, the cropping intensity in Western and Central regions was more or less stagnant during the corresponding period. The area under sodic land, water logged and permanent pastures has steadily been decreasing in every five year plan across the regions. (Table-II-3)

There was a slight increase in gross cropped area in 1999-2000 over 1992-93 at the state level. the maximum positive increase in gross cropped area was 6.43 per cent in Bundelkhand region followed by 4.48 per cent in the Central region during corresponding period. The increase in gross cropped area was attributed to increase in area under summer crops across the regions. (Table-II-4)

[1] Govt. of India, Report of the National Commission on Agriculture, 1976, Vol.-1.

In the crop economy of U.P. foodgrains are dominant in terms of area. About 50 per cent of the net sown area is cropped more than once. Accordingly, the gross cropped area in U.P. in 1999-00 was 251 lakh hectares. In 1950-51 about 83.4 per cent of the total cropped area was under foodgrain crops. There has been some decline in percentage of area under foodgrain crops by 1999-00 and it has been estimated that about 80 per cent of the gross cropped area is under foodgrain crops. But there has been continuous increase in the area under cereals. It increased from 62.2 per cent of the gross cropped area in 1950-51 to 69.2 per cent of the gross cropped area in 1999-00. The decline of area under foodgrain crops has been due to sharp decline in area under pulses. The gross cropped area under pulses was 21.2 per cent of the gross cropped area in 1950-51, which continuously declined and reached the bottom of 10.6 per cent in 1999-00. The same declining trend has been observed in all the coarse grain crops also, along with pulses. Similarly there has been marked decline in area under important oilseeds. The gross cropped area under oilseeds was 10.5 per cent of the gross cropped area in 1950-51, which gradually declined to 3.8 per cent in 1999-2000. The foodgrains crop structure has shifted in favour of wheat and paddy. Similarly the area under vegetable crops is also increasing. Some high value crops such as horticulture, herbicides and aromatic crops are also coming up in Uttar Pradesh. Thus, it can be summarized that;

1. Percentage of net sown area to total geographical area of the state is almost constant in U.P.
2. A large number of holdings in the state are small and very small.
3. Agricultural economy of U.P. is dominated by food crops. Area under pulses, oilseeds and coarse cereals is sharply declining.
4. Crop composition has shifted of wheat and paddy.
5. The diversification process has been very slow in U.P.

Table -II.5
Trend of Area and Production of Crops in U.P.

Name of Crops	1950-51		1991-92		1999-2000	
	Area (000 hect.)	Production (000 M T)	Area (000 hect.)	Production (000 M T)	Area (000 hect.)	Production (000 M T)
Cereals	12743 (62.21)	8751	16084 (66.98)	31322	17384 (69.21)	41710
Pulses	4345 (21.21)	3023	2837 (11.81)	2494	2668 (10.62)	2551
Total Food grains	17088 (83.42)	11774	18921 (78.79)	3386	20052 (79.83)	44261
Oilseeds	2158 (10.53)	779	1147 (4.78)	905	954 (3.80	834
Others	1239 (6.05)		3947 (16.43)	110459	4112 (16.37)	118311
Gross cropped area	20485 (100.00)		24015 (100.00)		25118 (100.00)	

N.B. Figures in brackets is percentage to gross cropped area.
Source: Agriculture department, Govt. of U.P.

The statistics related to physical production also confirms that break-through has occurred in U.P. in case of cereal crops only. Increase in production of vegetables and horticultural crops are the recent phenomenon. Production of cereals was 87.5 lakh tons in 1950-51; it increased to 417.1 lakh tones in 1999-00. The production of pulses declined from 30 lakh tons in 1950-51 to 25.5 lakh tons in 1999-00. The decline in production of pulses presents serious contradictions in crop economy of U.P., particularly to the people living below poverty line in the state. Though there has been increase in total production of oilseeds during the above period but the area has declined. It shows that productivity of oilseeds has increased. The benefits of the programmes for the development of oilseeds have changed. The above table confirms the facts regarding the change in area and yield of crop economy. The table shows that area under all non-foodgrain crops was 16.58 per cent of the gross cropped area. It increased to 21.21 per cent of the gross cropped area in 1991-92 but again declined to 20.17 per cent in 1999-00.

During the First Phase (1950-51 to 1970-71) the annual growth rate of production of food grains was 2.55 per cent. The productivity growth was slight higher than the growth rate of area under crops during the period. The productivity growth rate during the said period was 0.95 per cent per annum while the area growth rate was 0.65 per cent per annum. Here, it can be said

that during the first decade of planning contribution of increase in area was higher than increase of yield in the growth of production. It was a period in which Barren land, wasteland were brought under crops. But due to traditional mode of farming low productive seeds and low use of chemical fertilizers the increase in yield was very low.[*2] Net cropped area was 15.6 million-hectare in 1951 and it increased to 16.8 million hectare in 1970-71.

Table-II.6
Growth rates of area, production and productivity

Period	Annual Growth Rates (In %)		
Food Crops	Area	Production	Productivity
1950-51 to 1970-71	0.65	2.55	0.95 phase-I
1970-71 to 1990-91	0.23	3.05	2.88 phase-II
1990-91 to 2000-01	(-) 0.14	1.78	1.91 phase-III
Over all 1950-51 to 2000-01	0.33	2.59	2.26
Non-food crops			
1950-51 to 1970-71	2.19	3.16	1.88
1970-71 to 1990-91	1.77	3.43	2.82
1990-91 to 2000-01	3.03	2.65	(-) 0.38
Over all 1950-51 to 2000-01	1.69	2.77	1.07
All Crops			
1950-51 to 1970-71	0.79	3.00	2.18
1970-71 to 1990-91	0.42	3.33	2.90
1990-91 to 2000-01	(-) 0.07	1.10	1.16
Over all 1950-51 to 2000-01	0.47	2.72	2.24

Source: Tenth Five Year Plan (2002-07) and Annual Plan (2002-03) Vol.-I (Part-I) U.P.

During the second phase (1970-71 to 1990-91) the growth rate of agricultural production was higher than the growth rate of agricultural production of first phase. The distinct feature of the second phase was higher contribution of increase in productivity than the contribution of increase in area. The composition of the variables were reverse during the second phase.

[2] C.H. Hanumantha Rao, Growth and Productivity in Agriculture, Allied Publishers, New Delhi.

During the second phase the growth rate of productivity was 2.8 per cent per annum while the growth rate of area was only 0.23 per cent per annum. During this period food grains production increased at the rate of 3.05 per cent per annum.

During the third phase (1990-91 to 2000-01) increase in agricultural production was solely through increase in productivity alone. There has been no increase in area under crops since 1990 in the state but the production of food grains enhanced from 33.8 Million tonnes in 1990 to 44.3 million tonnes in 2000-01. The present scenario reveals that increasing demand for land of urban areas and environmental issues are creating a pressure on cultivated land. A clear trend is there to show the decline in net cropped area. Though some wasteland, reclaimed land, fallow land and cultivable wasteland is being brought under the crops. But the drift is more than the increase in the cropped area.

The statistics reveals that during 1990-91 to 2000-01 the growth rate of agricultural production was 1.78 per cent and increase in productivity was 1.91 per cent per annum. During the period the area under foodgrain crops declined. The growth rate of area under foodgrain crops was 0.14 per cent per annum. But the above conclusion regarding a continuous decline in the growth rate of area under food crops is not true in case of non-food crops. It shows that a shift is taking place in favour of non-food crops from foodgrain crops. The Table-II.6 confirms the above trend of area under food and non-food crops.

Plan-wise Growth of Area, Production and Productivity of Important Crops

Plan-wise area, production and productivity of important crops in the state have been given in Table-II-7. Crop-wise and plan-wise analysis of area, production and productivity are narrated below:

Paddy

Paddy is the main crop of Kharif season of different regions of U.P. It occupied 21 per cent of gross cropped area in 2000-01. The growth rate of area, production and productivity was positive in Ist and IInd Five Year Plans, while production and productivity were negative in IIIrd Five Year Plan. From 4th Five Year Plan onwards, there had been positive growth rate. It is

also notice from the table that the growth rate of area under this crop was comparatively lower than its production and productivity during the study period. The growth rate production and productivity was the maximum during the Vth five year plan while it was the lowest during the IXth five year plan. The area under paddy was 36.35 lakh hectares during Ist five year plan which went up to 58.97 lakhs hectares during the IXth five year plan, thereby showing an increase of 62.23 per cent over the base year. The maximum jump in area under this crop was noticed in the VIth five year plan. The productivity of this crop was 5.77 quintals per hectare which has significantly increased to 20.77 quintals per hectare during the IX th five year plan. There was substantial increase in productivity of this crop in the succeeding five year plans. (Table-II-8)

Maize

Maize is the second important kharif crop of the state which occupied 3.71 per cent of gross cropped area during 2001-02. The area under this crop was 9.44 lakh hectares during Ist five year plan which has marginally increased to 9.76 lakh hectare during IXth plan showing 3.39 per cent increase. However, the productivity of this crop doubled during the IXth five year plan from productivity of 7.83 quintals during Ist five year plan (Table-II-8). The growth rate of area was negative over plan period except Ist, IIIrd and VIIIth five year plans. Maximum down fall occurred after the introduction of green revolution. The range of growth of productivity was between 1.85 and 7.83 per cent per annum. There was very erratic growth rate of productivity of this crop over the plan periods (Table-II-7).

Other Coarse-Grain Crops

The area under jowar, mandua, kodan and sawan has decreased gradually in all the succeeding five year plans. The area under kakun and kulthi are now invisible in all most in part of the state.

Wheat

Wheat is very important crop of the Rabi season and is grown in all the regions of the state. It occupied the highest share being 52.79 per cent during 1999-2000 of gross cropped area. Table II-8 indicates that 36.53 lakh hectare area was under wheat during Ist plan which increased to 92.59 lakh hectares during IXth five year plan, thereby showing an increase of 153.44

per cent over the base year. The pace of enhancement of area under this crop started since the inception of green revolution. The productivity of this crop was only 8.23 qtls per hectare in Ist five year plan which increased to 26.53 qtls per hectare in the IXth five year plan. The area, production and productivity of this crop have a positively increasing trend in every five year plan period. It is also noticed from Table-II-7 that growth rate of area and productivity was quite encouraging from seventies onwards (Vth five year plan). There was very slow growth of area under this crop during the VIIIth five year plan and it became almost negative during the IXth five year plan (Table-II-7).

Oilseeds

Table-II-7 also reveals that growth rate of area and production was negative in IInd and Vth five year plans. The growth rate of productivity of oilseed was quite impressive over all the five year plan periods. Overall, growth rate of area production and productivity was quite low during IXth five year plan in comparison to wheat and paddy crops (Table-II-7).

The cause of slow pace of growth rate of area can be attributed to changing the area to sugarcane, vegetables, paddy and wheat. Since it is very susceptible to pests and diseases so the production of oilseeds appeared to be un-productive (Table-II-8).

Pulses

Moong, urd, gram, pea, lentile and arhar are the main pulse crops of the state. Out of total cropped area, the pulses accounted for 10.60 per cent area during 2001-02 which was 21.20 per cent during 1950-51. The position of pulses had been very distressing since seventies. The maximum area of rabi pulses shifted to wheat crop because of Green Revolution. During the Ist and IInd five year plans, he growth rate of area and production was quite encouraging. From IIIrd five year plan onward the growth rate of area, production and productivity suffered a great set back. There was decline in area of gram, pea and arhar across the regions. On account of expansion of irrigation facilities coupled with new strategy of wheat and paddy crops, the area under pulses started being used for wheat, paddy and vegetable crops.

The above analysis highlights that the pulses and coarse grain crops have suffered a lot since introduction of green revolution and expansion of

irrigation net work in the state. Besides, the area and production of sugarcane and vegetable crops have also increased manifold in the state.

Region-Wise Productivity of Major Crops

The productivity of paddy and wheat, sugarcane and potato was the maximum in the Eastern region while it was the minimum in Bundelkhand region. However, the productivity of pulses was the highest in the Bundelkhand region. Table-II-9 reveals that productivity of oilseeds was the maximum in the western region followed by the Central region. The productivity of these crops in Central as well Eastern Regions was close to Western regions while there was a wide gap between western and Bundelkhand regions. It is also noticed from Table-II-9 that there was an increasing trend in the productivity of wheat in Bundelkhand region as compared to other regions. The enhancement in productivity of wheat was quite slow across the regions. (Table-II-9). The productivity of different crops either of kharif of rabi seasons was more or less stagnant during IXth five year plan because of unbalanced use of fertilizers, excessive use of water and unchanged cropping pattern across the state. The pace of growth rate of production was higher during 1980s than during 1990s. The cause of lower growth rate in food grains production was declining investment in agriculture. Hence, the agro-climatic regional planning requires to be stressed in a bigger way. There is also need for diversification from crops sector to livestock and fisheries across the regions of the state. A substantial capital should be allocated for control of floods, reclamation of sodic and degraded lands etc. so that more lands could be used for cultivation. The farmers should be advised to also spare some areas for pulses, vegetable, floriculture, medicinal plants etc. to get regular income throughout the year.

Table -II-13
Individual Yields Achievable Level Current Productivity and Possible gap

(Qtls/ha.)

	Individual highest yield		Achievable Productivity		Current Productivity		Possible GAP	
Zone	**Rice**	**Wheat**	**Rice**	**Wheat**	**Rice**	**Wheat**	**Rice**	**Wheat**
Hills	59	48	30	25	20	18.65	10	6.35
Western Plains	62	68	40	45	25	32.48	15	12.52
Mid-Western Plains	53	54	40	40	26	29.23	14	11.77

South Western	--	57	30	42	18	30.75	12	11.25
Semi Dry Plains								
Mid Plains	47	73	30	38	19	27	11	11
Bundelkhand	25	41	20	25	12	20.04	8	5
North Eastern Plains	43	52	25	40	20	25.5	5	14.5
Eastern Plains	49	57	30	40	21	25.51	9	14.5
Vindhya	33	38	25	20	22	16.38	8	3.62
Uttar Pradesh	47	57	30	35	21.48	26.68	8.52	8.32

Table-II-13B
Region-wise Distribution of Districts According to Category of Development

Developed	Moderately Developed	Less Developed	Backward
Western Region			
Ghaziabad	Rampur	Ferozabad	Badaun
Meerut	Moradabad	Farrukhabad	
Muzaffarnagar	Bulandshahar	Shahjahanpur	
Saharanpur	Bareillly	Etah	
Mathura	Aligarh	Etawah	
Bijnore	Pilibhit		
Hardwar	Mainpurii		
Agra			
Central Region			
Kanpur Nagar		Rae Bareli	Fatepur
Kucknow		Kheri	Kanpur Dehat
		Barabanki	Sitapur
			Hardoi
Eastern Region			
	Varanasi	Deoria	Pratapgarh
	Gorakhpur	Mirzapur	Maharajganj
		Ballia	Gonda
		Allahabad	Siddharthnagar
		Sultanpur	Bahraich
		Jaunpur	
		Sonebhadra	

		Faizabad	
		Ghazipur	
		Azamgarh	
		Mau	
		Basti	
Bundelkhand Region			
	Jhansi	Jalaun	Hamirpur
			Lalitpur
			Banda

Horticulture Economy

Uttar Pradesh is blessed with strong horticulture production base. It is the sixth largest producer of vegetables and eighth largest producer of fruits in the country. It contributes around 45 per cent of the potato production of the country. It has 2.66 lakh hectares of area under the mango orchard. It is a pioneering state which initiated the declaration of fruit belt orchard dominated areas of the state has been declared as fruit belt and promotional as well as protective measure are being introduced. Thus, U.P. has great potential for the development of horticulture like, fruits, vegetables, aromatic & medicinal plants and floriculture crops. As a result of continuos efforts, horticultural crops have substantially increased. New varieties of fruits, vegetables and new technology have also been introduced in the field of horticulture. The table given below shows the area and production of horticulture during first plan and at the end of Ninth Plan:-

Table-II.14
Year-wise Physical Achievements during the Ninth Five Year Plan

Year	Fruits		Vegetables		Potato	
	Area (lakh Ha.	Prod. (lakh M.T)	Area (lakh Ha.)	Prod. (lakh M.T)	Area (lakh Ha.)	Prod. (lakh M.T)
1951-56 (Ist Plan)	1.00	5.00	1.00	10.00	0.07	6.86
1997-99	8.24	85.00	10.20	165.00	3.96	58.54
1998-99	8.37 (7.58)	88.00 (3.53)	10.50 (2.94)	171.20 (3.76)	3.90 (-1.51)	80.00 (36.66)
1999-2000	8.55 (2.15)	85.25 (-3.13)	10.75 (2.38)	177.77 (3.84)	3.95 (1.28)	96.00 (20.00)
2000-01	7.15 (-16.37)	69.24 (-19.13)	11.23 (4.47)	163.30 (-8.14)	4.00 (0.01)	85.00 (11.46)
2001-2002 Proposed	8.85 (-23.78)	100.00 (44.43)	11.25 (0.18)	191.05 (16.99)	4.05 (1.25)	103.00 (21.18)

Note: Figures in brackets are percentage change over preceding years.

Table-II-15
Year & Plan wise Area & Production of Fruits, vegetables and Potato

Sl. No.	Years/ Plan	Fruits		Vegetables		Potato		Total
		Area	Prod.	Area	Prod.	Area	Prod.	Area
1	1951-56 Ist Five year plan	1.00 ((33.67)	5.00	1.00 (33.67)	10.00	0.97 (32.66)	6.86	2.97 (100.00)
2	1956-61 IInd Five Year Plan	1.50 (36.38)	9.00	1.50 (38.38)	15.00	1.13 (27.24)	7.99	4.13 (100.0)
3	1961-66 IIIrd Five Year Plan	2.99 (43.40)	17.99	2.43 (35.27)	27.13	1.47 (21.33)	13.41	6.89 (100.00)
4	1969-74 IVth Five Year Plan	3.49 (41.70)	21.79	3.07 (36.38)	36.08	1.81 (21.92)	16.95	8.37 (100.00)
5	1974-79 Vth Five Year Plan	5.23 (40.64)	28.15	4.94 (38.38)	55.25	2.70 (20.98)	42.41	12.8 (100.00)
6	1980-85 VIth Five Year Plan	5.80 (35.58)	38.39	7.41 (45.46)	89.92	3.09 (18.96)	52.56	16.30 (100.00)
7	1985-90 VIIth Five Year Plan	6.98 (37.59)	56.60	8.30 (44.70)	108.40	3.29 (17.71)	59.90	18.57 (100.00)
8	1990-91 Annual Plan	7.16 (38.00)	59.00	8.45 (44.85)	113.00	3.23 (17.15)	61.46	18.84 (100.00)
9	1991-92 Annual Plan VIII Plan	7.33 (37.53)	63.00	8.76 (44.85)	120.60	3.44 (17.62)	60.09	19.53 (100.00)
10	1992-93	7.49 (36.00)	66.00	9.21 (145.10)	124.2	3.72 (18.22)	54.71	20.42 (100.00)
11	1993-94	7.94 (138.01)	67.24	9.30 (44.52)	132.85	3.65 (17.47)	7.69	20.89 (100.00)
12	1994-95	7.78 (37.26)	72.50	9.49 (45.45)	143.00	3.61 (17.29)	65.61	20.88 (100.00)
13	1995-96	7.94 (37.34)	81.78	9.97 (44.95)	159.00	4.11 (11.53)	92.63	22.18 (100.00)
14	1996-97 IX Plan Year	8.10 (36.52)		9.97 (44.95)	159.00	4.11 (18.53)	92.63	22.18 (100.00)
15	1997-98	8.24 (36.78)	85.00	10.20 (45.54)	165.00	3.96 (17.68)	58.54	22.40 (100.00)
16	1998-99	8.37 (36.76)	88.00	10.50 (46.11)	171.20	3.90 (17.13)	80.00	22.77 (100.00)
17	1999-2000 Estimated	8.55 (36.82)	85.25	10.75 (46.34)	177.77	3.95 (16.96)	96.00	23.25 (100.00)
18	2000-01	7.15 (31.95)	69.24	11.23 (50.18)	163.30	4.00 (17.87)	85.00	22.38 (100.00)
19	2001-02 proposed	8.85 (36.64)	100.00	11.25 (46.58)	191.05	4.05 (16.78)	103.00	24.15 (100.00)

Note: figures in brackets are percentages of total area.

The targets for production of fruits, vegetables and potato have been substantially raised for the Tenth Five Year Plan. It has been decided to promote horticultural exports and the farmers are being encouraged to undertake cultivation of medicinal and aromatic plants. It has also been decided to promote food processing units in the state specially in the areas

rich for horticultural crops. Similarly the state has good prospects for floriculture. The state has a tradition of growing aromatic flowers in Kannauj, Hathras and Ballia. National Horticulture Broad, National Cooperative Development Corporation, Agricultural Processing Export Development Authority (APEDA) and U.P. Diversified Agriculture Support Project (UPDASP, Horticulture Component) are trying to develop floriculture in the state.

Development potential of horticulture and floriculture is very high in the state. In this backdrop various development programmes have been launched for the sector. Public sector investment in the horticulture and floriculture sector has also been considerably raised. There was negligible expenditure for these sub-sectors of agriculture during the Ist, IInd and IIIrd plans. It was the VIth plan in which 1.31 per cent of the plan expenditure was made available for horticulture. The plan outlay has sharply increased to 5.24 per cent in the Xth five year plan. As a result of this the production, productivity and area under horticultural crops have increased. The future of farming community in the state depends considerably on diversification of agriculture, particularly in favour of horticultural crops.

Live Stock Economy

Agriculture and livestock remained like one inseparable entity since the beginning of agriculture, whether unsettled or settled. They nourished each other. Live stock has a key role in the agricultural economy of U.P. as it provides milk, meat, wool, farm power, manure and cooking fuel. Live stock has a major role in providing assured income and employment to small and marginal farmers and weaker sections of the society, particularly to women and landless labourers[*3]. Mentioning the importance of livestock sector Royal Commission on Agriculture (1926) highlighted that, "Cow worship in India is common because it supplies bullock power, which is the backbone of rural economy."[*4] It is closed interwoven with agriculture and obviously plays an important part in the rural economy. But it did not receive as much attention as crop production till the Royal Commission on

[3] Livestock Economy of India, Conference proceedings, Indian Society of Agricultural Economics, Oxford & IBH, Pub. Co. New Delhi, 1989.

[4] Govt. of India, Royal commission on Agriculture, New Delhi, 1928.

Agriculture provided an unusually comprehensive and insightful discussion of India's livestock economy.

Live stock sector is more relevant to Uttar Pradesh as the percentage of small and marginal holding as well as agricultural landless labourers is higher in U.P. than the all India average. The percentage of marginal farmers' land holding in total land holding of the country is 59.4 per cent, while in U.P. this percentage is 75.6 per cent[*5]. This shows that for providing income and employment to marginal farmers and landless labourers, livestock has more weightage in U.P. The number of livestock is substantially large in U.P. than that in India. During the last two decades cattle population in the state has declined by a margin of 3 per cent annually. Buffaloes have recorded a decrease of 0.5 per cent annually. Though the number of goats, sheep, pigs and poultry population have increased. Cattle Breeding Programme has been an important programme in the state followed since independence. Until the Third Plan breeding policy emphasized the development of multipurpose cows that would provide more milk and quality work cattle. But from the Third Plan onwards the strategy was shifted to the breeding of high yielding cross-bred cows whose male progeny is less suited for rearing as work cattle. The strategy was implemented in Intensive Cattle Development Projects and subsequently in Operation Flood Projects.

Capital Formation in Agriculture

Investment creates capital, whether tangible or intangible. Investment in economic activities includes public sector investment and private sector investment. After independence public sector investment has played a crucial role in the development of agriculture by enhancing infrastructure like irrigation, electricity, agricultural research, roads, markets, warehouses and communication etc. Capital formation either in form of public capital or individual capital creates a conducive atmosphere for agriculture. Agricultural machinery is a part of gross capital formation in agriculture. There has been steep progress in the use of agricultural machinery and implements in the state. Use of tractors, threshers, diesel engine sets, electric

[5] Govt. of U.P. Tenth Five Year Plan Vol. I Part-I and Statistical Diary of U.P 2001, P-85.

tube-wells have increased remarkably during the plan period in U.P., as presented in table-II-16.

Gross capital formation in agriculture both from public and private sectors increased in India till 1979-80 in terms of amount and total capital formation. Share of agriculture and allied sector in total gross capital formation was 17.7 per cent in 1979-80. The trend has changed after 1979-80. The decline has been more steep since 1982-83. Percentage share of agriculture and allied sector in total gross capital formation declined to 7.1 per cent in 2000-01. Similarly the investment in agriculture as percentage of G.D.P. was 1.6 per cent in 1993-94. It declined to 1.3 per cent in 2000-01.

The decline in public sector investment is a matter of serious concern. Percentage share of public sector in gross investment of agricultural sector was 33 per cent in 1993-94. The contribution of public sector investment in agriculture declined to 24.2 per cent, while the share of private sector in gross investment of agriculture increased from 67 per cent in 1993-94 to 75.8 per cent in 2000-01[*6]. The above trend of capital formation continues in U.P. also. In U.P., public sector investments were in the form of agricultural machinery such as tractors, power tiller, thresher. Investments in irrigation, electricity, agricultural research, road, trade and communication have declined. The more disturbing point is decline of private sector investment in agriculture in U.P. During the period of study we found that in eastern and western regions of U.P agricultural surplus, particularly from big farmers, is being shifted to cities and nearby towns as well as more for consumption expenditure.

On the basis of plan expenditure on agriculture the above conclusion can also be substantiated. It has seen observed that upto the Vth five year plan total expenditure on agriculture in India was more than 12 per cent of the total plan expenditure. After 1979 it declined sharply and during IXth five year plan the same was only 4.9 per cent of the total plan expenditure in India[*7]. The same trend prevails in U.P. also. In U.P. during the Vth plan total expenditure on agriculture was 13.6 per cent of the total plan expenditure and it declined to 5.4 per cent in the sixth plan. But there has been marginal increase in the figures during the next three plans. The trend

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[6] Computed from on Report on Currency & Finance, RBL, 2000-01 & Economic Survey 2000-01.

[7] Planning Commission, Government of India, Tenth Five Year Plan Vol.II,.

has been presented in the table-II-17. The declining trend in public and private sector investment is to be reversed by better targeting of subsidies, increasing investment in productive assets such as agricultural machinery, irrigation, power, credit and developing rural infrastructure in the state.

Table-II.17
Plan Expenditure on Agriculture in India & U.P.

Plan Period	Expenditure on Agriculture as percentage to total Public Expenditure in India	Expenditure on agriculture as percentage to total Public expenditure in U.P.
I Plan	14.9	24.7
II Plan	11.3	28.8
III Plan	12.7	27.8
IV Plan	14.7	18.9
V Plan	12.3	13.6
VI Plan	5.8	5.4
VII Plan	5.9	8.4
VIII Plan	5.2	9.1
IX Plan	4.9	12.3

Source: Govt. of India, X Five Year (2002-07) Plan, Vol.-II and Compiled from various Plan Documents of U.P.

On the basis of intra-sectoral plan expenditure in various sectors of agriculture in U.P., it has been observed that during First plan expenditure on crop economy was 81.7 per cent of the total plan expenditure which declined to 23.7 per cent in the Ninth plan. On the other hand plan expenditure has increased in livestock, horticulture, forestry and soil conservation as well as in cooperation and warehousing including marketing. The increase in these sub-sectors has been more remarkable since Forth Five Year Plan. The plan expenditure trend given in the following table shows that more emphasis is being given to allied activities of agriculture as well as to development of supporting services for agricultural sector. Forestry and soil conservation have also attracted attention of the policy makers as total plan expenditure was 4.2 per cent of the total expenditure of the First Five Year Plan. It gradually increased so much so that 34.8 per cent of the total expenditure of the VIIIth plan was used for

forestry and soil conservation. It further increased to about 39 per cent in Ninth Five Year Plan. The trend reveals to very important conclusions.

1. The health of land and soil has degraded intensively and soil degradation creates a threat to future development of agriculture.
2. Forest cover is an essential aspect for soil conservation and other benefits related to forestry.
3. Horticulture has gained momentum particularly after Fourth Five Year Plan as 1.31 per cent of plan expenditure was used for horticulture in Six Five Year Plan, which increased to 5.24 per cent in Ninth Five Year plan.

Table-II-19
Uttar Pradesh at a Glance (Plan wise Expenditure)

Item and Units	Time	Particular
1	**2**	**3**
Five Year's Expenditure (In Crores)		
A. First Five Year Plan	1951-56	153
B. Second Five Year	1956-61	233
C. Third Five Year	1961-66	561
D. Annual Plan year	1966-69	455
E. Fourth plan Year	1969-74	1166
F. Five Year Plan	1974-79	2909
G. Annual Five Year Plan	1979-80	829
H. Six Plan Year	1980-85	6594
I. Seven Five Year Plan	1985-90	11949
J. Annual Five Year Plan (Annual)	1990-92	6904
K. Eight Five Year Plan	1992-97	21680
L. Nine Five Year Plan Annual	1997-98	5667
M. Nine Five Year Plan Annual	1998-99	6364
N. Nine Five Year Plan	1999-2000	6569
O. Nine Five Year Plan	2000-2001	8188

With Uttaranchal

The plan expenditure pattern in various sector of agriculture in the state shows that fisheries sector of the state has not received much attention of the policy makers. The percentage of total expenditure on fisheries remained constant (around 1 per cent of the total expenditure) except Second Five Year Plan. Plan expenditure on fisheries sector was 3.3 per cent of the total plan expenditure of the state in Second Five Year Plan.

Agriculture being the dominant sector in terms of GDP, employment and source of the supply of the basic requirement of life deserves serious attention of the state. Increased capital formation through plan expenditure in agriculture shall boost the agricultural productivity and its diversification. Development of livestock sector, fisheries, horticulture, floriculture, aromatic plants for which U.P. has vast potential also depends on capital formation.

Table-II-20
Per Capita Plan Expenditure in Five Year Plans

Plan Period	U. P.	India	Percentage U. P. to India
1st Five Year Plan (1951-56)	25	38	65.8
2nd Five Year Plan (1956-61)	32	51	62.7
3rd Five Year Plan (1961-66)	72	92	78.3
Annual Plan (1966-69)	53	61	86.9
4th Five Year Plan (1969 - 74)	132	142	93.0
5th Five Year Plan (1981 - 85)	329	361	91.1
6th Five Year Plan (1981 - 85)	588	718	81.9
7th Five Year Plan (1985 - 90)	1077	1270	84.8
8th Five Year Plan (1992 - 97)	1559	2135	73.00

CHAPTER-III

Major Initiatives in Agricultural Development

At the dawn of independence it was imperative to develop agriculture in view of continuing food shortage and heavy inflow of refuges in the country as well as in Uttar Pradesh. The government of U.P initiated various schemes and programmes, from time to time, to increase the agricultural production. The chapter deals with the major initiatives taken for agricultural development in the state. An overview of the agricultural development schemes and programmes launched during the plan period shows that the focus of the programme has changed from time to time. During the first three decades of the plan period the emphasis was to increase gross foodgrain production. As the income of the people grew the consumers' taste and requirements of the farmers changed. Accordingly, the essence of schemes, programmes and priorities also changed to accommodate the changes in consumers' taste and market environment. The major schemes and programmes launched for agricultural development in the state are summarised below:

1. Schemes and Programmes to Raise Gross Agricultural Output:

As we have earlier observed that during first two decades of planning high priority was assigned to institutional changes for the growth of agricultural production, specially foodgrains such as abolition of intermediaries, consolidation of holdings, ceiling on land holdings, regulation of rent, tenancy reform etc. Later on technological innovations were adopted and implemented to raise the gross agricultural production. This aspect has also been summarized in the earlier discussions.

2. Schemes & Programmes Related to Crop Production:

The other aspect of the schemes and programmes has been crop and region specific. During the plan period a number of programmes and schemes were introduced such as: Kisan Mitra Scheme (for all crops), Small Farmers Development Agency (SFDA), Marginal Farmers and Agricultural Laboures Development Agency (MFALDA), Free Boring Scheme, Intensive Sugarcane Development Programme, Scheme for Fodder and Pasture Development, Feed and Fodder Production Enhancement Programme.

Crop production and its growth have been the major concern of the government of Uttar Pradesh. Various national programmes, such as IADP, IAAP, Technological Change, Drought Prone Areas Programme, Hill Areas Development Programme, Diversification and Multiplication Programmes have been launched in U.P. These programmes were financially assisted by the government of India. Besides these macro programmes, government of U.P. has launched various development programmes and schemes for specific crops and backward areas of the state. Some notable programmes and scheme are Free Boring Scheme, Feed and Fodder Production Enhancement Programme, Crop Insurance Programme, Integrated Cereal Development Programme. Special Programme of Rice Development, Agricultural Training for Women Programme, Integrated Cereal Development Programme (Maize), establishment of Agricultural Development Funds, Intensive Cane Development Programme etc. Besides these, Technology Mission Programme is also in operation in the state to enhance the production of selected crops like urd, moong, pageonpea, gram and lentil. The Technology Mission also helps raise the production and productivity of oilseed crops. It also intends to increase the production of maize. UPDASP has also initiated a number of programmes for raising the crop production and diversifying the agricultural sector, such as, Programmes of Barley, Maize, Bajra, Rice, Oilseeds, Pulses and Wheat etc.

3. Horticulture:

Government of Uttar Pradesh, as in case of India, paid more attention to the development of foodgrains. It is only since the beginning of globalization of agriculture that the government started to pay more attention to horticultural crops and at present U.P. produces 8.5 million tons of fruits. This is around 18 per cent of total fruit production of the country. Vegetable production is around 20.4 million tons constituting around 19 per cent of total vegetable production of the country. Similarly around 2000 hectares of area is under the cultivation of flowers in the state. Thus U.P. has considerably progressed in the production of horticultural crops such as fruits, vegetable, potato, spices, flowers, mushroom and betel leaves. The U.P. Horticulture Department has launched the following major schemes for the development of horticultural crops:

1. Plantation of fruit sapplings.
2. Establishment of nurseries and gardens at block level on private land.
3. Establishment of herbal gardens.

4. Development of vegetables and spices.
5. Development of fruit belt areas
6. Development of mushroom cultivation.
7. Development of medicinal and aromatic plant.
8. Distribution of seeds for the cultivation of spices and vegetables.
9. Change of varieties of the plantation crops.
10. Establishment of fruit processing industries.
11. Establishment agri-export zones.
12. Strengthening of farmers and gardeners.
13. Development of Citrus Fruits and Plants in Bundelkhand Region.
14. Ornamental gardening scheme.

Above is the list of major schemes being implemented for the development of horticulture in the state. Besides these schemes, some other programmes are being implemented in U.P. for the development of horticultural crop, such as intensification of major horticultural crops like fruit, vegetable, spices, medicinal and aromatic plant and bee-keeping. Similarly, a programme has been launched for introduction of new production technology like establishment of green houses for floriculture, establishment of green house for protected vegetable production, promotion of low tunnel technology for nursery management and mechanization in vegetable production. There is another programme for productivity, improvement of post harvest infrastructure and marketing facilities.

Establishment of Agro-Export Zone is an important programme for the development of major horticultural crops for which the state has very rich potential. In this direction Mango Export Zone has been established at Lucknow and Saharanpur and Agri-Export Zone for potato has been setup at Agra. The state government has forwarded a proposal to central government for establishing Agri-Export Zone at Varanasi (for vegetable), Pratapgarh (for Aonla) Rampur and Barabanki (for Mentha). These Agri- Export Zones shall help further development of various vegetable crops.

4. Live-Stock

The main aim of animal husbandry development in the state was to create employment and alleviate the poverty of down trodden people through effective implementation of policies and programmes. The following major policies and activities were initiated during different Five Year Plans for the development of live stock in the state.

I. Policies and Activities to Control Live stock Diseases. Epidemics have been controlled through preventive vaccination. On account of this, mortality rate have come down. Under this programme maximum emphasis has been to establish veterinary hospitals, dispensaries and mobile units. Apart from these, special efforts have also been made to control infertility problems in live stock. This programme has been giving positive result since its inception.

II. Artificial Insemination Programme (AIP) has received grand success in the state. Frozen Semen and Embryo Transfer Technology have been implemented in a big way. This has brought a revolutionary improvement in the breed of milch animals.

III. Feed and Fodder Programme Feed and fodder storage has been a major bottleneck for the live stock economy of the state. Keeping it in view Feed and fodder Programme was started in 1959-60 in the selected villages, in which seed of barseem and perennial grass were distributed to cultivators at 50 per cent subsidy. But the response was poor.

IV. Poultry Development Programme the Govt. had exempted poultry feed and ingredients from trade tax under this programme to achieve 2.50 lakh improved poultry of layer. Efforts were also made to improve marketing back-up and provided technical support to entrepreneurship. The Scheme for Promotion of "Backyard Poultry Keeping" is being launched during the Tenth Five Year Plan for increasing the production of egg and poultry meat. This programme will encourage target group to increase their income and employment among the house-wives.

V. Sheep and Wool Development the sheep extension work had been carried out through 124 Sheep and Wool Extension Centres during the IV Five Year Plan. For getting quality production of wool, the Govt. had initiated the following schemes:

(a) Establishment of Sheep Breeding Farms.
(b) Establishment of Wool, Grading and Marketing Centres
(c) Expansion and Strengthening of Goat Breeding Facilities.

(d) Veterinary support to shepherds under Sheep and Wool Development. The **"Mass Drenching Programme"** along with the vaccination of sheep was started to get good quality wool production. This programme would enhance the wool production upto 0.560 lakh kg. per annum in years to come.

VI. Goat Production Programme Govt. had given adequate attention to improve the goat breeds. On account of this, the goat meat and milk production has significantly increased. Goat produced 266.337 lakh kilograms of meat and 0.0893 lakh M.T. of milk during 1999-2000. The Animal Husbandry Departments will provide small goat units (one buck+ten does) to thriving family under self-employment scheme. The department has set a target to establish 200 Goat Breeding Societies. Each society has 50 members. In the wake of this, the goat meat production shall increase by 10% by the end of Tenth Five Year Plan.

VII. Piggery Development Programme Animal Husbandry Department had given full attention for strengthening and expansion of Pig Breeding Facilities. A Regional Pig Breeding Station was established at the Central Dairy Farm, Aligarh at the end of the second Five Year Plan to produce quality boars and gilts to issue in the field for piggery development. Integrated Pig Development Scheme was also launched throughout the state through Public/ Cooperatives/ Breeder's Societies/ NGOs. A large number of SC/ST families were maximum covered under this programme. Diagnostic Investigation Laboratories were also established in potential areas.

VIII. Fodder and Pasture Development Training and Extension Support, Establishment of A.H Extension wing, strengthening of live stock marketing units were also among the programmes of Animal Husbandry Development to achieve better growth by the end of X Five Year Plan.

IX. Dairy Development Uttar Pradesh is the largest milk producing state of the country. The state produces 14.5 M.MT milk annually which is about 16% of the total production of the country. At present 11917 Dairy Cooperative Societies are working under the 51 district unions and the Provincial Cooperative Dairy Federation (PCDF). More than 7.59 lakh dairy farmers of the state are getting employment in this

sector. In order to increase the milk production and to improve the economic condition of the milk producers, the following schemes and programmes were been launched in the state:

(a) Awareness for Dairy Development and Extension and Training.
(b) Financial help to Milk Co-operative Institutions under Special Component Plan.
(c) Border Area Development Programme.
(d) Market Intervention Operation.
(e) Revitalization, Consolidation and Expansion of existing Milk Unions/ Societies.
(f) Establishment of Dairies and Chilling Plants.
(g) Milk Production and Enhancement Programme.
(h) Mahila Dairy for Milk Cooperative Societies.
(i) Saghan Mini Dairy Department (SMDP).
(j) Mother Dairy.

Integrated Dairy Development Project in non operation, flood prone and backward areas (IDDP): Govt. of India has been providing 100% grants-in-aid to state Govt. for dairy development under this scheme. Three projects viz, U.P.-I (Bundekhand), U.P.-2 (Purvanchal) and U.P.-3 (Tarai) have been sanctioned by Govt. of India in 1993-94 with a financial outlay of Rs. 1242.80 lakh. **Diversified Agriculture Support Project (DASP)**: The DASP has also been supporting to boost the dairy development programme in the state.

5. Fisheries

Fisheries sector has been assisting economically weaker communities. There has been a remarkable growth of inland fisheries in the State. It provides gainful employment and higher income to the farmers. With a view to developing the fisheries in the state, the state Govt. had set up Fish farmers Development Agency (FFDA) in the following phases:

Phase-I:	**1975-76 to 1979-80**	5 districts
Phase-II:	**1980-81 to 1987-88**	17 districts
Phase-III:	**1988 onward**,	37 districts.

At present all the districts of State have been covered under FFDA. The FFDA had been launched in each district of the state to facilitate the following activities for the development fisheries.

(a) Promotion of aquaculture in rural areas.
(b) Integrated fish farming.
(c) Plantation on bundhs
(d) Financial assistance (bank loan and subsidy).

FFDA has played a significant role in promotion of fisheries sector in the state. The average fish productivity of ponds was only 600 kg/ha/yr before the initiation of programme, but it was raised upto 2250 kg/ha/yr after the implementation of the programmes. It also arranges the bank loan along with subsidy to fishermen for construction and improvement of ponds. In so far as the marketing of fish is concerned, FFDA has been developing infrastructural facilities to provide the reasonable price to fishermen. Apart from this, the exploitation of fishermen by middlemen have also been stopped due to implementation of FFDA in the state.

The Agro-Economic Research Centre, Allahabad had conducted a study on **"Evaluation of Fish Farmers Development Agencies in U.P.",** during 1995-96 to know the performance of FFDA in U.P. FFDAs were selected from different agro-climatic zones of U.P. A sample of 328 units was drawn from different land holdings in the selected FFDA. The study had broughtout the following results:

The fish production had increased to 14.17 qtls per/ ha./ per year from the yield of 3 to 5 qtls per/ha/yr due to application of scientific methods. The fishermen had also received net return more than Rs. 19124 per ha. Fish farming had also created employment of about 153 man-days per ha. Hence, this programme was very beneficial for fishermen. Besides its positive contribution in the over all development of fishermen, the study has also found negative response of FFD from selected samples. Such as, irregularities in Patta allotment of ponds, non cooperation of banks, lack of technical persons, lack of proper marketing net-work etc. On an over all basis, the FFDA programme was beneficial in the development of fisheries in the State. Hence, the state Govt. has given the maximum attention for proper implementation of FFDA in Tenth Five Year Plan. State Government has taken initiative to introduce pearl culture in the State along with fish farming. Demonstration farms have been established for pearl culture. The concept of integrated fish farming incorporates pearl culture and poultry farming along with fish farming. Pearl culture has high potential for income and employment generation.

Table-III-1
Fish Production in U.P.

		1991-92	1999-2000	2000-2001
1	Fish Production (000 quintals)	112	1903 (1599.12)	2083 (9.46)
2	**Fish in Ponds (in Lakhs)**			
	I. Fishery Department	157.16	193.38 (23.05)	210.25 (8.72)
	II. Fish Development Nigam	114.50	276.75 (141.70)	270.00 (-2.44)
3	**Private Sector (Fishery Fingers in Lakh)**			
	I. Fishery Department	2599.26	7170.33 (75.86)	8108.90 (3.09)
	II. Fish Development Nigam	93.37	669.05 (616.50)	670.36 0.20)

Note: Figures in brackets are percentage change.

The above analysis of major initiatives taken in the State for agricultural development shows that a number of Programmes and Strategies were launched for the progress of agricultural sector. These resulted in the growth crop production and productivity. But it is clear that very attention has been paid during the planning period for the growth cereal crops, particularly for wheat, rice and sugarcane. Though livestock sector also attracted the programmes of the government but some other sectors like Poultry, Pig Farming, Agro-forestry, Bee-keeping could not get proper attention.

CHAPTER-IV

Analysis of Constraints to Agricultural Development in U.P.

This chapter highlights and analyses the constraints operating in agricultural sector. It deals with the constraints related with land, labour, live stock, horticulture, crop economy, food sector, irrigation, technology, extension, dryland development, trade and marketing.

1. Land

Per capita availability and the criterion of quality are the most important constraint related to land for agricultural development in the state. The availability of cultivable land has been sharply decreasing year after year due to increasing population and fast pace of industrialization and urbanization in the state. The per capita availability of cultivated land was 0.25 hectare in 1951-52 which has come down to 0.10 hectare in 2000-2001. Out of total reporting area, net sown area accounted for 55.47 per cent in 1951-52 which has gone up to 69.42 per cent in 2000-2001. Despite the increase in net sown area, the per capita availability of net sown area has been decreasing. Both have negative correlation.

Table-IV-1

Per Capita of Reporting Area and Net Area Sown During 1951 to 2001 in U.P

Year	Total Population (lacs)	**Reporting area (Hectare)**		Net Area Sown Hectares	
		Area	Per capita	Area	Per capita
1950-51	6,32	29258285	0.46	16231147	0.25
1960-61	7,38	29397785	0.40	17289873	0.23
1970-71	8,83	29806179	0.33	17304883	0.19
1980-81	11,09	29739421	0.26	17221367	0.15
1989-90	13,20	29799009	0.18	172232051	0.13
2000-2001	16,61*	24200000	0.14	16800000	0.10

* Except Uttaranchal

The number of holdings less than 1 hectare was 15.87 crores which accounted for 75.6 per cent of total holdings. Maximum number of households possesses tiny size of holding, only 9.9 per cent land holdings were commanded by large farmers in the State (1995-96). There is increase in the area and number under the small size of holdings and decrease in area and number under large size of holdings. The average size of holdings is 0.86 ha. It reflects that there is uneven distribution of land among different categories of the farms. Out of total holdings, marginal and small size of holdings jointly accounted for 90.10 per cent (less than 2.00 ha.) in 1995-96 against 9.90 per cent of large holdings during the corresponding year. Out of total area of 17710.4 thousand ha. the marginal and small holdings accounted for 57.90 per cent against 42.10 per cent of medium and large holdings. It shows that there is very large imbalance between marginal and large size of holdings.

Region-wise Distribution of Holding size:

There is a vast variation in the area and population ratio of the five regions. The Eastern region is the largest region in terms of area and population followed by Western region as compared to other regions. Hence, the marginal and small holdings are the maximum in this region. Against this, the Bundelkhand region had less pressure of population on land as compared to other regions. Therefore, average size of holdings was higher than that in other regions. Even then, the marginal as well as small holdings were ranged between 80 and 90 per cent of total holdings across the regions. It is also evident from Table-IV-2 that fragmentation of holdings occurred in each region but was found the maximum in the Eastern region as compared to Bundelkhand region. The size of holding has been sharply declining in each region due to high pressure of population on land. (Table-IV-2)

The Ceiling of Holding Act has not been implemented strictly as a number of disputes are pending in courts. It is noticed that 145003 ha. land has been declared surplus of which 91.62 per cent was taken into possession. Out of total surplus land, only 70.14 per cent was distributed to 2.91 lakh beneficiaries. It shows that the surplus land remaining for distribution is only 14000 hectare. It means that the size of cake to be distributed is very small. Land-leasing mechanism is also more or less not operative in the state due to the fear of transfer of ownership. Therefore, the small and marginal holdings are overburdened to provide livelihood for small and marginal farmers. The

distress selling of land by marginal farmers is still prevalent in some parts of the state due to the existence of non-viable small size of holdings. The concentration of land holdings is still maximum among the rich farmers. The main aim of consolidation of land holdings was to consolidate the scattered holdings to make them economically viable by the use of modern techniques. It became very fruitful. But could not remain for long due to subdivision of holding and the sale operation. The incidence of tenancy has considerably declined during the preceding four decades.

Since U.P. has 9 agro-climatic zones, therefore, the topography of land has vast variation. On account of this, sodic land accounted for 9.55 per cent, followed by 24.91 per cent, 12 per cent and 6.72 per cent in ravines, riverine land and waterlogged. These jointly accounted for 53.18% of reporting area of the State which are more or less lying under utilized or mono-cropped.

The degradation of land, erosion in soils is continuing due to excess use of water, fertilizers and pesticides. The contract farming in Uttar Pradesh is also not much prevalent due to very low size of holdings and a very high attachment of farmers with their land. Since the structure of land has much variation among the different agro-climatic zones, the common strategy of agricultural development is not possible for the state as a whole. The ground water table of the state has been going down fast due to excessive installation of pumpsets/ tube-wells. This leads to the degradation of fertility of land. Out of 901 community development blocks of the state, 72 have gone dark and 184 have become grey. Out of total water-logged and flooded area of 82,186 ha. in the state the eastern part account for 71.31 per cent. About 34 per cent of total reporting area of the eastern U.P. remains under flood and water-logged. The agricultural land in the vicinity of cities are being grabbed by builders. All these are negative factors for commercialization agriculture.

Table -IV-3

Status of Cropping Pattern in Various Economic Regions of U. P.

(Percentages)

Years	Western	Central	B. Khand	Eastern	Hills	State
TOTAL CEREALS						
1980-81	65.80	72.68	56.68	79.43	85.79	71.66
1985-86	62.74	71.11	51.88	78.59	83.34	69.41
1990-91	60.49	69.00	46.39	79.47	81.68	68.05
1995-96	61.17	68.94	44.15	79.38	80.66	67.86
1996-97	59.83	67.44	43.34	79.65	81.57	67.03
TOTAL PULSES						
1980-81	7.34	12.96	37.62	10.51	2.54	11.64
1985-86	7.92	13.54	41.38	11.12	2.80	12.54
1990-91	6.44	12.57	46.28	10.04	2.85	11.93
1995-96	4.83	11.01	45.83	9.82	2.84	10.97
1996-97	4.47	10.88	45.48	9.57	2.89	10.78
TOTAL FOODGRAINS						
1980-81	73.15	85.63	94.30	89.94	88.33	83.30
1985-86	70.66	84.65	93.26	89.72	86.14	81.95
1990-91	66.93	81.57	92.67	89.50	84.53	79.99
1995-96	66.00	79.95	89.98	89.20	83.50	78.83
1996-97	64.30	78.32	88.81	89.22	84.46	77.81
TOTAL OILSEEDS						
1980-81	3.75	4.29	2.80	1.45	1.37	2.88
1985-86	4.73	3.84	4.72	1.65	1.55	3.41
1990-91	5.88	4.82	5.18	1.58	1.46	3.99
1995-96	6.01	6.04	8.12	1.78	3.09	4.68
1996-97	6.09	6.00	9.14	1.77	2.35	4.79
SUGARCANE						
1980-81	9.86	3.81	0.11	3.32	3.20	5.55
1985-86	10.34	4.76	0.23	3.29	3.37	5.89
1990-91	12.78	6.59	0.18	3.82	4.64	7.28
1995-96	13.48	7.05	0.28	3.92	4.85	7.73
1996-97	14.09	7.74	0.33	3.88	4.16	8.08
POTATO						
1980-81	1.36	1.10	0.08	1.08	0.61	1.08
1985-86	1.53	1.14	0.07	1.12	1.03	1.18
1990-91	1.75	1.27	0.07	1.21	1.19	1.32
1995-96	1.87	1.38	0.06	1.36	1.34	1.44
1996-97	2.17	1.67	0.07	1.44	1.43	1.63

Most of the cultivable land of east U.P. is prone to water logging due to heavy rain. The flood is a common phenomenon in east U.P. due to lack of proper drainage system and frequent damage of bundha during flood. The Kharif crops are generally not grown or damaged. Against this, Bundelkhand is drought prone region of the state, therefore, most of area could not be utilized for double cropping. The area of Bundelkhand region along with Vindhyan occupies 13.74 per cent of the reporting area of the state. Most of the cropped area of the region is mono cropped. The structures of the soil of the region are highly heterogeneous in nature. The soils are poor in organic content and also very shallow. A large part of this region is plateau which is not suitable for cultivation. Net cultivated area of the state is not properly cultivated till today. The cropping intensity was only 149.34 per cent during 1999-2000. Fertility of soil also differs much from region to region in the state. The fertility of land has been degrading in western region of U.P. because of the neglect of various pulses in the cropping patterns. The rotation of crops in scientific manners is not being adopted in the most parts of the state. On account of excess use of water, fertilizer and pesticides as well as neglect of various pulses in cropping pattern is disturbing natural soil composition. It will lead to a sharp decline in productivity of crops in years to come.

Apart from the above constraints, the state transferred 18% of its geographical area against only 5% of its population for the formation of the new state of 'Uttaranchal'. Hence, the per capita geographical area and per capital forest area have been reduced and these are hampering the economic development of the State.

Table-IV-4
Percentage of Net Area Sown to Operational Area and Cropping Intensity

Region	% of Net area sown to operational area		Cropping Intensity	
	1990-91	1997-98	1990-91	1997-98
Hill	5.25	43.90	164.29	161.71
Western	89.60	90.60	`152.83	156.23
Central	80.10	79.80	141.75	148.04
Eastern	84.40	86.00	153.95	150.28
Bundelkhand	80.80	84.70	113.01	117.99
Uttar Pradesh	83.00	83.30	147.29	148.72

Cropping Pattern of Different Regions of Uttar Pradesh:

The crops grown in U.P. are mainly divided into two seasons viz. Kharif and Rabi. The main kharif crops are paddy, maize, jowar, bajra, moong, urd, til, groundnut, soyabean; while wheat, barley, gram, pea, lentil, arhar, mustard, linseed, potato are rabi season crops. The above crops are generally grown in almost all regions of the state (Table-IV-3). Out of total gross cropped area, cereals accounted for 67.03 per cent followed by 10.78 per cent, 4.79 per cent, 8.08 per cent and 1.63 per cent for pulses, oilseeds, sugarcane and potato respectively during 1996-97. It is also reflected from the table-IV-3 that proportion share of cereals and pulses had declined in 1996-97 as compared to year 1980-81. However, the proportion share of area under sugarcane and oilseeds had substantially increased in 1996-97 over the year 1980-81.

Table-IV-3 also reveals that proportion share of area under cereals had sharply come down by 5.97 per cent, 5.24 per cent and 13.34 per cent in 1996-97 over 1980-81in Western, Central and Bundelkhand regions respectively while it was more or less stagnant in Eastern region during the corresponding period.

In regard to the area under pulses, it had declined in all the regions except Bundelkhand region. There was much enhancement in area under sugarcane in all the regions. The area under oilseeds in Bundelkhand region increased considerably followed by Western region. It shows that area under paddy, wheat, maize and coarse grain crops have been reducing in all regions of the state. It also implies that area under pulses too started decreasing from year to year in all the regions except Bundelkhand region. Now the cropping patterns also started shifting from cereals to sugarcane, potato and horticultural crops in Western, Central and Eastern region. The coarse grain crops viz. maduva, kakun, kudo, sawan etc. were generally grown in rainfed areas of different regions during the sixties but therefore, these were replaced by other competitive crops. However, it is worthy to note that area under oilseeds has been increasing which is evident from the fact that more lands are being spared for mustard, groundnut and soyabeen. Land improvement activities, better water management, expansion of irrigation network, availability certified seeds diffusion of new technique etc. are basic factors to take better sequence of cropping pattern across the regions of the state.

2. Labour

The man and land ratio has a decreasing trend on account of high pressure of population. Man and land ratio was higher being 8.04 in the state against 5.95 of the country in 1991. Out of total workers of 519.28 lakh, the agricultural labours accounted for 42.05 per cent followed by 57.95 per cent of non-agricultural labours in the state in 2001, against 39.88 per cent and 60.12 per cent respectively in 1981. It shows that pressure of agricultural workers is more in the state in comparison to the nation. It has been estimated that additional labour force during Tenth Plan (2002-07) would increase to 59 lakh with an average annual growth rate of 2.8 percent. The self employment in the state has decreased in 1999-2000 as compared to 1972-73. While casual workers have an increasing trend during the corresponding period. They do get job for about 150 days in a year in agricultural sector. In order to get jobs in slack season, they generally go to cities. The migration of labourers is the maximum from east U.P. because of the high pressure on land.

The employment opportunities in agricultural sector have adequately increased due to increase in the cropping intensity but availability of jobs for labour has been decreasing on account of high pressure of population on land. Apart from this, due to the fast mechanization in agriculture the replacement of human labours has been taking place in few pockets of the state. Since the illiteracy per cent is higher in the workforce of the target groups, therefore, they have no alternative but to absorb themselves in the agricultural activities. The disguised unemployment in agriculture is higher in East U.P. than that in the western and Bundelkhand regions. There are minimum opportunities of employment in non-agricultural sector in rural areas, so the labourers have been migrating from villages to cities in search of employment. Most of the rural industries of the state are at the verge of closure due to their high cost and poor quality products as compared to modern industries. The employment opportunities in non-agricultural sectors has been decreasing year after year in the state. Therefore the laboures are getting jobless in villages and are forced to go out side the state.

The Minimum Wages Act is not being properly enforced in the remote villages of the state. The minimum wag rate of labour was Rs. 50 per day but the labourers were getting Rs. 30 to 40 per day. The wage rate of woman and man is equal for doing the agricultural activities but it is yet not in practice in the villages. The women workers get about 10 per cent less

wages than their male counterparts. The welfare schemes for labours are not being properly enforced at the ground level. The medical facilities, compensation on casualties, construction of better houses, insurance scheme, etc. are not being actively enforced in the agricultural and non agricultural sectors.

Child labour is still engaged in agricultural and non-agricultural sectors for lower wage payment. Large number of children belonging to landless labour families are engaged in non-agricultural sectors on account of their poverty and poor resource base. Hence, the Child Labour Abolition Act is not properly enforced in the state.

Sugar industry of the state is the largest agro-based industry providing maximum employment opportunity. Most of the sugar factories of the state are sick and labourers are being retrenched from jobs. Hence, the labour of surplus region of east U.P. are becoming jobless and on account of this the twin problems of poverty and unemployment are becoming acute.

Most of the workers in the state are employed in unorganized sector. The share of organized sector employment to total workers was estimated at only 5 per cent during 55^{th} round of the NSS. As per the 55^{th} round of NSS, the total number under-employed were 112 lakh of which 86 per cent belonged to rural areas. Thus, they required additional work in rural areas.

The programme for self-employment and supplementary wage employment schemes are not being properly and effectively carried out to favour the target group. There is no proper arrangement to improve the skill of labours in the rural areas. A large number of BPL populations are getting generally seasonal employment. Food for Works Scheme is also getting a setback due to its improper implementation in the areas of distress.

3. Live Stock

The excessive cattle population in Uttar Pradesh is a major problem for their better rearing. The area under pasture land is decreasing due to its conversion into cultivable land. The area under grazing was 0.30 per cent of reporting area in 1991-92, which has decreased to 0.28 per cent in 1999-2000. Against this, total population of Live Stock was 4.94 crore in 1961 which has gone upto 7.01 crore in 1993, showing 41.90 per cent increase over the period. Due to shrinkage of natural pastures, the sheep and goat

keeping has become difficult, hence, the production of wool in the state may go down in future, while it is a basic raw material of carpet industries, a popular industry of the state. Per day production of milk per cow and buffalo has been estimated at about 2.90 Kgs. and 4.20 Kgs. respectively which were far below the output in the neighbouring states viz, Harayana and Punjab. The causes of low yield of milk in the state are non-availability of adequate quantity of quality fodders, poor shelters and maximum number of deshi-breed. Apart from this, the veterinary services are quite inadequate in the state.

Table-IV-5
Details of Live Stock in Uttar Pradesh

(Thousands)

Classification	**1988**	**1993**	**1997**
Total Live stock	66075++	70183	56442*
Cow	28323	25663	20002
Buffaloes	18239	20086	18968
Goats, he, she	11321	13110	11781
Sheeps	2180	2404	1908
Pigs	2489	2905	3181
Total Poultry	9320	10790	12194
Hens	3473	3829	4130

+ -Not taken dogs
++- With 4929 thousands dogs
0 -With 5354 thousands dog
*-With Uttaranchal
Sources: Indian Live Stock Census 1988, 1993 and 1997

Table-IV-6

Population of Live Stock (Region wise)

Region	No. of Population of Milch Cattle Per Hospital		No. of Milch Cattle per thousand Population	
	1990-91	1996-97	1989-90	1992-93
Hill	16946	15272	114	108
Western	40751	40157	75	77
Central	38120	40148	62	66
Eastern	34433	34389	52	52
Bundelkhand	51415	50015	99	96
Uttar Pradesh	35244	34420	67	68

Table-IV-7
Availability of Veterinary Hospital Facilities

	1991-92	1999-2000	2000-2001
Veterinary Hospital	1823	1758	1758
Livestock Development Centre	2943	2557	2557
Artificial Inseminations Centre	2651	2942	3079
Semen Collection Centre	34	25	25
Hybrid Semen Prod. Centre	6	4	4
Veterinary Doctor (000)	17412	20560	17325*
Artificial Insemination (000) Veterinary	2638	2499	1531
A- Cow	1566	1549	1027
B- Buffalloe	1072	949	504
(000) Vaccination	27215	22661	20392

The Dairy Policy in the state in regard to supply of cross breed cattle did not get momentum as much as it was desired. Out of total number of milch cattle (Cows and Buffaloes), of 69.52 lakh, buffaloes constituted 83.23 per cent followed by 16.77 per cent cows in 1993. Of the total number of cows, only 32.20 per cent were cross breed. It reflects that Artificial

Insemination Programme is not achieving the good success at ground level. The state has 1758 veterinary hospitals which serve 97,134 villages of the state. The number of "D" class dispensaries were estimated at 38 per village. The collection Centre of Semen was only 25 in the state. Out of total number of milch cattle, only 1,53,100 milch cattle were gone into artificial insemination in 2000-01. The facility of veterinary hospital and other essential Centres are inadequate to serve a large number of milch cattle in the state. There is huge shortage of veterinary doctors and technical staff as per requirement in the state. Most of the veterinary hospitals situated in rural areas are in weak conditions because of poor availability of doctors and medicines. As per the recommendation of National Commission on Agriculture, 1976 one veterinary hospital is required for 500 animals but one veterinary hospital is serving 21,000 animals in the state. There is also imbalance between milch and draught animals in the state. Most of the households keep the livestock for social and demographic reasons. They are not much concerned for improvement in milch production of their milch cattle. More than 70 per cent cattle and buffalo population have been identified as non-descript type. (Table-IV-7)

The intensive cattle breeding activities are not upto the mark in most parts of the state. The demand for draught animals in agriculture is decreasing due to expansion of mechanization. Thus, draught animals are becoming a burden on the farms. The Dairy Development Programme is benefiting mostly the resourceful farmers. There is also lack of momentum in the promotion of feed industries. Transfer of fodders from surplus to deficit regions is not being activated. Uttar Pradesh Development of Milch Cattle Council had launched a programme to provide employment to the unemployed youths but the success was not satisfactory due to rural politics. Adequate number of bulls and sire has not been kept at progeny centers because of their higher maintenance costs. The semen is not kept properly in the stock centres. The Artificial Insemination is not so successful as only 20 per cent of the conception gets success. The calf of the Frozen breed is useless for the agricultural purposes. Therefore, people do believe in the natural process than the Artificial Insemination. The outlook carries a weight also. On account of this, the Dairy Development Programme gets set back in backward parts of the state. However, western regions are much better than the eastern part of the state. The production of milk per cow and buffalo is about four times higher in western region than that of eastern region. Besides these, artificial insemination facility is less than optimum in east part of the state. The progress in the development of exotic breed of milch cow,

organization of artificial insemination for changing local breed and construction of dairy processing plants are quite low in the eastern region than that in the western region of the state. The dairy is treated as next best occupation in the western region while it is still being carried on as a traditional occupation of certain castes in eastern U.P. due to poverty, illiteracy, small holdings, social binding of woman of higher castes.

Poultry farming is not being done on commercial lines. It is being practised by some small and marginal farmers. Only a few farmers have adopted it as a special enterprise. The poultry, pig, and goat farmings are still in traditional way in the villages. These farming have high risk. These are also highly prone to diseases and have large number of enemies, so the better feeding, good veterinary support, food, shelter, better services etc. are basic requirements for maintaining viable poultry farming in the state.

4. Horticulture

Horticultural sector has handsome share in the total income of the state and it has been creating ample employment opportunities to the masses in peak as well off-seasons in a year. U.P. is the major producer of vegetables and fruits, accounting for 25 per cent and 20 per cent of the total production of the country respectively. The fruits, vegetables, flowers, spices and medicinal plants are broadly grown in the state on account of varied agro-climatic conditions supported by natural resources. U.P. has first and sixth position in the production of vegetables and fruits respectively among the states of the country. While productivity and quality of horticultural crops are much lower and inferior in the state as compared to that in Maharashtra, Andhra Pradesh, Karnataka, Tamil Nadu and Kerala. Scarcity of adequate planting material, low use of plastic in horticultural crops, minimum use of Hi-tech, inadequate infrastructural facilities of marketing etc. are major constraints in increasing the areas, production and productivity of different horticultural crops. Apart from this, the quality of produce of horticultural crops is not in tune with the market demand. The traditional varieties of fruits, vegetables, flowers, spices are still prevalent. Since more than 70 per cent growers of horticultural crops are poor, they are not in a position to use the costlier techniques of the production and disposal of horticultural produces.

The post harvest infrastructure and marketing facilities are extremely inadequate in the state. On account of this, more than 20 per cent produce of

fruits and vegetables get rotten and damaged during harvesting season. Besides this, non-availability of adequate space in cold storages to keep the vegetables, fruits, flowers etc. during the harvesting periods, the prices go down to so low that it fails to meet the expenses of harvesting operation. The producers sell their produces at even throw away prices. The state produces about 85 lakh tonnes of fruits a year accounting for 18% of the total production of the country. While the production of vegetable is about 203.68 lakh tonnes in the state but the export of these horticultural produces is almost zero. U.P. ranked first and second in the production of potato and mango respectively among the states of the country during 2001-02. Inspite of such huge production of potato and fruits in the state, the export was very negligible. Out of the total production of mango of 31.62 lakh tonnes during 2001-02, only 0.37 per cent was exported It shows that quality of mango and potato was not at par with the standard of consumers of foreign countries. The production of potato and fruits of the state are sub standard as compared to that in the states of Punjab, Harayana, Maharasthra, Andhra Pradesh, Tamil Nadu because of minimum application of Hi-tech in production and unscientific use of post harvest technology.

Infrastructural facilities for export of the horticultural produces from the state are not adequate. Private as well as public investment to promote production of horticultural crops and develop marketing facilities are not adequate as compared to other potential states of the country. The association of growers are too weak in the state to arrange inputs and marketing of their products. The major constraints of horticultural development in the state are, non-availability of sufficient quantity of planting materials, high price of improved seed, lack of sufficient marketing facilities in producing areas and low adoption of post harvest techniques. Beside these, the quality oriented production of horticultural crops is not found at almost all the farms of the state in accordance with demand of foreign consumers. There are 462 food processing units in the state but they are not adopting the methods and procedures to maintain the high qualities of produces at international norm and standard. There is also shortage of training centres to guide the growers to produce standard quality in the state as other states are adopting. The analysis reveals that there is surplus production of horticultural crops in the state but it lacks better marketing facility.

5. Food Sector

Availability of food is the basic requirement of the society. It is the responsibility of agricultural sector as well as markets and Govt. to provide food to all. Very often market fail in providing food security to the vulnerable sections of the society. This type of market failure was an important reason of the recurring famines in the country during 1870 and 1943. This necessitated intervention of the Govt. in the food supply process. In Uttar Pradesh the PDS, RPDS, TPDS, Annapurna Yojana and Antyodaya Anna Yojana are in operation. It has created a comfortable situation in providing cereals to the masses. But there is acute shortage of per capita availability of pulses particularly to the poor. Nutritional security is yet to be achieved. Mal-nutrition is common in families living below poverty line. Though the milk and inland fish production have substantially increased in the state but lack of purchasing power is creating hindrance in obtaining nutritional security particularly by the poor.

Table-IV-9
Region-wise Per Capita availability of Foodgrains and Pulses

Regions	Foodgrains (Kg)		Pulses (gms)	
	1990-91	**1997-98**	**1990-91**	**1997-98**
Hill	253.92	216.80	11.12	2.75
Western	270.90	280.62	21.38	5.66
Central	251.14	247.84	21.38	31.72
Eastern	240.14	238.35	15.36	11.23
Bundelkhand	332.04	320.39	134.29	114.75
Uttar Pradesh	258.04	258.06	20.14	14.26

Region-wise Per Capita Availability of Foodgrains and Pulses:

Table-IV-9 reveals that per capita availability of food grains was the highest in western region during 1997-98 while in other regions, it was below the state average. Except western region, the per capita availability of food grains has come down during 1997-98 over 1990-91. As regards to per capita availability of pulses, it was the highest being 114 grams in Bundelkhand region while it was the lowest in the Eastern region. There was

sharp decline in per capita availability of pulses during 1997-98 across the regions over the year 1990-91.

Region-wise Per Capita Availability of Foodgrains and Pulses:

The state is now fully sufficient in cereal production. There is no shortage of wheat and paddy for daily consumption of 16 crore population of the state. Against this, there is a huge shortage of pulses. Table-IV-9 shows that per capita availability of food grains was quite sufficient in 1990-91 as well as 1997-98 across the regions. However, availability of pulses has come down during 1997-98 as compared to 1990-91 across the regions. It is a great paradox for Bundelkhand region known as bowl of pulses that the availability of pulses has come down in 1997-98 as compared to 1990-91.

6. Irrigation

The area under irrigation has been constantly increasing. Since First Five Year Plan adequate funds have been allocated for the expansion of canal network and installation of public and private tube-wells / pump-sets. Huge subsidy has also been provided to target groups for installation of pump-sets. Hence, the growth of irrigated area have been positive during different Five Year Plans. The length of canal was 45,810 kms in 1968-69 which has got expanded to 75,147 kms in 1997-98. The number of tube-wells / pump-sets was 225 thousand in 1968-69 which has drastically increased to 3,682 thousand in 1999-2000, showing 1,536 per cent increase over the period. The area irrigated was 6,580 thousand hectares in 1968-69 which has increased to 17,575 thousand hectares in 1999-2000, thereby showing 167.11 percent increase over the period. Out of total area irrigated by different sources, state tube-wells/pumpsets accounted for 69.29 per cent followed by 30.07 per cent, 4.50 per cent, 3.00 per cent by canals, well and others respectively in 1991 which became 69.76 per cent, 23.79 per cent, 3.55 per cent, 1.75 percentages respectively in 1999-2000. It reflects that the traditional sources of irrigation viz. ponds, tanks, wells have been neglected which were the assured sources of irrigation during drought period and were also fruitful in maintaining water table. Most of the area under ponds, tanks and lakes have been converted into cultivable land. While most of wells became non-functional supply of water in canals is not equitable. Lands situated at the tail of canals do not receive sufficient water. Against this, farmers use excess water where the areas are situated near the head of canals. It shows that there was no proper hydrological linkage between

surface water and ground water resources. Most of distributaries of canals got silted due to lack of regular cleaning of the silt. The channels connected with canals are mostly damaged. The canal charge being a flat rate, the farmers tend to use excess water in crops, causing water logging and salinity in most part of the state. Inefficient management of supply of water and over use of water in crops are major concern of the state. Most of canals of Uttar Pradesh face the problem of financial assistance adequate enough to repair the embankment and clean the tracks. The numbers of pump-sets and tube-wells have tremendously increased but these are not economical as compared to canal irrigation.

Table-IV-10
Different Sources of Irrigated Area and its Percentages

(Area in 000 hectares)

Source	**1950-51**	**1970-71**	**1991-92**	**1998-99**	**1999-2000**
Net Irrigated Area					
Canal	18.47 (38.22)	24.97 (5.68)	31.02 (28.85)	30.07 (24.35)	29.88 (23.77)
Tubewell	2.76 (5.71)	23.30 (5.30)	67.90 (63.16)	86.16 (69.77)	87.00 (69.76)
Wells	19.05 (39.42)	17.03 (3.87)	4.50 (4.18)	4.39 (3.55)	4.82 (3.87)
Tank, Lake and Ponds		371.00 (84.42)	0.86 (0.81)	0.95 (0.77)	0.82 (0.65)
Others	8.05 (16.65)	3.15 (0.73)	3.23 (3.00)	1.92 (1.56)	2.18 (1.75)
Total	48.33 (100.00)	439.45 (100.00)	107.51 (100.00)	123.49 (100.00)	12470 (100.00)
Gross irrigated Area	5209	8362	14943	17146	17575

With Private and Govt. Tubewell.
Source: Agriculture Director, U.P. & Agriculture Statistics of U.P. for 50-51 or 70.771.

Due to irregular supply of electricity and hike in price of diesel, the tube-wells / pump-sets are not functioning efficiently and effectively. The charge of a pump-set is about Rs. 50 per hour which is higher than the charge of canal. The percentage of gross irrigated area to gross cropped area and percentage of net irrigated area to net area sown were 68.00 and 65.90 respectively which were much lower than those in Punjab and Haryana states. There is no dearth and scarcity of ground and surface water in most parts of the state except Bundelkhand but they have not been fully utilized.

The exploitation of ground water by pump-sets has been in full swing in the state as compared to surface water. Area irrigated by Pump-sets / Tube-wells has increased to 8,700 thousand hectares in 1999-2000 from the irrigated area of 6,790 thousand hectares in 1991-92 showing 21.95 per cent increase over the period. Hence, it is the irony of fate that there is over exploitation of ground water which would create serious problems in future. Since the quality of canal water is inferior to water from pump-sets, hence the farmers prefer to irrigate the crops by the pump-sets. Therefore, there is vast variation in using the surface water and ground water in the crops in the state. The indiscriminate use of ground water is responsible for decline in the ground water table in western region of the state.

The number of state tube-wells was 7,844 in 1996 which has increased to 28,551 in 2000-01, showing 264 per cent increase over the period, but most of state tube-wells are not working to their capacity due to power crisis. Besides this, 5,69,609 energized tube-wells of private owners are also not working to their capacity due to erratic supply of electricity in villages. Irregular supply of water in canals, erratic supply of electricity and frequent hike in price of diesel are major cause of concern in the adoption of new technique in the production of crops.

Region-wise and Source-wise Irrigated Area:

More than 31 per cent of net area sown is still un-irrigated in the state. Across the regions, 62.70 per cent net area sown of Bundelkhand region is still rainfed. Against this, 87 per cent of net area sown of the western region followed by 86 per cent of the central region were fully irrigated during 1997-98. It is evident from table-IV-11 that the irrigation network has also been expanding in Bundelkhand region. The percentage of irrigated are to net area sown has risen to 68.66 per cent in 1997-98 from 60.90 per cent in 1990-91 across the regions. However, the pace of enhancement (in percentage) of irrigated area the net area sown relatively higher in Bundelkhand region than the other region of the state during the same period. Table-IV-12 indicates that the proportion of share of irrigated area by canals and state tube-wells has been decreasing year by year in all regions. Against this, the proportion share of net irrigated area to net area sown by private tube-wells has been increasing year by year across the regions. It reflects that Bundelkhand region requires special attention for expansion of irrigation network. The canal and tube-wells require huge investment within the region due to its geographic situation and low strata of

ground water. Therefore the conservation of rain water by different methods would be more economical to take more and more area under irrigation in years to come.

7. Technology and Extension

Since the introduction of new strategy in agriculture, the Govt. and public institutions have been promoting new techniques for crop production through promotion of awareness by training and visit (T&V), demonstration, distribution of inputs, organising the farmers' fairs, etc. 'From lab to field approach,' through various means, has been getting maximum attention since the introduction of green revolution. Technology dissemination to the farmers are confined to resource farming. The flow of technology is not getting desired momentum due to the increase in the prices of inputs. The approach of T & V was quite encouraging to persuade the farmers to adopt new techniques but it could not be carried out after non- availability of funds from World Bank. Since technological changes in agriculture are frequently occurring, hence the participatory approach should be initiated through investment in research and extension. The availability of funds for development, research and extension is not enough to do these activities in a big way at ground level. There is also lack of good coordination between the scientists of SAUs and State Govt. officials. The strength of extension staff is quite low against the requirement of the state. On account of this, transfer of technology is not properly implemented at farms.

It is also unfortunate that state has only 29 Krishi Vigyan Kendras (KVK) to serve 72 districts. For proper dissemination of upto-date techniques of agriculture, the state requires at least 42 KVKs. The financial position of existing KVKs is also not so healthy to diffuse the latest technology effectively and efficiently at ground level. The KVKs also do not cater to the local need. The multiplication of seed farms is not being carried out efficiently due to paucity of funds. The seed replacement ratio is about 12 per cent which is very low as compared to the required ratio of 20 per cent.

The consumption of Nitrogen (N), Phosphorous (P) and Potash (K) have increased manifold in Uttar Pradesh. Total consumption of NPK have constantly increasing trend since the advent of green revolution. It increased from 15.12 Kgs per ha. in 1968-69 to 118.17 Kgs per ha. in 1998-99 with contribution of NPK being 93.57 Kgs 21.31Kgs and 3.29 Kgs per ha.

respectively. It shows that consumption of NPK is disproportionate against the recommended proportion (4:2:1) for NPK. It destroys the structure and texture of the soil. The indiscriminate use of fertilizers and pesticides are also giving adverse impact on environment and natural resources. The reasons for excess use of fertilizers and pesticides were lack of awareness among the farmers about the benefits of biotic activities and importance for growing leguminous crops in the fields. Appropriate post harvest technology is not being properly communicated from top to bottom by the extension agencies. Besides this, non-adoption of appropriate post harvest technology, the quality of foodgrains, vegetables, fruits, etc. goes down as per standard of market demand. Since the use of machine for different operation in crop production, high replacement of human labours are higher in agricultural sector than that of other sectors. The energy consumption in agricultural sector has been increasing year by year. It is very unfortunate that local resources are not being taken into account in the formation of new technique. Apart from this, the new techniques are much costlier so that large segment of farmers are not taking much participation in the adoption of technology.

Extension is closely related to technology creation. It ensures access of farmers to the technology development. Recognizing the necessity and role of extension a complete programme known as "National Extension Service" was launched in the county in 1953. Lab to Land Programme is also an extension programme for diffusion of technology to the farms. It has been mentioned in the documents of Govt. of India that during last decades, quality research has declined in India in the field of agriculture. The Tenth Plan document (Approach Paper to the Tenth Five Year Plan) clearly states that extension programme has collapsed in the country.

During the period of the study, we found that the Govt. extension department is busy in popularizing the new technologies related to mechanization, irrigation, fertilizers, and pesticides, seeds sowing, storages and post harvest technology to prevent the produce losses and to add the value of agricultural produce. Simultaneously corporate sector has also come up in extension work for their own produce particularly in the areas of new seed popularization, pesticides popularization, agricultural machineries and food processing. Now it can be said that the efforts of corporate sector is creating a challenge before extension programme of the Govt. Hence, the clash between socially desired approach and profit oriented approach deserves attention. Corporate sector has profit motive, through it should

have it with a social face, even then the profit motive dominates in the working of corporate extension service. We found in the villages that small and marginal farmers as well as farmers of the less developed regions of the state, particularly Bundelkhand and Vindhan areas, do not get access to new technologies related to agriculture.

Per Hectare Distribution of Fertilizers in Different Regions:

There was variation in the level of adoption of inputs among the regions. The use of fertilizers in crops has gained momentum since the inception of green revolution. The use of fertilizers is well associated with the availability of irrigation sources. Distribution of fertilizers in different regions had much variation between 1990-91 and 1997-98. Distribution of fertilizers was maximum in the western region while it was the lowest in the Bundelkhand region during both the periods. It is also noticed from the table-IV-13 that the distribution of nitrogen phosphorous and potash was quite uneven among the regions. It shows that the use of nitrogen in crops was much more than the recommended doses while potash was being used in less quantity than the prescribed doses. None of the farmers of different regions was using balanced dose of fertilizers in his crops. Low consumption of fertilizers in Bundelkhand region was due to non-availability of irrigation facilities and maximum area being under pulse crops.

Table-IV-13
Per Hectare Distribution of Fertilizer

Region	1990-1991			1997-1998		
	Nitrogen	**Phos.**	**Potash**	**Nitrogen**	**Phos.**	**Potash**
Hill	53.61	16.25	5.00	66.16	16.49	6.71
Western	83.75	20.71	3.81	115.39	25.60	4.18
Central	62.40	15.55	3.52	81.24	19.80	2.77
Eastern	63.61	90.44	4.61	18.00	23.22	3.63
Bundelkhand	16.93	9.92	0.24	20.68	10.14	0.06
Uttar Pradesh	66.35	17.82	3.78	91.69	22.28	3.52

8. Dry land Agriculture

Since the scope for expanding the area under irrigation is limited hence, sincere efforts should be made to develop the dry land agriculture. Research and innovation of new varieties suitable for dry areas are essential. The semi dry land is mostly confined to Bundelkhand region of Uttar Pradesh which accounted for 9.94 per cent of geographical area. Millets, oilseeds and pulses are main crops in dry land areas. In this region, new technology of agriculture has not been carried out in a big way because of non-availability of adequate water. The farmers are poor and subsist on agriculture. The yield of millets, pulses and oilseeds are invariably lower. "Technology Mission" is also not so effective in the dry land areas because of low adoption of improved biological and mechanical technology in the oilseeds, pulses and millets. On account of this, the dry land areas of the state are lagging far behind the well endowed western and central regions of the state. There is high risk and uncertainty in the production of crops in the region. Beside these, the infrastructural facilities are not developed. Illiteracy is also the highest (50.04 per cent) as compared to 47.79 per cent of the state in 1991. The size of land holding is bigger in the this region but the agriculture is not performing better due to constraints in technology transfer coupled with scarcity of water.

The National Watershed Development Programme was in operation in 32 districts of the state, out of which 7 belonged to Bendulkhand region. The main objective of this programme was to conserve moisture in the soil by the development of water sheds and provide the financial help for better cultivation of crops and rearing livestock. The maximum attention has also been paid to guide the farmers to adopt mixed farming, cultivation of horticultural crops and agro forestry. The jawar, bajra, maize and other coarse grains are main crops of dry land. The per hectare yield was 8.94 qtls, 13.95 qtls, 14.49 qtls of bajra, jowar and maize respectively in 1999-2000 which are lower as compared to crops grown in the rainfed areas of Uttar Pradesh. The millet crops fetch very lower price than other crops. The demand of coarse grains in the market has decreased sharply. The new technologies for the coarse crops have not received any preparation from the agricultural scientists at par with wheat and paddy. Traditional way of cultivation and use of old varieties are still prevalent in dry land area of the state. The processing method of coarse grains is also not modern to improve its quality to get higher prices.

The livestock in dry land are found mostly Deshi breeds. The production of milk per milch cattle is very low i.e. 4 kgs. as compared to 8 kgs in the endowed regions of the state. The rearing of sheep and goat in dry land is also very problematic because of diversion of the non-agricultural land into cultivable land. The quality of wool is also not upto the standard because of traditional method of cutting and processing of wool. The technology transfer for agriculture and livestock is not adequate because the shortage of strength of technical staff at the ground level. The veterinary services are also very poor because technical staffs do not want to remain in dry prone districts of the state. The infrastructural facilities viz., road, electricity, schools, banks, etc. are extremely poor as compared to western part of the state. The consolidation of land is not so effective due to geographical situation of land, the construction of water sheds in dry land region generally lack proper planning and vision. Hence, the return on huge investment on watersheds was not optimal. The existing rate of return of watersheds is much less as compared to cost involved. The state Govt. pays Rs. 50 per feet for making terraces but it requires Rs. 500 per feet for terrace cultivation. Most of the watersheds are not operational because of the want of repairing. The cultivation of water intensive crops such as paddy and sugarcane is not being avoided in the irrigated area.

9. Marketing and Trade

The marketing is also one of the major constraints of agricultural development in the state. The production of foodgrains, vegetables and fruits has increased mainfold since the advent of green revolution and implementation of hi-tech in horticulture. Besides, the products of live stock have also been increasing year by year since the introduction of programmes and policies of animal husbandry. Now the state has generated surplus in food grains, vegetables, fruits and products of live stock. But the farmers are still denied their due share of consumer's rupee because of imperfection of marketing functionaries. Despite a number of Acts, Regulations, Bye-laws enforced in markets, the malpractices are still prevalent in even regulated markets. The marketing of agricultural produce is still under the command of private traders. Out of total marketed surplus, more than 80% trading is being performed by private agencies in the state.

The Minimum Support Price is still not much operative in most parts of the state. Food Corporation of India, State Warehousing Corporation, Central Warehousing, Agro-Industries Corporation and other government

agencies are white elephants, as only 7.74 per cent and 2.60 per cent of total production of paddy and wheat respectively were procured by these agencies during 1996-97. Among the agencies involved in the procurement of paddy, rice and wheat, U.P. Cooperative Federation was found more active having procured 36.57 per cent of total trading of wheat during 1995-96 followed by 20.14 per cent, 14.97 per cent, 13.32 per cent 9.34 per cent and 5.66 per cent in case of State Govt., U.P. State Agro-Industries and other corporations U.P. State Food Essential Commodities and FCI respectively. The capacity of warehouses, godowns, cold storages and other storing devices are not being expanded at par with production of agricultural and horticultural crops. The total number of storages were 225 in 1995-96 of which state warehousing corporation accounted for 44.44 per cent followed by 32.89 per cent and 22.67 per cent of FCI and CWC respectively. These storages jointly have the capacity of 23.51 lakh tonnes against the total production of 3.62 crore tonnes. It shows that out of total production of cereals only 6.50 per cent could be stored in different storages in the state. On account of the lack of proper own storing capacity and non-availability in Govt. storages, the farmers are bound to sell their maximum share of marketed surplus just after threshing operation and get the lowest price. More than 20 per cent of total marketed surplus of foodgrains goes waste in each year due to lack of adequate storing facility which could have met the consumption needs of millions of people in the country. On account of ineffective intervention of U.P. Govt. the dominance of private traders are persisting in the markets.

Large and medium farmers prefer to sell their produce in the regulated markets having good transportation facilities while small and marginal farmers sell their produces to hats (Village) or at doors to avoid the botheration and difficulties of the markets. Besides this, the small and marginal farmers do not get satisfactory response from the govt. agencies during trading as compared to private traders, so they prefer to sell their produce at lower prices to private traders. Underweight of quantity of all commodities is still prevalent in the local markets as well as regulated markets because of the lack of proper supervision of marketing staff. It is noticed that 2 to 5kg per qtl is taken out from marketed quantity by traders in addition to wrong weight of quantity in the markets. The farmers are harassed in the regulated markets by saying that produce is low in quality and has much moisture than the prescribed norms. The payment is also not so prompt in case of Govt. agencies because more than 20 percent of the sale amount is given after a week. The institutional credit and pledge financing are also not properly availed by the farmers.

Since the number of regulated markets is only 265 and more than 83.74 per cent are un-regulated in the state, hence a large number of private traders do their marketing activities outside regulated markets. The density of regulated market in U.P. is only 38.92 per thousand of gross cropped area which are absolutely inadequate to provide the better marketing facilities to the farmers. Apart from this, one regulated market serves 151 villages. It shows that a regulated market is probably established in a radius of 14 kms against the prescribed norm of within a radius of 5 kms. On account of establishment of regulated markets on long distance, the access to all the produce is not possible at present. Auction method is not honestly adopted even in regulated markets. Overwhelming majority of farmers of the state sell their produce in un-regulated markets. The price signal is not also well developed. Most farmers are not adequately aware of functioning of regulated markets due to high illiteracy among them. The above analysis reflects that regulated markets have not been playing a significant role to minimize the unregulated markets and private traders. The size and structure of regulated markets are limited as compared to production and size of the state. The storage and marketing of agricultural produce including horticultural produce are facing actuate problems because of inadequate facility available in the storages particularly for small and marginal farmers.

Most of the processing units, viz., rice mills, flour mills, pulse mills and spellers have been established in the cities and are controlled by private traders. Therefore, the farmers do not receive the due share of value addition price of commodities. Inspite of this, more than 80 per cent of vegetable production are sold as fresh products. Therefore, vegetable growers, orchardists get very low prices in the market specially in glut season. The processing units have been mostly established in private sectors, hence they have monopoly in fixation of prices of fresh products of vegetables and fruits.

The capacity and structure of processing units are very limited in relation to production of vegetables and fruits. The processing units are also not being established in private sector because of non-conducive and terrifying attitude of political leaders of the state. The liberalization of economy of the state is not getting the boost due to the lack of vision for globalization. Irregular availability of electricity, higher input costs and lack of devotion among the workers towards the works etc. are major hurdle

discourage the private investors to establish processing units in potential areas of the state.

Sugarcane is the main cash crop of the state. Million of population of the state directly or indirectly depend on the production of sugarcane. The state has 101 sugar mills at present of which 52 are in private sector followed by 22 which are under the control of State Govt. and 27 are in cooperative sectors. Most sugar factories are sick. Few of them have been closed and rests are running in heavy losses. On account of this, crushing capacity of running sugar factories are very low as compared to the production. At present, the existing sugarcane factories are now in a position to crush about only 30 per cent of the total production of sugarcane in the state. There is tug of war between factory owners and state Govt. in the fixation of price of sugarcane. The suppliers of sugarcane have not been getting their payment in due time from factories. On account of lack of proper marketing of sugarcane, the area of sugarcane has been reducing from year to year which gives a wrong signal in so far as the sound economy of the state in years to come is concerned.

10. Trade

Trade is considered as the engine of growth. Trade enhances the income of the farmers. After independence for a long period, trade in agriculture was protected and restricted. Liberalization has opened vistas for the expansion of agricultural trade. De-canalization is also taking place in agricultural trade. Establishment of Agricultural Economy Zones is an important policy shift to boost the agricultural trade. In spite of globalization and liberalization in agricultural trade, there are some very strong constraints, for example, out of total fruits trade, only 0.37 per cent was exported. Similarly, the vegetables and cereals trade are also negligible.

Due to lack of knowledge among the farmers about the sanitary measures of the international standard, lack of quality produce in cereals, fruits and vegetables and lack of trade related infrastructural facilities such as export houses, venture capital, packing and transportation and lack of awareness among the farmers at gross root level about the foreign markets and export mechanism, the, farmers hesitate to change the crop composition in favour of trade dominated agricultural produce.

CHAPTER-V

Agricultural Policy for Uttar Pradesh

The chapter deals with the SWOT analysis and Policy Matrix based on hard empirical data and interviews who have lone standing knowledge in the field of agriculture and related activities. It also deals some points for the Agricultural Policy of the State in view of the earlier discussions and taking into account strength, weakness, opportunities and threats of the agricultural economy of U.P. There was lack of any thoughtful Agricultural Policy for the State till independence. This type of situation prevailed in the whole country also. The British rule in India was characterised by the lack of the deliberate State policy in any of the economic sectors of the country. As the result of the recommendations of the Famine Commission (1901) and the Irrigation Commission (1903) scientific research and experimentation was started by the Government of Lord Curzon to whose far-sighted vision much of the progress of the Indian agriculture must be attributed. It was realised that the initiative to solve the agricultural problems in India has to be taken mostly by the government because the bulk of agriculturists did not have sufficient capital, known-how and interest to take the lead. Departments of agriculture were established in various provinces between 1875 and 1905. Their functions were clearly defined by the Govt. of India which consisted largely of collection of statistical and economic data. Dr. J. A. Voelcker, a distinguished agricultural chemist was brought to India in 1889 to conduct and enquiry into the character of the soil and agricultural conditions. This is regarded as the first serious step to frame a policy of agricultural research suited to the conditions of India.

The distinguished visitor was of the opinion that the methods followed by the Indian agriculturist were not as backward as they were believed to be. The existence of the diversity of agricultural practices indifferent parts of the country could be removed if there is spread of general and agricultural education, extension of canals and other means of the irrigation, and extension of experiments/ research aided by chemical science in reference to new crops, methods of cultivation, manures etc. The all India Board of Agriculture was setup in 1905 at Pussa in Darbhanga district of Bihar for research and higher education. All together the years from 1905 to 1919 were marked by steady growth in agriculture research and education. After

the reforms of 1999 agriculture became a transferred subject and responsibility for improvement in agriculture including veterinary and co-operation was shifted to the provinces. Subjects of Research, Irrigation and Forestry however, remained with the Government of India.

A Royal Commission was appointed in 1926 to examiner and report on the conditions of agricultural and rural economy in India to make recommendations for the improvement of agriculture and the production of the welfare and prosperity of the rural population. The Commission issued a comprehensive report in 1928 covering a very wide field. The aim of the suggestions and recommendations made by the Commission has been to bring about greater efficiency throughout the whole field of agricultural production and to render the business of farming more profitable to cultivator. Their conviction was "that no substantial improvement in agriculture can be effected unless the cultivator has the will to achieve a better standard of living and the capacity, in terms of mental equipment and of physical health, to take advantages of the opportunities which science, wise laws and good administration may place at his disposal. Of all the factors making for prosperous agriculture, by far the most important is the outlook of the peasant himself."

The recommendations of the Commission were comprehensive in nature including subjects like sub-division and fragmentation of holdings, improvement of livestock, irrigation, marketing and rural reconstruction. Unfortunately before much could be achieved by implementing the Commission's recommendations, the Great Economic Depression came. Owing to the restrictive budgetary policy of the Government to combat the effects of the Depression, most of the recommendations of the Royal Commission of developmental nature were not acted upon. A significant and immediate outcome was the establishment of Imperial (now Indian) Council of Agricultural Research in 1929. The Depression affected directly India's market for raw and manufactured jute and indirectly the demand for other Indian exports.

The World War II was in many ways a turning point for agricultural economy of the country. One notable development of the war years was the sharp rise in prices. Commercial crops like jute, cotton and groud-nut lost their market and demand for foodgrains increased considerably, pushing up prices. Government sought to meet the situation by restricting area under cash crops and encouraging diversion to food crops. Inview of the steadily

deteriorating food situation in the wake of Burmese occupation by Japanese forces in 1942, the Government convened a Food Production Conference in April, 1942 which was attended by the representatives of the Provinces and States. As suggested by the Conference and to achieve immediate increase in agricultural production the GMF campaign was initiated in 1943 and loans and grants were given by the centre to the States to enable them to increase production. The aim of policy on the diversion of area from cash crops, mainly short staple cotton to food crops, extension of cultivation to current fallows and culturable wastes intensive cultivation, was given a new perspective.

The Bengal Famine of 1943 in which 15 lakh people perished due to their inability to by food at high prices was undoubtedly the worst of the century. The Famine Inquiry Commission appointed in July, 1944 under the Chairmanship of Sir John Woodhead, after a very careful examination of all relevant factors came to the view that the impact of the tragedy could have been greatly reduced if not avoided, by more efficient and vigilant administration. In their Final Report the FIC urged the Government to recognise the ultimate responsibility in making food available to all. They ruled out the policy of laissez faire on the matter of food supply and the distribution as inexpedient and suggested that all the resources of the Government must be brought to bear in achieving an equitable distribution. The recommendations of the Food Production Conference and the Famine Inquiry Commission provided the initial frame for a national food policy which was modified from time to time according to exigencies of the situation.

A major development of this period was the first ever elaboration of an all India policy on agriculture. The reports of many of the sub-committees appointed by the policy committee on Agriculture, Forestry and Fisheries helped to shape future policy in the respective fields. Mention might be made her of the study undertaken by Dr. W. Burns on Technological Possibilities of Agricultural Development in India based on existing farm situation and available indications of production possibilities from known technological improvements. During the period 1939-1947 Government took majors not only to meet the immediate food storage but also to make permanent improvements in agriculture. Comments the National Commission on Agriculture that “In response to the challenging situation in production and distribution of foodgrains. The rudiments of a national production policy as also food policy began to emerge.”

Different agro-climatic zone, rich soil and water resources, rich bio-diversity, strong irrigation facilities various plantation and fruit crops are the major strength of State. On the other hand a large number of small and marginal holdings, a substantial area under ravines and waterlogged lack of storage and processing facilities, non-sufficient agricultural credit, frequent recurrence of flood and droughts, high unemployment and under employment, disproportionate use of NPK, neglect of coarse grain crops and pulses, poor quality of livestock, low diversification and inadequate marketing facilities and defective marketing system are the major weakness of the agriculture sector of the State. Price spread is some times very wide and puts the farmers in miserable condition. Very after farmers do not get even minimum support price fixed by the State. It will, therefore, be suitable to frame a suitable agricultural policy for the State keeping in view the following dimension:

1. The State have too many people not too much land. It is therefore, necessary to promote intensive cropping pattern in the State.
2. Excessive and disproportionate use of chemical fertilizers in destroying the inherent natural fertility of the soil. It is therefore necessary to popularize the extension of coarse cereals which have, after processing, high value and nutrient potential for the soil. Thus a region specific suitable cropping pattern is to be evolve and popularize.
3. Price Policy is the most important elements of agricultural policy. It can eliminate the necessary of farming community. It is therefore necessary to announce minimum support price for various crops and a suitable mechanism for sale of the agricultural produce to the cultivators.
4. Demand led production is the requirement of the time. Nature and preferences of the consumer demands is changing, demand for processed food is increasing as income of the consumers is increasing. It is therefore necessary to place high priority for diversification of agriculture.
5. Most of the farmers of the State are Small and Marginal with poor resource base, credit policy should be framed in such a way that farmers may get sufficient credit on demand.
6. Globalization is now not a option but a reality. The State can earn foreign exchange by export of rich agricultural produce. It requires development of proper at post infrastructure and supporting services for which the State is lagging behind.
7. Agricultural labourers are bond to survive in acute poverty, very often they do not receive minimum wages. They remain unemployed during a

substantial period of the year. Social security is also nominal for them. The Agricultural Policy should lake care of the agricultural labour and effective network of social security should be evolved for them.

8. Sustainability of development should be maintained in all the economic sectors. It is responsibility of the present generation to transfer a fertile and rich land to the coming generation. It is therefore necessary to regulate indiscriminate use of water soil and other free gifts of nature. An strategy of converting fertilizer and water into grain should be checked.
9. Marketing and storage occupy a crucial role in the development of agriculture and supplying the agricultural to the consumers through out the year. It is therefore necessary to strength the regulated market network throughout the State.
10. Uttaranchal has a very rich potential for fruits, flowers, aromatic and medicinal plants. A thoughtful strategy for development of these crops can enhance the income and employment among the farming community of the State.

These observations about the agricultural policy of the State are based on region wise SWOT analysis. The SWOT analysis for the State as a whole and a region wise and policy matrix for the agricultural policy of the State is given below.

Policy Matrix

Sl. No.	Sub Sector	Area of Concern		Development			
				Strategy		Initiatives Required	
1.	**Crop Economy**		Target to achieve growth rate of 5.1% per annum in food grains	I.	Expansion of area under HYV.	I.	There should be a proper linkage between different Departments of Agriculture.
				II.	Popularization of seed treatment. Expansion of seed replacement rate.	II.	The extension net-work should be re-strengthened. The Seed and Farms Division should take full responsibility to supply Certified Seeds to the farmers.
				III.	Motivate the farmers for balanced use of fertilizer.	III.	The prices of seed are required to be lowered.
				IV.	Guidance to the farmers for normal use of water.	IV.	Timely availability of fertilizers and pesticides at reasonable prices.
				V.	Adoption of plant protection measures.	V.	Flow of water in canals and supply of electricity should be ensured.

				VI.	Maximum area lying under unproductive uses needs be brought under plough.	VI.	Encouragement for scientific cultivation of crops.
				VII.	Prompt delivery of inputs.	VII.	Maintain ecological balance and appropriate land water management.
						VIII.	More and more crops should be brought under crop insurance scheme.
						IX.	SAUs should take initiatives to develop agro-climatic zone wise technology.
						X.	Diversification of agriculture towards cash crop.
2	**Seed**		The SRR is static and around 8 to 9 per cent.	I.	The SRR should be atleast 20 per cent.	I.	SAUs, ICARI and other agencies should produce more Breeder Seed and Foundation Seed of oilseeds and pulses.

			SRR in case of maize, groundnut, soyabean and sunflower is extremely poor.			II.	Seed and Farms Division should collect the seed from SAUs, and ICARI well in advance of the time of sowing of crops.
						III.	State Seed Corporation, NSC, Seed and Farms Division and TDC are required to expand and strengthen their activities.
						IV.	Strict action should be taken against organisations supplying low quality seeds.
						V.	Expansion and upgradation of storage facilities.
						VI.	Promotion of use of Bio-Technology.
						VII	Support for varietal improvement and hybridization.
						VIII	There should be forward and backward linkages between producing and supplying agencies.

						IX.	Financial support should be available to breeder scientists.
3	**Irrigation**	I	Only 68.82% of net area sown is irrigated.	I.	Modernization of existing irrigation system.	I.	Cleaning of the main as well as tributary canals are required.
		II	Less than 50% area under assured irrigation	II	Flood protection measures	II	Pucca embankment is needed on main canals.
				III	Construction of check dams	III	Supply of water at tail of canal should be ensured.
				IV	Promotion of lift irrigation.	IV	Adequate funds are needed for proper functioning of old canals and construction of new canals.
				V	Popularization of drip and sprinkling system of irrigation	V	Non-operative state tube-wells should be repaired at war footing level.
				VI	Subsidy available for boring and purchasing of engines	VI	More and more areas should be covered under water harvesting system.
				VIII	Watershed development programme in rainfed areas.	VII.	The ponds, wells, lake etc. are required to become operational by providing financial assistance for theirs repairs.

						VIII.	Drainage repairing is required.
						IX.	Inter-State projects of irrigation should be completed to release the financial commitments.
						X.	The net-work of canal should be expanded in unirrigated areas.
						XI.	The subsidy for the purchase of pipe, sprinklers etc should continue.
4	**Fertilizer**		Ratio of fertilizer consumption at present is 26:8:1 (N2:P205:K20) which is unbalanced and affecting soil texture and structure. It should be narrowed down to 7:5:1.	I.	Balanced use of fertilizer.	I.	Expansion of soil testing laborateries. Timely distribution of different types of fertilizer at single door.
				II.	Use of farm organic manure.	II.	The laborateries for production of bio- agents should be established.
						III.	Popularization of pulses cultivation.

						IV	Motivate the farmers to use the fertilizers in prescribed compositions for different crops.
5	**Pesticides**	I.	Maximum use of pesticides.	I.	Awareness among the farmers to use minimum doses of pesticides.	I.	IPM/ IPNM bio-control will have to be popularized among the farmers.
						II.	Pest and insect resistant varieties should be evolved by the scientists of SAUs and Research Laboratories.
6	**Land**	I.	Degradation Problems	I.	Uttar Pradesh Bhumi Sudhar Nigam has been reclaiming the Alkaline/ Saline soil in 17 most Usar prone districts with the help of World Bank.	I.	UPBSN should cover more Usar prone districts.

		II.	9.23 lakh ha. Ravines 7.63 lakh ha. Alkaline/ Saline 13.50 lakh ha. Riverine land 7.50 lakh ha. water logged 37.66 lakh ha. Total	II.	Soil Conservation Department has also been reclaiming the Usar soil.	II.	There should be no financial constraints for the Soil Conservation Department. Full financial support is needed.
		III.	More than 23.09 lakh ha. is covered under fallow land and 5.86 lakh ha. under cultivable waste land.	III.	Waste Land Development and Utilization Programme have been continuing.	III.	There is need to manage flood prone watershed area by appropriate soil conservation.
		IV.	Fragmentation of holdings.	IV.	Rainwater harvesting programme are being activated.	IV.	There is also a need to strengthen water harvesting through construction of ponds, check dams etc. It requires huge investment. So financial support is a must.
				V.	Water shed development programme has been expanding	V.	Participating water shed management is needed.

				VI.	Consolidation of holdings is being conducted in second phase in the covered districts	VI.	Soil and water conservation programme should be implemented. The training is a must for the beneficiaries for proper utilization and maintenance of assets created under this programme.
						VII.	Efforts should be made to cover all the districts of state under consolidation of holdings.
						VIII	Participation of women farmers in agricultural activities is needed.
7	**Horticulture**	I.	Low productivity of various horticultural crops	I.	Supply of planting material and improved varieties.	I.	Modernization and upgradation of nurseries.

		II.	Poor quality production	II.	Improvement in pre and post harvest technology.	II.A B. C.	Dissemination of latest technology at ground level by strengthening the extension services. Motivate the farmers to use biological manure and take IPM approach in pest control to establish wormi-cultural farms. Training is needed for growers to adopt Hi-tech in post harvesting process.
		III.	Maximum post harvesting losses and less number of processing units.	III.	Insufficient storing facilities.	III.	Establishment of cold storages.
		IV.	Remunerative prices are not available.	IV.	Processing of produces of horticultural crops to get additional price value.	IV.	Huge subsidy is need to attract the private investors for establishment of cold storages and processing units in potential pockets. Air conditioned markets are needed for export of flowers, fruits, vegetables etc.

		V.	Lack of post harvest technology.	V.	Availability of quick transport facilities.	V.	Agro-based industries and regional planning are needed to safeguard the producers.
		VI.	Undeveloped infrastructural facilities in regards to export.	VI.	Development of infrastructural facilities for export of horticultural produces.	VI.	The exporters should be encouraged in national and international trade fairs and buyer seller conferences.
		VII	Share in total export of horticultural produce of the state is extremely low.	VII.	There is urgent need for setting up Agri-Export Zone (AEZ) in the state.	VII. A. B.	Export of Basmati Rice, Mango, Guava, Citrus Fruits, Potato, Ginger, Garlic Green Peas, Mushroom, Mentha, Medicinal and Scented Plants etc. should get top priority. Efforts should be made to establish a Perishable Cargo Centre with the assistance of APEDA.

		VIII	Inadequate database in horticulture.	VIII	Directorate has made comprehensive plan for collection of data on horticultural crops by its own staff.	VIII	Horticulture Inspector, DAO and others should be made responsible for collecting data pertaining to area, production, marketing position for proper planning at different stages.
8	**Livestock**	I.	Cattle population has declined at the rate of 3% annually	I.	Improvement of breeding services.	I.	Door to door Artificial Insemination facilities should be provided.
		II.	Buffaloes have decreased by 0.05% annually	II.	Genetic upgradation	II.	Efforts are required to improve genetic potential of indigenous livestock.
		III.	Goat and sheep have also decreased annually at 0.38% and 1.36% respectively.	III.	Cross -breeding programme at a large scale.	III.	Establishment of sheep breeding farms. Technical support at the door- step is required.
		IV.	More than 70% of cattle and buffalo population are non-descript and hence responsible for low productivity of milk.	IV.	New advanced technologies like use of frozen semen and embryo- transfer technology are being implemented.	IV.	The breeding coverage should be extended upto 35% against 29% at present.

		V.	Infertility problem in livestock.	V.	Efforts are being made to control infertility problem in livestock.	V.	Strengthening diagnostic facilities optimization of animal husbandry activities, veterinary hospitals, "D" dispensaries, Pasudhan Prasar Adhikari are more needed.
		VI.	Epidemic and diseases are common phenomena in livestock.	VI.	More veterinary hospital dispensaries and mobile units should be established.	VI.	Vaccination programme against dreadful diseases viz. H.S., FMD is of utmost importance.
		VII	Less availability of fodder and livestock feed concentrate.	VII.	Availability of adequate nutritious feed and fodder have been ensured by adopting advanced and improved management practices at farms.	VII	There is need to improve fodder production and grass land development programme.
		VIII	Shrinkage of natural pastures.	VIII.	Area under natural pastures is being protected by enforcing the relevant laws.	VIII	Degraded forest land should be put under fodder production.
		IX.	Low number of chilling plants.	IX.	Private entrepreneurs are invited to establish chilling plants in rural areas.	IX.	Subsidy for establishment of chilling factories should be provided to entrepreneurs.

		X.	Dairy Cooperative Unions are non-viable.	X.	Laws are being enforced to get early elections to cooperative union at the scheduled time.	X.	Milk cooperative societies should be established to function a la the Gujarat State.
		XI.	Insurance Scheme for livestock.	XI.	Livestock insurance schemes are being implemented in a broader prospective.	XI.	Livestock Insurance Schemes should get top priority in the X Plan.
		XII	Annual growth of animal husbandry sector has been targeted at 8% in the Tenth Five Year Plan against 4.5% during IX Plan.	XII.	To streamline the breeding services the embryo-transfer technology and field progeny testing should be taken up in a big way.	XII.	Veterinary education training and skill upgradation should be given to the milkmen by PT, DDU University of Veterinary Science and Goanusandhan.
		XIII	Marketing facilities are poor.	XIII	Sufficient allocation of fund has been helpful to different departments to develop the market network.	XIII	There is need to open the milk collecting centre in remote areas and it should be equipped with proper storing capacity.

9	**Fisheries**	I	Much gap between availability and requirement of fish production.	I.A B. C.	Promotion of aquaculture in rural areas. Promotion of integrated fish farming. Construction of ponds.	I.A B. C. D. E.	Effort are required to utilize maximum water for fish culture. There should be proper linkage with Irrigation Department. Fish seed production also requires further gear up. Conservation of riverine fisheries. Utilization of alkaline soil for aquaculture. Water logged areas should be utilised for fish culture.
		II.	Highly risky in fish farming.	II.	Provision of housing for fishermen for establishment of mini hatcheries.	II.	Provision of Group Accident Insurance Scheme.
		III.	Maximum dispute in the allotment of ponds, tanks on Gram Sabha land.	III.	Amendment of laws relating to the allotment of ponds, tanks etc. in favour of fishermen.	III	Proper Utilization of ponds on Gram Sabha land for fish culture.
		IV.	Poor Infrastructure facilities.	IV.	Identification of marketing places.	IV	Community allotment of marketing place.
		V.	Non-availability of adequate credit	V.	Financial help for purchase of inputs.	V	Supply of in well Fingers advance.

		VI.	Lack of scientific storing facilities.	VI.	Provision of Scientific Containers for the fishermen.	VI	Quick and well equipped transport facilities are required. Railways should make special arrangement for transport of fish.
		VII	Insufficient training facilities.	VII.	Establishment of Training and Extension Centre for fishermen.	VII	Strengthening the activities of FFDA in favour of fishermen.
		VIII	Maximum exploitation of fisheries during hatching for their sale in rural areas.	VIII.	Provision of better infrastructural facilities for fish marketing to securer the fishermen against exploitation by middlemen.	VIII	NABARD should be vigilant for proper loaning to fishermen to purchase the inputs.
10	Miscellaneous	I.	Diversification of present agriculture	I.	At present, the diversification in agriculture is maximum towards cash crops.	I.	The diversification should also be initiated in the other complimentary sectors. i.e horticulture, animal husbandry, seri-culture, milk production, bee-keeping etc. The UPDAs will have to lead in this direction.

		II	Development of infrastructural facilities.	II.	Each village and market will be linked with pucca roads. The supply of electricity drinking water, school, primary health centres, livestock, clinic centre are the main strategies of the X plan.	II.	MLA and MP funds should be properly utilized for the integrated development of villages. There should be proper linkage among the different departments to get work done efficiently and quickly
		III.	Cane development.	III.	Prompt payment of sugarcane prices.	III.	State as well central Governments should take total responsibility for prompt payment of sugarcane price to the growers.
		IV.	Welfare of farming community.	IV.	Kisan Credit Card, SHGs and other micro financial institutions are fulfilling credit needs of the farmers.	IV.	NBARD should look into the activities of financial institutions for promotion of their micro activities.
		V.	Implementation of provisions of Minimum Wage Act.	V.	Provision of action in the Act against the guilty persons.	V.	The Labour Officer of the district should take full responsibility to enforce the Minimum Wages Act in rural areas.

		VI.	Representation of women in the various decision making bodies.	VI.	Empowerment through different means has been given to women to exercise equal authority in decision making.	VI.	SHGs should be extended to more and more areas.
		VII	Investment in agriculture is low (both in public and private sectors.			VII	The State Govt. as well as financial institutions is required to have a liberal attitude to attract private investors. Prompt action is needed in favour of private investors in the allotment and supply of subsidy. The private investor should get help from different departments such as Revenue, PWD, Electricity etc. to get their work done immediately.

CHAPTER -VI

Agricultural Policy of Uttaranchal

Introduction

Prior to November 2000, Uttaranchal was a part of Uttar Pradesh known as hill region. It became the 27th State of the country on November 9, 2000, thus becoming a part of the Central Himalayas, starting from foothills in south extending to snow clad mountains in the north. The state is fortunate enough to have important rivers, valleys, glaciers, flower valleys and high peaks, covered with snow throughout the year, so it is a picturesque place. It is a very tiny state of the country, having only 53483 sq. km. land which is merely 1.6% of the country's total area. The total population of the state was 84.7 lakhs which accounted for 0.83% of total population of the country as per Census report of 2001. Of the total population, the population of males and females was 43.17 and 41.63 lakh respectively, showing sex ratio of 954 females per 1000 males. The decennial growth rate worked out to 15.49% during 1991-2001. The literacy rate of males was 84.0% against 60.26% for females as per 2001 Census. The density of population was 159 per sq. km. in the state against 324 per sq. km. Of the country in 2001. The state is divided in two administrative divisions viz. Garhwal and Kumaon, comprising of 13 districts. Almora, Phithoragarh, Nainital, Bageshwar, Champawat and Udham Singh Nagar belong to Garhwal division while Pauri Garhwal, Dehradun, Tehri Garhwal, Chamoli, Uttarkashi, Rudra Prayag and Haridwar fall under Garhwal division.

The geographical area of Uttaranchal is 53483 sq. kms. Out of the total geographical of Uttaranchal the area under forest accounted for 62.56 per cent followed by 23.42% area under non-agricultural use during 1998-1999. The net area sown was only 14.02% of reporting area which is the lowest among the states of the country. Out of 7.81 lakhs ha. of net area shown only 44% was irrigable whereas most of hilly areas are still rainfed because only 12% of cultivated area is still irrigable. The cropping intensity in the state was around 160.61%. The size of holding is maximum concentrated (71.8%) between 1.00 to 2.00 ha. in Uttaranchal against 59.40% of the country. The small and marginal farmers are 71.8% and 16.3% of the total holdings respectively. Table-VI-1 & 2.

Table-VI-1
Land Utilization in Uttaranchal

(Area in 000 hectare)

Particulars		Years		
		1996-97	**1997-98**	**1998-99**
1.	Reporting Area	5595939	5593342	5592361
2.	Forest	3499687 (62.54)	3501285 (62.60)	3498447 (62.56)
3.	Usar & Unculturable Land	299608 (5.35)	299114 (5.35)	294756 (5.27)
4.	Waste Land	320228 (5.72)	322840 (5.77)	324443 (5.80)
5.	Permanent Pastures	227398 (4.07)	227324 (4.07)	228940 (4.10)
6.	Tress	218818 (3.91)	218134 (3.90)	217033 (3.88)
7.	Current Fallow	11423 (0.20)	11102 (0.20)	11257 (3.88)
8.	Non-Agricultural uses Land	163836 (2.93)	164238 (2.94)	166324 (2.97)
9.	Other Fallow Land	67659 (1.21)	67007 (1.20)	67044 (1.20)
10.	Net Area Sown	787282 (14.07)	782298 (13.99)	784117 (14.02)
11.	Area Sown More than Once	471450	458349	475272
12.	Gross Cropped Area	1258732	1240647	1259389
13.	Cropping Intensity	159.88	158.59	160.61
14.	Net Irrigated Area*	340069	331291	343407
	(a) Canal	100307 (29.5)	95266 (28.8)	101867 (29.7)
	(b) Tube well	175536 (51.6)	177238 (53.5)	180945 (52.7)
	(c) Wells	19618 (5.8)	17866 (5.4)	18475 (5.4)
	(d) Ponds, lake etc.	75 (0.0)	74 (0.0)	91 (0.0)
	(e) Others	44533 (13.1)	40847 (12.3)	42029 (12.2)
	Gross Irrigated	532518	529931	551054

Source: Statistical Diary Uttaranchal 2001-02

Figures in brackets are percentage to reporting area.

*Figures in brackets are percentage to Net Irrigated area.

Table-VI-2

Area, Production and Productivity of Major Crops in Uttaranchal

Area-hectare
Production-M. Tonnes
Productivity-Qtls. hect.

Crops	1996-97			19967-98			1998-99		
	Area	Production	Produ-ctivity	Area	Production	Produc-tivity	Area	Production	Produc-tivity
1. Cereals	938889 (81.97)	1554362	16.56	936243 (83.04)	1636350	17.48	961012 (83.76)	1587931	16.52
Paddy	280940 (24.53)	523376	18.63	291151 (25.82)	603128	20.72	305058 (26.59)	560078	18.36
Wheat	388329 (33.90)	721424	18.58	382964 (33.97)	686525	17.93	386697 (33.70)	684175	17.69
Barley	27101 (2.37)	24942	9.07	27044 (2.40)	34088	12.60	27101 (2.36)	25818	9.65
Jowar	--	--	--	6 (0.00)	4	6.67	7 (0.00)	4	5.71
Bajra	20 (0.001)	29	14.50	17 (0.001)	24	14.12	20 (0.002)	23	11.50
Maize	33500 (2.92)	38924	11.62	35346 (3.13)	58333	16.58	35683 (3.11)	42650	11.95
Others	208999 (18.25)	245667	11.75	199715 (17.71)	254248	12.73	206446 (17.99)	275223	13.35
2. Pulses	36361 (3.17)	22613	6.22	33617 (2.98)	21952	6.53	32776 (2.86)	19751	6.03
Urd	11217 (0.98)	4823	4.30	10807 (0.96)	4452	4.12	10571 (0.92)	3284	3.12
Moong	324 (0.03)	178	5.49	180 (0.02)	84	4.67	161 (0.01)	99	6.15
Arhar	1786 (0.16)	1265	7.08	1822 (0.16)	1168	6.41	1801 (0.16)	1077	5.98
Gram	1643 (0.14)	1497	9.11	1290 (0.11)	1107	6.58	1179 (0.10)	1051	8.91
Other Pulses	21391 (1.88)	14850	6.94	19518 (1.73)	15141	7.76	19064 (1.66)	14240	7.47
3. Oilseeds	34451 (3.01)	24140	7.01	28439 (2.52)	16871	5.93	25598 (2.23)	19748	7.71
Mustard	14246 (1.24)	14227	9.99	14078 (1.25)	7949	5.65	13454 (1.17)	11340	8.43
Groundnut	3235 (0.28)	3491	10.79	3616 (0.32)	4097	11.33	3356 (0.29)	3789	11.29
Other Oilseeds	16970 (1.48)	6422	3.78	10745 (0.95)	4825	4.49	8788 (0.59)	4619	5.25
4. Other Crops	135686 (11.85)	7431768	547.72	129182 (11.46)	7338749	668.09	127928 (11.15)	7340034	513.76
Sugarcane	120172 (10.49)	7126037	592.99	113907 (10.10)	7119245	629.01	112459 (9.80)	6994258	621.94
Potato	15063 (1.31)	304081	201.87	14852 (1.32)	217682	146.57	15120 (1.32)	344281	227.51
Tobacco	252 (0.02)	1540	61.11	269 (0.02)	1771	65.84	216 (0.02)	1438	66.57
Cotton	153 (0.01)	25	1.63	118 (0.01)	9	0.76	116 (0.01)	22	1.89
Others	46 (0.004)	85	18.47	36 (0.003)	42	11.66	17 (0.001)	36	21.18
Total	1145387			1127481			1147314		

Note: Figures in brackets are Percentage to total
Source: Statistical Diary Uttaranchal 2001-02

Thus, the average size of holding was 0.94 ha. in the state. Out of cropped area of 1147 thousand ha., cereal accounted for the highest share followed by 2. 86%, 2.23% and 11.15% for pulses, oilseeds and other crops respectively during 1998-99.

Among the cereals, wheat and paddy were important crops, which accounted for 33.70% and 26.59% respectively. Pea and soybean were dominant crops among the pulses. Sugarcane and potato were also important commercial crops of the state, which occupied 9.8% and 1.32% of GCA during 1998-99. The area under vegetable crops had also adequate share (7.21% of GCA) during the corresponding period. It shows that vegetables and potato jointly occupied 9.13% of GCA. It is also noticed from Table-VI-3 that allocation of area under vegetables was much higher (63.58%) in Garhwal division than that of 36.42% in Kumaon division. It reflects that Garhwal division is more suitable for production of vegetables than that of Kumaon division of the state. As far as production and productivity of different types of vegetables are concerned, Garhwal division is well off as compared to Kumaon division. Of the total production of vegetables of 6,56,945 M. tonnes, the share of Garhwal division was estimated at 73.92% against the share of 26.08% of the Kumaon division. Table-VI-3.

Among the vegetables, pea, french bean, radish and tomato were dominant crops and had occupied 14.98%, 9.52%, 8.30%, 5.99% respectively during 2000-01. Pea occupied highest share being 24.37% in Udham Singh Nagar district of Kumaon division while its share was 13.71% in Tehri district of Garhwal division. Radish was prominent vegetable in Pauri district followed by Almora district.

As far as tomato is concerned, it had maximum coverage of area of 21.08% and 16.34% in Dehradun and Haridwar districts of Garhwal division. While it was maximum being 11.40% and 10.98% in Pithoragarh and Almora districts respectively of Kumaon division during the same period. It shows that maximum concentration of area of vegetables was found in Haridwar and Dehradun districts of Garhwal division while Almora and Nainital districts had maximum area under vegetables among the districts of Kumaon division Table-VI-4 & 5.

Agricultural Policy of Uttaranchal

After its separation from Uttar Pradesh the Uttaranchal Government has chalked out new strategy for Agricultural Policy vis-à-vis liberalization and WTO. The Agricultural Policy has been framed keeping in view the agro climatic situation and condition of soil texture and structure etc. The maximum emphasis has been laid on horticultural crops viz. vegetables, fruits, medicinal plants having export potential. The salient features of the Agricultural Policy for the development of agriculture, horticulture, live stock and other allied sectors during 2000-2001 are detailed below:

Agricultural Sector

The foodgrain crops are generally grown in the plain areas of the state. The main crops are paddy, wheat, sugarcane, mustard, soyabean, lentil and gram in the state. Hence, the state Govt. has been paying adequate attention to increase the production and productivity of these crops by adopting the following policies and programmes.

I. The availability of improved seed, fertilizers and pesticides is being ensured.
II. Automatic forecasting appliances are being set up at different places to get advance knowledge of weather condition.
III. The consolidation of land holdings are being executed in plain districts, while voluntary consolidation of holdings approach is being popularized in the hill districts of the state.
IV. Emphasis is being given to mechanization of agriculture to reduce the cost of production and improve the efficiency of work. In this connection, modern small implements and power tillers are being provided to farmers at subsidized rate. The sprayers and sprinklers etc. are also available to the growers at minimum prices.
V. Efforts are being made to construct Hydrodrum in hill districts to restore the maximum water of rain.
VI. The replacement rate of seed at present being very nominal would be increased by 15 per cent in years ahead.
VII. Uttaranchal Govt. is trying to open more fertilizer shops in remote areas to ensure the availability of fertilizers.
VIII. White til crop has much potential in this state. Efforts are on to increase the area under this crop.

IX. Groundnut can also be grown in the hilly tracts, hence, efforts have been continuing to replace its old varieties.
X. As the soyabean is one of the commercial crops of the state, the modernization activities in its cultural activities are needed to sustain its productivity for a long time. The state Govt. has been trying to construct the modern godowns for the storage of foodgrains and concrete steps are also going on for its processing and proper marketing with a view to enabling the farmers to get remunerative prices.

The production and productivity of paddy and wheat crops have a tendency to decline during last few years in the state. Hence, the state Govt. has made following comprehensive plan to sustain the production and productivity of these crops.

I. To motivate the farmers for comprehensive use of biological manures.
II. To advise the farmers to increase the seed replacement rate.
III. To motivate the farmers for using balanced doses of fertilizers.

Horticultural Crops

The horticultural crops are major enterprise of the hilly tracts of the state. Its contribution in total economy of the state is much higher than that of agricultural crops. The potato, cabbage, pea, tomato, shimla chilly etc. are the major vegetables. Apart from this, floricultural crops are also very promising in the state. Gladiolus, tube-rose, chrysanthemum, rose, marigold etc. are main flowers of the state.

Uttaranchal is very suitable for the better production of vegetables, potato, flowers, fruits in normal as well as off season. The suitability of soils, availability of water, cool temperature, suitable temperature in summer season and massive rainfall etc. are the main contributing factors to producing standard quality vegetables, flowers and fruits in Uttaranchal State. Since the creation of the hill state, the state Govt. has been trying to boost the production of horticultural crops at global standard in the potential pockets of the state. In the context of WTO, following policies have been framed to get the maximum share of exports from the country in the years ahead:

1. Distribution of Hybrid seeds.
2. Provision of Hi-Tech will be provide to horticultural crops through strong extension net-work.
3. Emphasis on the production of tomato, brinjal, shimla chilli, french bean etc. in the potential areas of the state.
4. A very positive strategy devised by Horticulture Department for the betterment of rose, marigold, carnation, gladiolus and tuberose in selected district of the state. In this context, polyhouses would be constructed in potential areas.
5. Popularisation of the aromatic and medicinal plants among the growers to provide them the good marketing infrastructural facilities.
6. Popularisation through proper strategy of the cultivation of spices in the selected areas of the state. The demonstration and supply of planting materials are the basic activities of horticulture department at present.
7. The state Govt. has made a big plan to mobilize the private investers to establish the processing units in the producing areas of the state. In this connection, the state Govt. is ready to provide all the physical financial help to the investors in the establishment of processing units in the state.
8. The state Govt. has been doing sincere efforts for establishing the cold storages in the plain areas of the state to provide the better storing facilities of vegetables, flowers and fruits.

The state Govt. is ready to protect the interest of producers and consumers by providing them good services of marketing, processing, storing, packing and transporting through the following programmes and policies.

1. Establishment of terminal markets to provide alternative marketing facilities to the producers.
2. Each Tehsil will be covered by acts and regulations of regulated markets.
3. Each regulated market will adopt atleast a village for its integrated development.
4. Village markets will also be modernized.
5. Out of total income of markets, 75 percent will be invested in that market.
6. Since vegetable, flowers and fruits are highly perishable, the private investors are being invited to set up cool chain system to protect the post harvest losses.

Live Stock

The economy of live stock is not so encouraging in Uttaranchal as compared to Uttar Pradesh, Delhi, Hayarna and Punjab. The production of milk per milch cattle is very low in the state due to the immense population of local breeds Table-VI-6 & 7. The prospect of live stock is very strong because of large grazing and forest areas. The foreign breeds of milch cattle such as Friesian, Jersey, are very suitable in the state. In order to boost the production of milk, the state Govt. has made following programmes and policies for the development of live stock.

Table-VI-6

Details of Live Stock in Uttaranchal

(000)

Sl. No.	Categories of Live Stock	1988	1993	1998
1.	Cows (Deshi)	1999	2008	1927
2.	Cows (Cross Bread)	85	123	104
3.	Milch Cattle	2064	2131	2031
4.	Draught Cattle	1007	1064	1094
5.	Sheeps	354	359	312
6.	Goats	914	1098	1085
7.	Pigs	24	25	32
8.	Others	192	243	58
9.	Total Live Stock	4575	4920	4612
10.	Poultry	663	845	983

Table-VI-7

Production of Milk and Other Produce in Uttaranchal

Category of live Stock	Production		
	1988	1993	1998
Milk Production per day per Milch Cattle (kg)			
(a) Cows	1.301	1.328	1.437
(b) Buffaloes	2.466	2.551	3.078
Eggs per Bird per year (Nos.)	191	201	200
Wool per Sheep per year (grams)	1259	1267	1229
Meat per animal (kg)			
(a) Sheep	15.299	14.958	14.943
(b) Goat	14.682	14.457	14.142
(c) Pig	50.675	50.619	50.533

Source: Statistical Diary Uttaranchal 2001-02

Programme and Policies

1. Initiation of an Intensive AI Programme in each nook and corner of the state.
2. Live stock census for its better management in the years to come.
3. Adequate emphasis on the veterinary supports to live stock. To provide the better treatment of live stock, the state Govt. is going to allot adequate finance to open the veterinary hospitals in remote areas of the state. In addition to this, the poultry development programme will also be launched very soon in the potential districts.

Sericulture

The agro-climatic condition is very suitable for development of sericulture in hilly districts of the state. It could be a good business in the state. The state Govt. has framed the following programmes for its development.

1. Financial and physical support to farmers for the plantation of mulberry trees.
2. Training centres for development of sericulture would also provide training to women.
3. The establishment of development centres for better marketing facilities.

Bee keeping

Uttaranchal state is botanicals very prosperous and has very conducive agro-climatic condition for bee keeping. The bee keeping is not only a remunerative business but it increases the productivity of crops also. In order to popularise the bee keeping in the state, Govt. has already chalked out massive policies and programmes for its development such as;

1. Coverage of more and more people under bee keeping training programme.
2. Extension of credit facilities to the interested families.
3. Improved marketing facilities to provide better price of honey.

Mushroom

Since the temperature in even summer season of hill districts of the state is very moderate, all varieties of mushroom could be grown throughout the year. Mushroom cultivation is very remunerative and has very high potential for export. Therefore, state Govt. has been paying adequate attention to its development such as;

1. Motivation and training to the farmers and supply of planting material at subsidized rates.
2. Plan to provide the processing and marketing facilities.
3. A new strategy the mushroom production at global standard by establishing modern processing units in the potential areas. The supply of electricity to processing units would be ensured.

Tea

The tea plantation was carried out during the British regime in selected areas of the hill districts. But due not availability of processing units in the state, it was sent to Calcutta which meant prohibitive transport costs. On account of this, it was uneconomic here as compared to that in Assam or West Bengal. In order to revive its cultivation, the state Govt. has made a number of plans:

1. The potential area will be identified and Land Development Banks would also be opened.
2. Research station will also be established.
3. Processing units will be established at tea growing districts.
4. Marketing net-work will be strengthened.

Development of Marketing Net-Work

The marketing facilities in the state is extremely weak. The road transport is well developed only in 9 out of 13 districts of the state. Most of villages and primary markets are not connected with roads. Head load transport is only way to carry the produces from producing centres to secondary markets. On account of these bottlenecks, the producers have to bear heavy losses and are deprived from getting remunerative prices of their

produce. The state Govt. has been giving top priority to develop transport facilities by connecting the villages and markets with pacca roads.

Besides these developments, the following export promotion initiatives are on top of the Govt. agenda at present:

I. Establishment of Export Processing Zones in appropriate places.
II. Establishment of Agro-Park which would be equipped with modern facilities as are available in foreign countries.
III. Formation of the Export Unions to protect small and marginal producers from middlemen.
IV. Provision of adequate loans to producers at reasonable rate of interest SHGs and NGOs will be more strengthened to provide timely and adequate loans to the growers.

The size of holdings particularly in hill districts of the state is very small. Therefore, diversification in agriculture is rather very essential to get assured income throughout the year. The agro-climatic conditions, soil texture and structure, sufficient availability of water, good extension support are available in the state. Even then, the state is well behind the State of Himanchal Pradesh. The Uttaranchal has come into existence in 2000. The state has made its own agricultural policy in 2001. If the policy is implemented with sincerely the state would emerge as one of the best states of the country with regard to the export of vegetables, flowers, fruits etc. in years to come.

CHAPTER-VII

Summary and Conclusion

Uttar Pradesh is a rich state in terms of agricultural and other natural resources. It is a soil and water rich state. Texture of the soil is highly favourable to crop growth and its diversification. Percentage of net cropped area to total geographical area of the state is higher than the percentage of net cropped area to total geographical area of the country. A major part of the state is constituted of alluvial soil deposited by perennial rivers Ganga, Yamuna, Sarju and their tributeries. Western and Central regions of the state are the most fertile tracts of the country. Similarly eastern region of the state also has fertile soil and natural environment. But the soil of Bundelkhand region comprising of Banda, Hamirpur, Jhansi, Jalaun, Lalitpur and some part of Mirzapur, Sonbhadra and Allahabad Districts are rocky. It is less fertile in comparison to the soils of other regions.

The Study on Agricultural Policy in Uttar Pradesh and Uttaranchal: A Policy Matrix

Intends to analyse and discuss the agricultural development performance of the Uttar Pradesh incorporating major initiatives taken by the Government in for agricultural development of the State. It also deals the major constraints prevailing in agricultural sector for proper growth of the sector. Accord on Agriculture of the WTO has created some new challenges before the State to meet the challenges has also been discussed in the study. Taking into account the strength weakness opportunities and threats related to agricultural sector a Policy Matrix has been prepared. Following is the objectives and methodology of the study.

Objectives of the Study

1. To review the available material (including policy documents and Five Year Plan Documents of the Union and State Governments, at the State level dealing with policy interventions after the formation of the State.

2. To identify important constraints and review the efforts made by the State in the past to meet major challenges pertaining to agriculture and allied activities.

3. To record the State's response to the already formulated National Agricultural Policy, that is, to find out precisely how and where the State would like to suitably supplement, modify and re-articulate the National Policy in the local context.

4. To bring out the State's concerns as well as to record the State's view on the changing economic situation due to India's involvement with the World Trade Organization (W.T.O).

5. To document the State's initiatives to meet the problems and constraints arising out of India's WTO commitments and review in brief the effectiveness of government interventions in the form of technology adoptations, institutional adaptations, price policy changes (e.g., through changes in tax and subsidy regimes) and legal policy changes undertaken so far.

6. To discuss with the important stakeholders (as identified above) the requirements for formulation of a policy document at the State level, in response to the country's growing concerns in response to challenges arising from WTO or otherwise.

7. To elaborate on the initiatives taken to meet the challenge of diversification, technology, resource management and price policy at the State level (whether in response to WTO or otherwise).

8. To assemble these views in the form of a meaningful policy requirement matrix, relating problems/issues as well as to suggest a programme of action. The study intends to spell out the agencies, which should undertake such actions.

Research Methodology

The study intends to assess the agricultural resource base of the State alongwith highlighting the agricultural development scenario since recent past. The study analyses the measures, schemes, programmes and strategies launched in the state for agricultural development and their effect in the

various sub sectors of the agricultural economy. Further, the study also endeavour to assess the weakness and threats for agricultural development particularly keeping in view the challenges posed by the WTO accord on agriculture. We have used secondary data from various plan documents of the state as well as data from reports of the study groups, committees, and survey reports. These sources have been used to assess development performance. We have also contacted the stakeholders of agricultural economy, like agricultural labourers, farmers of the different holding size, officials of agriculture department, NGOs working actively for agriculture and rural development, the farm leaders units engaged in processing and trading units to get primary data and elicit their opinions. We have tried to collect facts related to strength of agricultural economy, weakness of agricultural economy, threats to agricultural economy and in the backdrop of which we have tried to propose a suitable agricultural policy of the State.

Water, the most required input for crop economy is also abundant in most part of the state except Bundelkhand region. According to estimates of Accelerated Irrigation Programme (AIP) Uttar Pradesh can irrigate its total gross cropped area by proper planning and water management in the state. While at the national level total gross cropped area can not be irrigated even after using ultimate irrigation potential. According to AIP the ultimate irrigation potential in India is only 138 million hectare, while the gross cropped area is around 190 million hectare.

Uttar Pradesh has a long tradition of growing various crops consisting of cereals, pulses, oilseeds, vegetables as well as fruit crops. It has been a prosperous state for agricultural produce before the advent of British rule in India. Agra, Avadh, Jaunpur, Varanasi and Kara were rich agricultural areas and very important centres for the revenue of the government. But the introduction of faulty land tenure system in the form of Zamindri and Mahalwari ruined the agricultural prosperity of the state and forced the farmers to survive in poverty and disgrace. The farmers were bound to cultivate as tenants of the intermediaries not as owners of the land. The then government, at the time of food crises caused through famine made some adhoc arrangements for crop growth. Some canals like upper Ganges, lower Gangas, Sharda Sayak etc. were opened during British rule. There was no incentive in price and or non-price form for the farmers for the development of agricultural economy. The period of British rule was the period of darkness for the erstwhile prosperous agricultural state of the country.

Soon after independence institutional improvement programme were launched in U.P., basically to abolish the intermediaries from the land tenure system. Accepting the recommendations of United Provinces Zamindari Abolition Committee (1948) all forms of intermediaries were abolished and ownership of holdings was given to the tillers. Similarly other programmes for land reforms like consolidation of holdings, establishment of cooperative farms and programme for ceiling on land holdings were also launched. A programme for 'Bhoodan' and 'Gramdan' was also initiated in the State.

Along with these programmes some other programmes and schemes were also launched to raise crop production and productivity. The extension of Grow More Food Compaign, launched in 1943, was an important effort to improve the agricultural economy of the state. Community Development Programme (1952) and National Extension Service (1953) also aimed at improvement of agricultural production. Establishment of three tier Panchyati Raj System was an effort to give autonomy at village level. Following the recommendation of Indian delegation to China, some improved methods of cultivation were introduced in the crop economy of the state. Intensive Agricultural District Programmes (IADP) launched at national level was implemented in Aligarh district of the state for overall development of the wheat crop. Later on the IAAP was also initiated in the state.

Though the above mentioned programme and policies were helpful in mitigating the bottlenecks prevailing in the agricultural sector but even then increase in agricultural production and productivity was not upto the desired level. Most of the increase in agricultural production during 1948-1965 could be attributed to increase in area under crops. During the period most of the barren land and cultivable waste land was brought under crops. A large tract of the 'Tarai' area (near foothills of Himalayas) was brought under crops. There was no remarkable increase in the productivity of the crops during 1948-1965. In the background of continuing food shortage all efforts for agricultural development were confined to the growth of foodgrain crops. The third plan period was a very bad period for the agricultural sector of the state due to severe drought of 1965-1966.

To overcome the food crises of the country and the state new strategy of agriculture popularly known as Green Revolution was launched in U.P. In fact Punjab, Haryana and Western U.P. have been the leaders in the introduction of green revolution in India. Green revolution based upon HYV

seeds, chemical fertilizers and increased irrigation facilities raised the crop production and productivity in the state particularly for wheat followed by Paddy, Jawar, Bajara and Maize. During the period 1970-1991 growth in agricultural productivity became the major source of increase in agricultural production. It is remarkable to note that since 1980 increase in agricultural productivity has emerged as a sole factor for growth of agricultural production. In fact net-cropped area in the state has started to decline because of shift of agricultural land for non-agricultural purposes. Land hunger is sharply increasing in the state for urbanization, commercial settlement, habitat, factories, institutions and other non-agricultural uses. Thus the pressure on remaining cropped area is increasing for supplying the foodgrains to a very large population (about 16.8 crores) according to Census 2001.

Agriculture is the important business of the State. Uttar Pradesh enjoys a comparative advantage for agriculture practices in comparison to several other states of the country. Keeping in view the dominance of agriculture the Government of India and the U.P. Government. Launched various programmes, schemes and strategies for the development of agriculture and allied activities. It has been already mentioned that during the first three decades of the planning, development efforts of agriculture were confined to the growth of production and productivity of foodgrain crops. Grow More Food campaign, Chinese method of cultivation, IADP, IAAP, new strategy of agriculture, subsidy to agriculture, increase in irrigated area all focussed at increased in the production of foodgrain crops. Though it was the demand of the time to overcome the food shortage, but other aspects related to crop economy particularly pulses and oilseeds could not get proper attention of the planners and policy makers. Programmes to supply HYV seeds, chemical fertilizers, pesticides, improved agricultural implements and machinery as well as extension service became the powerful tools for the growth of foodgrain crops. Agricultural Price Policy became also conducive for the growth of food grain crops.

Apart from this, some programmes for development of allied sectors were also initiated in the state during the plan period. Livestock and animal husbandry hold the key to agricultural development besides being an independent sector for generation of income and employment. Animal husbandry is closely interwoven with agriculture. Uttar Pradesh is endowed with rich and diversified assets of livestock. Programmes have been launched in the state to control livestock diseases and emphasis has been laid

to establish veterinary hospitals, dispensaries and mobile unit. Artificial insemination programmes as well as feed and fodder development programme have also been launched in the state. Until the third plan breeding policy emphasized on the objective of more milk and quality work cattle. But from the third plan onwards the strategy was sifted to breeding of high yielding cross-bred whose male progeny is less suited for rearing as work cattle.

Uttar Pradesh has comparative advantages over other states for the development of horticultural crops. Fruits, vegetables and flowers can be grown in the state during the various crop seasons. Various programmes for plantation of fruit saplings, herbal gardens, establishment of fruit belt areas, plantation of medicinal and aromatic plants have been launched. Moreover establishment of Agri-Export Zones is providing an opportunity for the farmers to enhance their income. Agri-Export Zones at Varanasi (vegetable), Pratapgarh (Aonla), Rampur and Barabanki (Mentha) are shortly to be established. These Agri-Export Zones shall be helpful for further development of horticultural crops. Some programmes have been launched in Bundelkhand region of the state for the development of citrus fruits. The region has favourable soil and climatic conditions for the growth of citrus fruits.

Sheep and goats have been providing employment and income to the farmers since the beginning of the settled agriculture. U.P. has high potential for sheep goat rearing. A research institution of Indian council of Agricultural Research is working at Mathura, in the State for the development of goats. It has helped in expansion and strengthening of goat breeding facilities. Similarly animal husbandry department has given full attention for expansion and strengthening of pig breeding. Integrated Pig Development Scheme was launched during the second five year plan. A regional pig breeding station was established at the Central Dairy Farm, Aligarh. Poultry farming and bee keeping are also being popularised in the State.

Dairy sector has emerged as an independent re-numerative activity. Uttar Pradesh is the largest milk producing state of the country. The state produces about 16 per cent of the total milk production of the country. Dairy Cooperatives are becoming popular in the state to strengthen milk sector. Programmes for awareness of Dairy and establishment of Dairy and Chilling Plants have been launched in the state. Integrated Dairy Development

Projects have been launched in flood prone and backward areas. Government of India has given l00 percent grant-in-aid for the development of three dairy development projects namely: U.P. - l (Bundelkhand), U.P. - II (Purvanchal) and U.P.-III (Tarai). U.P. DASP has also supported the programme of dairy development in the state.

Fisheries sector has emerged as a foreign exchange earning sector for the country. At present marine export constitute the highest proportion in agricultural exports of the country. Uttar Pradesh has a good potential for the growth of inland fisheries. Fish Farmers Development Agency (FFDA) is in operation in each district of the state to facilitate the development of inland fisheries. It is providing infrastructural and support services to the fish farmers in the state. An independent Ministry is working in the state for the development of fisheries. The state has given high attention for proper implementation of (FADA) Programme in the State. Central Inland Fisheries Institute and Institution of Indian Council of Agricultural Research are working at Allahabad for the development of inland fisheries.

Though the development initiative taken by the government in Uttar Pradesh is appreciable yet the results of the development initiatives are not upto the desired level. Some constraints are affecting the development performance. High population density and huge size of population are creating the hurdle in the development of agriculture. Most of the holdings in the state are small and marginal as a result of which the farmers do not get the economy of scale in agriculture. Large farmers are not very keen to adopt recent advances in agriculture, while marginal and small farmers are not in a position to afford the implementation of recent advances at their farms due to their poor asset base.

Indiscriminate installation of tubewells and borewells has resulted in depletion of ground water in various community development blocks of the state. It has been estimated that 74 Community Development Blocks of the state have gone dark and 184 have become grey with reference to ground water resources. Bundelkhand region of the state suffers from lack of irrigation facilities. As a result production and productivity of the region are very low. The fertility of land is declining in almost all the regions of the state due to neglect of multiple mixed cropping pattern and non-adoptation of proper crop rotation pattern. Organic manicuring have been neglected by the farmers. Chemical fertilizers are being used progressively without following the balanced norm of chemical fertilizer use. Per hectare fertilizer

consumption in the State was 130.4 Kg. higher than all India average of 90 Kg. per hectare.

Child labour is still prevalent in agricultural activities in U.P. Through the wage rate in at par with minimum wage rate in some parts of the state particularly in the areas closer to cities. But the wage rate is lower than minimum wage rate in the remote and backward part of the state. Average wage for female workers is lower than the average wage rate of the male workers. There is seasonal unemployment for agricultural workers during the off agricultural season. As a result agricultural labourers as well as marginal farmers are forced to migrate to cities in search of bare livelihood.

The livestock sector suffers from excessive cattle population in the state. The area under grazing and pasture land is declining at a sharp rate. The pasture land is being shifted for cultivation and other non-agricultural uses. Due to shrinkage of natural pastures the sheep and goats rearing is becoming difficult. There is possibility of decline in wool production in future. Though a number of programmes are in operation in the state to improve livestock sector but it is insufficient in the context of very large cattle population. The artificial insemination programme is not achieving much success. The average yield of the milch animal is very poor. The use of drought animals is declining in the state due to expansion of mechanization in agricultural activities and these are becoming a burden on farms and farmers. The Dairy development programme is being beneficial mostly for resource rich farmers. It is not becoming beneficial for the poorer section of the rural society. The progress in development of exotic breed of milch cow is quite low. The poultry, pig and goat farming are still being carried in traditional ways in the villages. These are highly prone to diseases causing unaffordable loss to the farmers.

Besides, the inadequate expansion of processing units, marketing facilities for the horticultural crops are also lagging behind their development in the state. Very often prices of the produce of horticultural crops become very low and the farmers are forced for distress sale. Popularization of high tech horticultural crop is yet to come in the state for common farmers.

The post-harvest infrastructure and marketing facilities are extremely inadequate in the state. On account of this more than 20 percent produce of fruits and vegetables are damaged during the harvesting season. Pest and

diseases cause a heavy loss to the farmers. Capital formation in agricultural sector is very low in the state in public as well as private sector. There is net drain of savings from rural to urban areas and from agricultural to non-agricultural activities. Public sector capital formation since mid-eighties has declined in the state. This has created a challenge for the future growth of agriculture as well as requirement of food supply for the increasing population in the state as well as in the deficient states of the country.

India is a signatory to World Trade Organisation (WTO) accord. Accord on Agriculture (AoA) of the WTO provides for opening of the domestic agricultural market, lowering of support to agriculture, abolition of Quantitative Restrictions to agriculture, implementation of TRIPs provision in the agricultural sector and to implement the Phyto-sanitary measures. These items of AoA have created a challenge for the agriculture of the state. Developed countries are selling their agricultural produce in the state at lower price than that prevailing in the market. Foodgrains, pulses, fruits and processed food from other countries can be seen in the agricultural market of the state. Though the state government has taken some initiatives to safeguard the interest of the farmers of the state, yet on the sanitary grounds the export potential of the state for the agricultural produce is rated very low. A situation of dumping is emerging in the state for wheat, pulses and fruits. It requires establishment and strengthening of the Agri-Export zones and other agricultural facilities. The agricultural policy of the state should concentrate effectively on certain variables:

1. There is an urgent need to evolve a sustainable agricultural practice to check sharp erosion of natural resources. It is the duty of the present generation to transfer rich and fertile soil to the coming generation. It requires a proper blending of new agricultural practices with tested and centuries old traditional practices for agriculture.

2. Demand led agricultural development and crop diversification are the needs of the hour. In view of mounting food stocks it has become more important to diversify the crop economy in favour of high value diversified agriculture.

3. Allied agricultural activities such as animal husbandry, bee keeping, horticulture, dairy, goat and sheep rearing have become very important.

4. There is lack of fundamental researches for the development of location specific agricultural practices. The approach paper of the Tenth Plan rightly observes that the extension service to provide a boost to modern agriculture is insignificant. They have virtually collapsed. This requires an effective development of location specific agricultural practices and re-engineering of extension service for the future agricultural growth.

5. Environmental degradation is posing a serious challenge to all life forms on the earth. The agricultural policy should take care of the environmental issues in the operation of agricultural activities. There is need for promotion of farm and social forestry. Agricultural processing should find an effective place in agricultural policy of the state. In view of the rising income of the society. The demand pattern of agricultural produce is changing. There is need for the expansion of crops producing superior cereals and other agricultural produce.

6. Farm leaders, progressive farmers and various non-government organization have advised for a favorable terms of trade to the agriculture. This should also form an integral part for the development of process of agriculture.

7. A judicious use of the natural resources is urgently required. The aspect of continuity in the availability of natural resources require serious attention of the policy makers. The crops which require less water and low level of plant nutrients should be developed. Following is the SWOT analysis for agricultural sector of the State. It should be taken into consideration to formulate the agricultural policy for the state.

The SWOT and Policy Matrix have been discussed in Chapter-V.

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- Report of the Impact of Minimum Support Prices on Agricultural Economy in U.P., 2001.
- Report of the Likely Impact of Liberalized Imports and Low Tariff on Edible Oil Sector in U.P., 2001.
- Report of the Assessing the Existing Training and Testing Facilities for Farm Machinery in U.P., 2001
- Report of the Agricultural Input Subsidies in India: Quantum of Subsidies to SC Farmers in U.P., 2002.
- Report of the Evaluation –Usar (Sodic Land) Reclamation Programme in U.P., 2003
- Report of the Rural Non-Farm Employment in U.P., 2003.
- Report of the Building U.P. of an Efficient Marketing System to Obviate the Need for a Large Scale State Intervention, 2003.

ACTION TAKEN

1. Comments received - 12/03/2004
2. Date of Dispatch of report - 13/04/2004

I am extremely grateful to Dr. R.S. Deshpande, Professor and Head ADRT Unit Bangalore for his valuable comments on the draft report "Agricultural Policy in Uttar Pradesh and Uttaranchal - A Policy Matrix". Most of his comments have been in corporate in the final report. The details of action taken against the comments are given below.

1. The plan-wise growth rate and percentage change over time of area, production and productivity of major crops have been incorporated in the final report.
2. The part of WTO has been separated from report and sent to Prof. Samar Dutta, CMA, Indian Institute of Management Ahemdabad.

Annexure-1

Level of Economic Development in Various Regions of U.P.

	Development Indicator	Eastern	Western	Central	Bundelkhand	U.P.
	1	2	3	4	5	6
A	**Population**					
1	Density of population (per sq.km.)	776	765	658	280	689
2	Decennial growth in population (%) (1991-01)	26.35	26.05	24.73	22.32	25.80
3	Percentage of urban population to total population (2001)	11.78	28.25	25.11	22.46	20.78
4	Percentage share in State's population (2001)	40.11	36.76	18.17	4.96	100.00
5	Percentage of villages having population less than 200 to total villages (1991)	14.79	8.95	5.48	9.98	11.07
6	Literacy percentage total (2001) (Male)	55.22	58.44	59.04	60.332	57.36
7	Literacy percentage (2001) (Female)	39.54	44.64	47.12	44.18	42.98
8	Senior Basic School	31	31	27	24	30
B	**III Infrastructural Facilities**					
9	Length of PWD Roads per lakh of population (km.) (2000-1)	56.55	59.72	58.86	100.26	60.30
10	Length of PWD Roads per thousand sq. km. of area (km) (2000-01)	440.31	455.41	387.66	279.97	415.63
11	Per capita power consumption (kwh) (2000-01)	169.12	186.5	170.0	155.0	175.0
12	Percentage of electrified villages to total villages (2001-02)	77.90	88.81	72.55	69.94	79.27
13	Percentage of net area irrigated to net area sown (2000-01)	69.2	88.01	73.9	42.3	73.7
14	Percentage of water logged area to total Kharif area (2000-01)	10.22	0.06	0.71	0.00	3.92
C	**Agriculture and Allied**					
15	Percentage of holdings of less than 1.0 hectare area (1995-96)	83.00	68.80	76.55	70.30	75.40
16	Average size of holdings (in hect.) (1995-96)	0.65	1.02	0.83	1.72	0.86
17	Fertilizer distribution per	116.86	140.60	109.40	36.27	117.05

	hectare of gross cropped area (kgs) (2000-01)					
18	Gross value of agricultural output per hectare of gross cropped area (1999-2000) (at current prices) (Rs.)	19388	25572	20703	13031	21398
19	Net sown area per capita rural (hec.) (1999-2000)	0.10	0.14	0.14	0.31	0.13
20	Productivity of major crops (qtls. Hect.) (2000-01)					
i.	Total foodgrains	20.05	26.18	19.77	10.91	21.04
ii.	Wheat	24.17	32.34	25.54	19.47	27.24
Iii.	Rice	20.02	21.58	17.36	9.79	19.77
Iv.	Potato	182.10	242.79	168.79	213.12	213.11
v.	Oilseeds	6.39	11.19	7.12	5.52	8.25
vi.	Sugarcane	474.48	578.7	512.79	427.37	547.2
21	Per capita foodgrains production (kgs) (2000-01)	235.82	288.36	233.39	2889.79	257.36
D	**Employment and Manpower**					
22	Percentage of main workers to total population (1991)	29.5	28.3	30.6	32.7	29.4
23	Main workers engaged in agriculture to total main workers (1991)	77.3	66.7	72.9	78.4	72.8
24	Per rural person gross value of agricultural produce (Rs. at current prices) (1999-2000)	5675	5675	4304	4814	4179
25	Per capita net output from commodity producing sector. (Rs. at current prices) (1999-2000)	6995	12385	9637	9267	9765

Source: Annual Plan 2003-04 Vol.-I (Part-I) Uttar Pradesh.