AGRICULTURE AND IRRIGATION

Land Reclamation and Utilization

The district had a geographical area of 6,31,600 ha. in 1971 of which 4,75,839 ha. was utilized for agricultural purposes. The statement below gives the figures of area of land utilization in the district in 1951, 1961 and 1971:

Utilization purposes	Area in hectares		
	1951	1961	1971
Total geographical area	6,74,539	6,44,425	6,31,600
Forest	77,456	59,911	55,628
Area not available for cultivation	51,946	52,156	52,058
Other uncultivated area excluding current fallows	64,248	38,348	41,844
Current fallows	20,530	17,998	7,711
Total cultivated area	6,58,421	7,74,160	6,56,616
Net cultivated area	4,61,137	4,75,951	4,75,839
Area cropped more than once	1,07,284	2,98,208	1,80,807

Cultivated Area

During the period between 1856 and 1871,average area under tillage was 6,16,828 hectares or 62.9 percent of the total of the district,excluding the large extent of forests. Appreciable progress in cultivation was recorded in subsequent years. At the time of the settlement carried out between 1856-1857 it was found that 1,01,171 hectares of land was reclaimed in Mahrajganj and Gorakhpur tahsils of the district. The average cultivated area four years ending with 1887-88 was recorded to be 7,37,337 hectares. In the following decade the average rose to 7,95,618 hectares and this would have been even higher but for the temporary decline due to a cycle of bad seasons in the second half of the decade. The recovery was however, rapid and in the decade 1898-99--1907-08 cultivation reached a higher figure than ever before, the average for the ten years being 8,26,549 hectares while in the second half of the decade it was 8,35,292 hectares or

71.17 percent of the total area of the district. In 1907-08 cultivated area on record was or 8,44,503 hectares. The following statement gives the decennial figures of net cultivated area in the district from 1911 to 1970-71 and in 1972-73:

Year	Cultivated area* in hectare	Percentage of total area
1911	8,60,511	73.3
1921	8,50,364	72.5
1931	8,76,308	74.8
1941	8,70,109	74.3
1951	4,61,137	68.2
1961	4,75,951	73.8
1970-71	4,75,839	75.3
1972-73	4,92,075	78.6

Culturable Land

Land under this category in the district includes waste lands,forests, groves, new or old, fallow lands and also land otherwise classed as waste due to sandiness, barrenness, re-infection, soil erosion etc. The statement below gives the decennial figures of culturable land in the district from 1951 to 1970-71 and in the year 1972-73:

Year	Culturable Land in hectares
1951	2,14,585
1961	1,68,474
1970-71	1,00,721
1972-73	78,529

The culturable land in the year 1970-71 mentioned above included 55,628 hectares under forests, 16,688 hectares under groves, 11,334 hectares under culturable waste, 467 hectares under postures and grazing grounds besides the fallow land which measured 16,604 hectares. In the same year barren and unculturable land in the district measured 4,462 hectares. Besides, the total area of the land in the district which was covered under

water, occupied by buildings and habitation sites, railways, etc, was 52,058 hectares in that year.

Precarious Tracts

The precarious tracts of the district are few and not extensive. The main river of the district are Rapti and Ghaghra. Besides, Rohini, Ami and Kuwana Nadi flow through this district. The slope of land is from north to south. The southern portion of the district is low-lying and there are numerous small rivers and nalas in this part as a result this part is usually most affected by floods and water- logging in rainy season. Ghaghra's fury is almost an annual calamitous feature. Vast areas and villages get submerged resulting in colossal loss to life and property and cultivation is worst affected. Precariousness assumes yet another shape in the tracts situated close to the banks of the rivers. In these areas the soil is usually sandy. An early cessation of rains plays havoc with the cultivation, the sandy nature of the soil precluding the construction of kutcha wells by the cultivators.

Irrigation

There are extensive irrigation facilities in the district. Little irrigation is needed in the Kacchar except in very abnormal seasons, for the natural moisture in the soil ordinarily sufficient for the needs of the Rabi crops. Again in the great rice tract of the north, where little attention is paid to the scanty rabi, irrigation is not needed except for the late rice, which is watered by means of channels from the tarai streams.

The returns of 1869-70 show an irrigated area of 3,67,225 hectares or 59.5 per cent of the net cultivation. Owing to the variation in the requirements of different seasons quoting only the figures of any single year may be misleading and consequently a fair idea of the irrigated area can be derived only from the averages of a more or less prolonged period. For the four years ending with 1887-88 the actually irrigated area averaged 2,09,581 hectares or 28.42 per cent of the total cultivation and the corresponding figures for the ensuing decade were 2,06,457 hectares and 29.51 per cent. From 1898-99 to 1907-08 the average was 2,65,667 hectares or 32.14 percent of the area under the plough the maximum being 2,98,065 hectares or 37.24 percent in 1900-01. The general average was considered very high. The proportion of irrigated and cultivated land varied in different parts of the district. The percentage of the irrigated area to the total sown area was 36.5 in 1971-72 whereas the state average was about 40 percent.

The following statement gives the decennial figures of total irrigated area in the district from 1951 to 1971:

Year	Irrigated area in hectares	percentage to cultivated area
1951	1,54,186	33.4
1961	1,80,341	37.8
1971	2,39,402	53.0

Means of Irrigation

For irrigation purpose the district has a network of canals tubewells and minor irrigation works like pakka wells fitted with pumping sets and persian wheels.

The following statement shows the area (in hectares) irrigated by different sources in a number of years between 1950-51 and 1972-73

Year	Canals	Tube-wells	Wells	Tanks,Lakes and Ponds	Reservoir	Others
1950-51	1,680	4,273	86,703	--	--	71,376
1961-62	10,606	14,100	63,788	53,998	36	33,052
1970-71	28,156	71,762	36,989	44,639	--	53,317
1972-73	34,424	1,12,338	30,813	23,069	--	35,817

Canals :- The numerous rivers have been incessantly brining havoc in this area in the shape of flood and water logging in abnormally wet years. The wayward monsoon also resulted in drought and worst famines in the area. Wells and tanks were too insufficient and often of no use in years of acute drought. Canals from the perennial rivers were considered the only hope to solve the problems and to guard the people against the vagaries of monsoon, drought and floods. As early as the beginning of 20th century the Tharus adopted a system of canals for the tarai streams of the Binayakpur and Tipur parganas, the water being collected by means of earthen embankments and conducted to fields along channels called kulas. In 1907 it was proposed to construct a gravity canal from the right bank of river great

Gandak near Bhaisalotan or Valmiki Nagar in Nepal.The scheme was, however, rejected by the state Government on the ground that the area produced, mainly paddy which did not require any irrigation in normal years.

Food shortage in the country during and after the second world war brought the problem again to the fore. In 1947 the central Government requested the government of Bihar State to investigate the possibilities of taking off canals from both sides of Great Gandak river for providing irrigation facilities, in the districts of Gorakhpur and Deoria in Uttar Pradesh and also a large area in Bihar State. In 1954 a preliminary project report was prepared and submitted to Government of India by Bihar. It envisaged an expenditure of Rs 3,194.0 lakh.

As a measure of immediate relief the construction of an inundation canal, namely Naraini-Pokhra canal was taken up by the U.P. Government in 1954. This canal takes off from the right bank of the great Gandak at Pathrawa ghat. The canal was completed in 1956. It commands a culturable area of 55,037 hectares in the district. Total length of the canal and its distributary channels is 206 km.

The U. P. Government has also prepared a project plan for the portion of western Gandak canal system covering part of Nepal and the two district- Gorakhpur and Deoria in this State- envisaging a total cost of Rs 1,547.40 lacs. In 1961, the U.P. Government submitted to government of India a revised plan for the works in the state entailing an expenditure of Rs.1,515.69 lakh proposed to provided irrigation to an area of 2,84,089 hectares. Work on the western Gandak canal project (for the area falling in U.P.) was started in the same year, the existing Naraini canal system was merged with the new project. The remodeling work of the Naraini canal was completed in 1969-70 . The work on Gandak canal project was started in 1967-68 and now (in 1974) it is almost complete.

The following statement shows the total canal irrigated area in hectares in the Third and Forth plan period and from 1971-72 to 1973-74.

Third five-year plan	**fourth five-year plan**	**1971-72 to 1973-74**
33,040	67,393	96,913

The Gandak canal system has been designed for providing irrigation to the Kharif crops comprising nearly 40 percent of the total Kharif area and 20 per

cent of the total Rabi area in the district. The main western Gandak canal takes off from the right bank of river Gandak at Valmiki Nagar. For the first 19 km. it flows in Nepal territory and thereafter it enters in uttar pradesh and crosses the state boundary at its 131 km. Thus length of main canal in U.P. is about 112 km. It is lined in entire length. It was run for the first time in December, 1972. There are 17 canal systems which take off from the main western Gandak canal from 19 km. to 131 km. The main systems are Deoria branch, Malhia branch, Khajuria branch, Chaff branch systems besides Rohini canal, Danda canal,Srinagar Tal, Naraini canal, Bakhira canal, Kuwana pump canal,Ramgarh (East and West) canal and Gandak canal. The total length of the channels is 2,388 km. in Uttar Pradesh.

Tube-wells :- The average depth of the underground water for the purpose of boring tube-wells is between 91 to 107 meters. The northern part being tarai has abundant rainfall. There are many swamps in these parts and the farmers use the water of swamps for irrigation by installing pumping sets. Well-to-do farmers build their own tube-wells for irrigating their land. In 1973-74 there were 364 tube-wells in the district which provided irrigation to an area of 6,980 ha. in that year. At the end of Second Five-year plan the irrigated area was 20,888 hectares 23,534 hectares at the end of Third Five-year plan and 22,522 hectares at the end of Fourth Five-year plan.

Wells :- The average depth at which water is found is about 4.5 metres below the surface in the bangar and very much less in the northern tracts. As the level of water is high the farmers build temporary wells at lesser cost. In 1972 there were 19,699 masonry wells which irrigated an area of 30,813 hectares. The shallow wells are worked by means of dhenkli or lever, the mot or leather bucket.

Tanks and Lakes :- Tanks for irrigation are as common as in any other part of the eastern district. These are the usual square or rectangular excavations dug down to water level. Gorakhpur is remarkable for the number of its large perennial lakes formed in most cases in the abandoned channels of rivers. Besides these the district possesses a vast number of temporary swamps and jhils. Most important among these are Ramgarh Tal, Domingarh Tal, Nadaur Tal, Amiar, Bhenri Tal and Chillua Tal. Lakes and jhils are also used for irrigation. The water is conducted along narrow, channels, to the fields by the use of beris or saving-baskets of wickerwork. In 1972-73 there were 3,577 masonry tanks which irrigated an area of 23,069 hectares.

Minor Irrigation Works :-As the rainfall is not always assured drought conditions often threaten agricultural production. The canals and State tube-wells are as usual very unreliable, poor and insufficient suppliers of water to the cultivation. The government has taken up programme of providing

financial assistance to the cultivators in shape of loans and grants for constructing private wells, installation of pumping sets and Persian wheels (rahats), etc. The following statement shows the achievements made in the field of minor irrigation works in the district during each Five-year plan and in the year 1973-74:

Minor irrigation work	First plan	Second plan	Third plan	1973-74
Masonry wells(Nos.)	2,011	647	7,178	162
Boring of wells ,,	65	539	1,975	1,505
Rahats ,,	5	62	459	--
Pumping sets ,,	1	79	989	623
Private tube-wells ,,	24	4	814	783
Irrigated area(hectares)	2,817	5,543	23,179	8,452

AGRICULTURE INCLUDING HORTICULTURE

Land and Soils

While the greater part of the district of Gorakhpur falls in the eastern sector of the Indo Gangetic plain whose two types of alluvial soils, (i) Older alluvium(bangar) and (ii) New alluvium (khadar) are generally met, a broad strip in the north forms part of the Tarai belt which runs parallel to the bhabhar, along the foothills of the Himalayas, from the west to the east.

In the Central part of district, the soils are highly calcareous or calciorthents. Soils in the Tarai area have developed under sub-humid climate and high water tabe conditions and natural vegetation of tall grasses. The parent material is medium to loose textured alluvium. The soils are characterized by the presence of a dark coloured organic matter with rich surface horizon. Other tracts in the district possess soils which are neutral to moderately alkaline and calcareous, and have sometimes, well developed clay accumulation horizon in the subsoil.

Bangar soils varying from loam to sandy loam, are distinguished by their poor lime content, and they are generally mildly alkaline to slightly acidic in reaction. A third type of soil called ''dhuh'' occurs near river banks which are liable to inundation.

The soil survey organisation of the State carried out a soil survey of the district in 1951, and found the soils deficient in nitrogen and phosphorus content. The nutrient index or potassium was, however, not discouraging. In tarai the main staple crop is late rice, for which pargana Binayakpur is

famous. In the bangar the nature of the crops depends on the composition of the soil. In the north, where the rainfall is abundant and throughout the clay areas, rice is chief staple, the early variety being grown on the higher levels and the late in depressions which hold sufficient water.

Soil Conservation and Reclamation of Land

Soil constitutes the physical basis of agricultural enterprise. Land development through soil conservation measures is, therefore, vital for successful agriculture. Wind and rain water are the main agents of soil erosion accentuated by deforestation and excessive grazing. The problem assumes alarming dimension in the catchment areas of the rivers, rivulets and nullahs,which are quite abundant in the district and where more and more land is vastly and steadily being devoured by the erosion and changed into ghastly barren wastes. It was estimated that a total area of nearly 75.000 hectares of land is affected or threatened by the soil erosion in the district in some from or other. The following statement gives the area of land affected by soil erosion in the four tahsils of the district.

Tahsil	**Area affected(in hectares)**
Gorakhpur	25,000
Bansgaon	20,000
Mahrajganj	12,000
Pharenda	18,000
Total	**75,000**

To prevent soil erosion a unit of a soil conservation department was established in the district in 1968. Since then the work is going on in the catchment areas of Turran Nala, Pharen Nala, Majhna Nala, Rohini river, Ami river and Powa Nala, Beside, the work of leveling construction of dam-cum-check dams, contour dams is also being under-taken as an integrated approach towards conservation of soil. Methods mostly applied to combat soil erosion in the district are contour bunding, leveling and check-daming.In the Third Five-year Plan period an area of about 990 hectares was conserved. The progress of the soil conservation measures undertaken in the district from 1969-70 to 1973-74 is as follows:

Periods/year	**By daming(in ha)**	**By leveling(In ha)**	**Total area (in ha)**

1969-70	3,350	20	3,370
1970-71	3,263	8	3,271
1971-72	3,235	-	3,235
1972-73	3,896	75	3,971
1973-74	310	808	1,118

Harvests

There are the usual Kharif and Rabi harvests in the district, the Zaid being very insignificant. The Kharif or rainfed crops are sown in June and July and harvested in September- October,while Rabi or irrigated crops sown in October , November and harvested in February- March.

The following statement gives the decennial figure of area (in hectares) under the principal Kharif, Rabi and Zaid crops in the district in the three decades from 1951-52 to 1971-72.

Period	Kharif	Rabi	Zaid
1951-52	3,50,357	2,25,323	3,418
1961-62	3,60,228	2,73,745	3,271
1971-72	3,61,894	7,22,420	2,399

The crops harvested more than once in a year (dofasli) covered a large area in the district. The figures of 1869-70 give a total of 1,46,225 hectares as double-cropped area, from 1884-85 to 1887-88 it averaged 1,87,391heactares and in the next two decades it increased to 2,45,442 hectares and 2,74,368 hectares respectively. In 1961 the the area sown more than once in a year was 2.98,208 hectares and in 1970-71 it covered 1,80,807 hectares.

Principal Kharif crops

Rice :- The most important crop of the Kharif season is rice. The adoptation and distribution crop is mostly governed by the amount and variability of rainfall both of which have been favorably disposed towards this district. Thought the different varieties of rice are innumerable, there are two well recognized division of the crop, comprising the bhadain or early rice sown broadcast in the fields and usually cut in the month of Bhadra and the late agahani or transplanted rice ordinarily reaped in the month of

Agrahayana.The latter is by far the more valuable, though at the same time it requires more labour and it occupies the land for a longer period. In 1969-70 area under rice as per cent of total cropped area was 39.1 and in 1970-71 the area under it was 53.6 per cent.

Maize :- Maize is very important staple in some parts of the district. It flourishes most abundantly in the higher bhat lands of the east. The crop is generally sown on a good soil, in which there is a plentiful supply of manure. It has the great advantage of reaching maturity at an early date, so that it is less affected than other staples by a premature cessation of the rains. In 1971-72 it covered an area of 9,276 hectares.

Arhar :- Another important kharif staple is arhar, which, though sown with the other autumn crops remains on the ground till the gathering of the spring harvest. it is found in combination with kodon and less commonly with juar, rice and til the mixture of rice and arhar being peculiar to this district. it acts as a kind of insurance against the failure of the rains for if the rice or kodon come to nothing the cultivator at least can count on his arhar, since this crop flourishes with very little moisture. In 1971-72 the area under arhar was 2,703 hectares.

Other Crops :- The other Kharif cereals are mandua, Juar, which is here invariably called bajra,the well known bajra of other district, Which requires a light soil and little moisture, being seldom seen in these parts. The remaining crops include the pulses called urd and moong. The area covered by mandua, juar was 30 and 46 hectares respectively in 1971-72.

Wheat :-Among the Rabi crops wheat is most valuable cereal. It requires a rich and well manured soil and is mainly confined to good land where it can obtain the abundant irrigation that is necessary. It is sown in Kartika on land that has been ploughed more often than for barley, sometimes more than ten times. It is watered in December, January and February unless there is abundant winter rains and is reaped in the end of March and beginning of April. In parts where the soil is very rich, wheat is grown as a second crop after early rice. In 1971-72 the area under wheat was 1,85,015 hectares.

Barley :-Barley is grown in all parts of the district and grows in light as well as in ordinary soil, and it flourishes without irrigation. It is commonly sown after early rice. It is grown separately as well as with other crops. In 1971-72 it covered an area of 42,596 ha.

Gram :-Another crop of considerable importance is gram which by itself or mixed with barley occupies a very large area among Rabi staples. It is

particularly popular in Bansgaon tahsil. In 1971-72 it covered an area of 15,375 hectares.

Pea :-Pea is seldom grown alone, the usual practice being to sow peas in combination with linseed, mustard and occasionally barley, gram, the mixed crop being called kirao or else Jau kirai when there is a considerable admixture of barley. In 1865, 18, 826 area were under pea which rose to 1, 34,004 acres in 1878 whereas ten years later it had risen to 1,73,472 acres. In 1971-72 pea occupied an area of 27,984 hectares.

Pea is a favourite food crop for many and is the earliest to be reaped of all the Rabi staples as the harvest is over by the end of February. Pea is usually watered once and dose not require as much labour and manure as wheat.

Other Crops :- Among the remaining Rabi crops masur occupies an important place. It is confined mainly to Maharajganj tahsil. Garden crops, for the most part, consisting of latri oats and boro or winter rice, are extensively grown in padrauna but are comparatively scarce elsewhere, and the same tahsil has a monopoly of the spices and condiments mainly turmeric and chillies. Tobacco is grown in Maharajganj, Bansgaon and Gorakhpur tahsils.

Non-food Crops

Sugar-cane is one of the important cash crop of the district specially in tarai. The cultivation of sugar-cane has been spreading into Mahrajganj. This crop generally gives a better result than others in a dry year. Seeds are never sown, but the stalks are chopped up and the pieces buried in rows. In 1951-52 the area under sugar-cane was 19,440 hectares which rose to 26,729 hectares in 1961-62. This area decreased to only 22,659 hectares in 1971-72 because the farmers now prefer to sow food-grains instead of sugar-cane. A considerable area is covered under cultivation of oilseeds such as linseed, tora, rapeseed and mustard. Of these the linseed is commonly sown as a second crop after rice while the rest are almost grown with various Rabi crops, specially cereals. Linseed is a particularly important staple in Maharajganj tahsil, whereas the oilseeds of the mustard type are to be seen in abundance throughout the district. In 1865 the total oilseeds occupied an area of 90,361 acres and from 1877 to 1889 the average was 1,07,831 acres. In 1971-72 the oilseeds covered an area of 10,574 hectares. Potatoes has also an important place in the district.

Formerly the district was known for cultivation of poppy from which opium is extracted. Its cultivation seems to have been introduced early in the last century. From 1827 onwards there was a steady increase in the area under

poppy and from 1860to 1865 the average area was 15,601 acres, the figure rising to 22,724 in the following five years,while by 1878 it was no less than 27,381 acres. In 1945-46 the area under it was 1,193 acres (483 hectares) which dwindled to only 46 acres (19 hectares) in 1956-57. In 1957, its cultivation stopped totally. Indigo another cash crop of the past,has also disappeared from the district.

Improvement of Agriculture

After Independence it was realised that the traditional methods of cultivation could not cope with the ever-increasing demand for food-grains. Improvements and changes in the pattern and technique of cultivation were,therefore, adopted. Since Independence the development of agriculture has been given an important place in the country's Five-year plan.

Agricultural production can be increased either by extensive cultivation or by intensive cultivation . Extensive cultivation is possible by bringing larger areas under cultivation by reclaiming waste lands,fallow lands etc. Intensive cultivation consists of applying scientific methods in cultivation, provision of better seeds, evolved though agricultural research and use of improved implements and chemical fertilizersrs etc.

Improved and scientific methods of growing wheat and barley and the Japanese methods of paddy cultivation have been popularized among the cultivation. These methods include proper tillage, sufficient and timely manuring, sowing of seeds of improved varieties and high yielding crops, proper and timely irrigation and protection of crops against pests and diseases.The sixties of the century saw the beginnings of the green revolution in the country, under which scheme of intensive cultivation and sowing of high yielding seeds of wheat barley, maize, jowar, bajra and other crops have been implemented. The government agricultural farm in the district and various other agencies of the central and state government, the Food and Agriculture organisation of the United Nations, agricultural colleges and universities and research centres in the country are doing pioneering job in orienting the farmers for adopting better and scientific methods and implements of cultivation. The three regular campaigns- kharif, rabi and zaid, are organized in the district every year. During the campaign period the workers and progressive cultivators are imparted training in different agricultural methods and practices. Much stress is laid for taking recourse to the various methods of development such as improved agricultural implements, improved varieties of seeds, plant protection measures, fertilizers, etc. For the popularization of high yeilding varieties demonstrations are organized in the fields where implements are explained

to the cultivators. The agriculture department popularises the modern methods of cultivation through development blocks.

For the development of agriculture the programme of intensive farming has adopted in all the development blocks of the district. The aim of this programme is to adopt the use of improved varieties of seeds and of fertilizers and in this way to increase the agricultural production so that the farmers may prosper. In 1966-67 the use of high-yielding varieties was started. In this programme short varieties of wheat and paddy were mixed. The cultivation of mixed varieties of maize, jowar and bajra was also started. The main object of this programme was to make the district self-sufficient in general production. There has been considerable increase in the production of food-grains and consequently the agriculture is developing as an industry. The district seems to have been self- sufficient in the production of food-grains in 1971. Due to the adoption of improved methods and technique, there has been considerable increase per hectare in the production of various crops. In 1965-66 per hectare yield of wheat and rice was 8.98 and 8.80 quintals where as it was 11.53 and 10.02 quintals per hectare in 1971-72.

The agriculture department gives taqavi whereas the co-operative department advances loan to the cultivators for purchasing better seeds, chemical fertilizers, agricultural implements, pesticides and bullocks and also to carry out private minor irrigation works like installation of pumping sets and Persian wheels and construction and boring of pucca wells. The agriculture department provided the following amounts of money as taqavi to the farmers during the period from 1968-69 to 1973-74:

Year	Amount distributed (in Rs)
1968-69	98,61,373.00
1969-70	1,33,17,384.00
1970-71	1,06,43,169.00
1971-72	1,03,51,439.00
1972-73	74,12,227.00
1973-74	2,56,580.00

The statement below shows the amount of short-term loan distributed by co-operative institutions for agricultural purposes during the period from 1968-69 to 1972-73:

Year	Amount Distributed (in Rs)
1968-69	1,87,98,400
1969-70	1,91,52,566
1970-71	1,04,95,488
1971-72	2,01,06,300
1972-73	1,70,65,565

AGRICULTURAL IMPLEMENTS AND MACHINES

The old indigenous implements and tools such as hansiya, phaura and Khurpi, etc., have given way to the improved modern implements because the farmers have started realizing that the new ones are superior to the old ones. Consequently the modern scientific agricultural instruments have become popular in the district.

According to the live-stock census of 1972, the number of agricultural implements used is as follows:

Name of implement	Number
Ploughs	5,67,409
Blade harrow	63,015
Wet land puddler	1,527
Leveller	62,946
Seed drills	1,853
Sugar-cane crushers	9,887
Plant protection equipment	332
Oil-engine pumping sets	8,333
Pumping sets operated by power	1,769
Persian wheels	129
Grawller tractor	78
Power tillers	92
Four-wheel tractors	726
Threshers	3,589

1	2

Harvesters	16
Power chaff-cutter	36
Ghanis	130
Others	158

The statement below shows the number of agricultural machines and implements in 1973-74:

Name of implement	**Number**
Tractors	457
Power threshers	2,201
Pumping sets	667
Persian wheels	56
Cultivators	412
Disc harrows	410
Disc ploughs	319
Mould would plough	298
Winnowing-fan	2,131
Alpad Thresher	641
Disc harrow(for pulling balance)	211
Three time cultivator	413
Others	2,011

Seed supply -- Development of agriculture depends to a great extent on agricultural inputs of which seeds form the most important part. Improved seed is defined to be one that gives a minimum higher yield of atleast 10 percent to 15 per cent over the local seed. An improved seed possesses high yielding propensity and superiority over the local variety.

Prior to Independence there were no schemes for multiplication and distribution of improved seeds with the result that agricultural development was retarded. Improved varieties of seeds of various crops were evolved at different research centres and then multiplied in the seed farms. The improved seeds thus multiplied are then distributed amongst the farmers. High yielding varieties of seeds are supplied by the government through seed stores maintained by the agriculture and co-operative department besides some private institutions and registered distributors, National seed

Corporation, Tarai Vikas Nigam etc. The agriculture department advances the seed on cash payment or as taqavi and the co-operative department on sawai basis, cash and co-operative credit. Seeds distributed on sawai basis involve repayment at the rate of 25 per cent in excess of the quantity advanced. In 1973-74 there were 52 co-operative seed stores of which only 41 were functioning. The followings statement shows the quantity(in quintals) of improved seeds of various Rabi and Kharif cereals distributed in 1972-73 and 1973-74.

Seeds	1972-73	1973-74
U.P. Paddy	4,154	3,534
Mexican wheat	2,467	2,777
U.P. wheat	4,120	2,609
Barley	18	106
Gram	452	161
Pea	684	500
Moong	--	1,200

The quantity of vegetable and flower seeds supplied in district in 1973-74 was about 900 kg. or nine quintals by the agriculture department and about 7,000 kg. or 70 quintals by other sources.

The farmers mostly depend on the seed stores for supplies of seeds. The government agriculture farms also produce improved varieties of seeds of various cereals to fulfill the requirements of farmers. The object is to meet the full requirements of the improved seeds of nearly all the crops and to saturate the district with quality seeds in the near future. The following statement shows the percentage of the seed saturation of different crops achieved up to 1973 in the district:

Name	Percentage
Paddy	53
Millets	72
Wheat	96
Barley	44
Pulses	43

Oil seeds	30

Government Agriculture Farms

In 1973-74 there were four government agriculture farms in the district namely,Bagapur, Basuli, Belipar and Natwa. The relevant details about these farms are given below:

Name of farms	Year of opening	Per hectare yield in (Quintal)
Bagapar	1957-58	31.3
Basuli	1958-59	57.2
Belipar	1958	59.4
Natwa	1961-62	53.4

Soil Nutrients :- The traditional manure, such as cattle dung,fram's refuse and stable litter are used for increasing the fertility of the soil. Farmers make their own kutcha or pukka compost pits into which rubbish is allowed to decompose and turn into manures. Now the cultivators have begun to realize the usefulness of green manure crops such as sanai dhaincha, moong, lobia and others as these provide nitrogenous ingredients to the soil and enriches it. Prior to commencement of the Five-year plans fertilizers were used by only a few progressive cultivator. But after the introduction of the plans and with extension of facilities and concession to farmers fertilizers have come to be used more and more in quantity and variety by the local cultivators. The farmers obtain seeds of green manure crops and chemical fertilizers from the seed stores of the agriculture and co-operative department, co-operative societies at the district and village levels and private agencies. In 1973-74 the area covered by the green manure crops was 9,540 hectares.

Among chemical fertilizers used by the cultivators of the district the more popular are the urea, ammonium sulphate, ammonium sulphate nitrate, ammonium chloride, calcium ammonium nitrate, dry ammonium phosphate, ammonium nitro phosphate, super phosphate N.P.K. and muriate of potash etc. The following statement gives the total quantity (in metric tons) of chemical fertilizers supplied by the agriculture co-operative department and other agencies in the district during the Fourth Five-year plan and in 1973-74:

Fertilizers	IVth Plan	1973-74
N 2	64.222	10.657
P 205	17.779	3.328
K 20	9.194	1.568

Rotation Of Crops and Fallowing

The Farmers of the district have been growing different crops by rotation in the same field for centuries. But in the past their knowledge about the advantages of the practice of growing crops in rotation was empirical rather than scientific. The agriculture department now makes the results of the latest researches regarding the rotation of crops available to the cultivators. So they are much more enlightened and try to adopt newer rotations of crops. Different rotations of crops in the district depend upon soil types and availability of irrigation. The intensity of crops of the district is 134 per cent. Generally two crops are grown in the district which are mostly wheat and paddy. Sugar-Cone has an important place due to tarai. The common rotations of kharif and rabi following by the farmers of the district are as under:

Kharif	Rabi
Paddy	Wheat,barley
Maize	Tarai
Arhar	Gram
Ground-nut	Pea
	Masur
	Sugar-cane

In the past when the land was abundant the farmers used to leave their fields fallow for at least one season because this practice enabled the fields to recuperate their fertility. But later on this practice is gradually being given up and the object is achieved by rotation of crops and mixed cropping which mean intensive cultivation, resulting in an increase in the total yield.

Mixed cultivation --The practice of growing more than one crop in a field at the same time gives additional harvests besides maintaining its fertility. Usually the pests, diseases and adverse weather conditions do not affect all the crops equally. Arhar is always sown mixed with jowar, urd and kodon. Paddy is sown with jowar and arhar, arhar with jwar, urd and arhar with ground-nut. In Rabi sugar-cane is sown with barley, toria and gram; wheat is sown with barley and tisi and gram with barley and mustard.

AGRICULTURAL CO-OPERATIVE AND JOINT FARMING

The practice of joint farming has been in vogue for centuries. Besides the use of forests, pasture lands was shared in common. The village community constructed and maintained tanks, wells and the village places (chaupals) collectively. Even to-day the farmers join each other in certain operations, e, g. ploughing, sowing, irrigating, harvesting and threshing. Farmers often pool their implements, bullocks and labour for a season or two for growing crops. Costly implements and machines are also sometimes owned or hired jointly and used in rotation.

Co-operative societies have also been formed in the villages for farming, distribution of seeds, fertilizers, implements, advancing loans, cattle breeding, supply of milk to big towns and marketing of agricultural produce. In 1973-74 there were 16 co-operative farming societies in the district which were established between the years 1958 to 1967. These societies were at Kuraghat, Belwaraipur, Baijudiha, sohradiha, Rajhi, Chargawan, Saiyapar, Chargawan, Unaula, Ledi Raji Jagdishpur, Thanaura, Barampur, Bhitirawat, Belabirbhan, Khandesari and Lehra.

In 1973 there were five co-operative marketing societies in the district established between the years between 1958 to 1963. The following statement gives the relevant details about these societies in the year 1972-73:

Name and location	Year of establishment	Quantity of produce (in quintals)	Amount of produce (in Rs)
Sahabganj Sahkari Kraya Vikraya Samiti Ltd. Sahabganj, Gorakhpur	1961	4,834	4,73,683.00
Sahjanwa Sahkari Kraya Vikraya Samiti Ltd. Gorakhpur. 10 km.on Gorakhpur-Basti Road	1961	5,466	5,91,239.00

Chauri Chaura Sahkari Kraya Vikraya Samiti Ltd. Gorakhpur 28 km. on Gorakhpur-Deoria Road	1963	6,588	8,41,600.00
Pharenda Sahkari Kraya Vikraya Samiti. Ltd. Gorakhpur. 44 km. on Gorakhpur-Nautanwa Road	1958	7,023	8,67,741.00
Nautanwa Sahkari Kraya Vikraya Samiti Ltd. Gorakhpur. 88 km. from Gorakhpur	1961	2,890	3,03,039.00

Horticulture

In the past the district was well provided with aritificial groves except the forest tracts of the north, where timber was abundant and cultivation backward. During the sceond decade of the present century the total grove area was 68,121 acres or 2.32 per cent of the entire district. The proportion was highest in Bansgaon where it was 3.8 per cent and lowest in Maharajganj where it amounted to 1.4 percent. The groves consist mainly of mango trees though other species are also to be seen, such as guavas, which are widely planted in the neighbourhood of Gorakhpur. The district abounds also in malua trees which are for the most part of spontaneous growth. The total area covered by groves of orchards was 14,499 in 1972-73.

The following statement shows main fruits and vegetables produced in the district and the area occupied by them.

Item	**Area (in hectares)**	**Average yield per hectares (in tons)**
Mango	8,572	6
Guava	2,885	4
Other fruits	3,015	--
Potato	5,153	8
Vegetables	3,350	--

It is clear from the above table that the mango occupies the most important place in the district. It is exported to other district, Banana is another important fruit which is grown especially in the adjoining areas of Napierganj. The Government Garden, Gorakhpur, Nursery of Fertilizer Corporation of India private Ltd., Gorakhpur, Nursery North Eastern Railway, Gorakhpur and six private nurseries namely Alenerbad Nursery,

Campierganj, Ramdeo Seed Co. Golghar, Bharat Beej Bhandar, Golghar, Shankar Beej Bhandar, Town Hall Market, Punjab Seed House, Golghar and Dhaarmpal Seed Store, Hindi Bazar, Gorakhpur supply seeds and seedlings of the orchardists and cultivators. In 1972-73 about 58,400 seedlings of fruit plants were supplied to cultivators through these sources. In the same year about 6,865 quintals of seeds of vegetable and flowers were supplied to the cultivators of the district through the department and other sources.

Agricultural Diseases and Pests

The pests that are most common in the district can be divided into three classes namely animal, bird and insect pests besides diseases. Depredatory animals and birds are largely warded off by individual human effort. It is the insect pests and crop diseases that are more dangerous and call for both traditional and scientific measures for their eradication. Monkeys, rats, squirrels, wild animals, parrots and some others damage the crops badly, besides a number of plant diseases which differ from crop to crop. The usual methods of protection normally provided by the cultivators are fencing, keeping watch and destruction of animals and birds whereas pests are killed by insecticides. The following statement gives the common diseases and insects with which the main crops are generally affected:

Crop	Common insect	Common disease
Paddy	Paddy bug	Khaira
	Paddy Stemborer	Bacterial blight
	Army worm	Blast
Wheat	Gujia and termite	Rust
		Smut
Pea and arhar	Pod borer	Powdery mildew
Sugar-cane	Pyrilla	Red rat of sugar-cane
	Stemborer	
	Gujia and termite	
	Sugar-cane white fly	
Mango	Mango hopper	Powdery mildew of Mango
	Mango mealy bug	Necrosis
		Black tip of mango

The measures taken in the district to fight the pests and diseases include both traditional and scientific though the rraditional ones are gradually being superseded by more rational and effective scientific methods. Among the traditional methods still practiced in a good part of the district are (a) drying the grain in the sun before storing (b) pretreatment of seed with cow dung and urine as a protective measure against the smut disease (c) mixing the

seed with wood ash and neem leaves for purposes of preservation (d) mass hunting and annihilation of caterpillars and grass hoppers and (e) sprinkling of the lime solution to control pests and diseases affecting the vegetable plants.

With the advent, however, of scientific methods, the paddy seed is now pre-treated by dusting with B. H.C.10 per cent. The important scientific methods resorted to for control of pests and diseases are dusting worth B.H.C. and sulpur, spraying with endrin, D.D.T., parathion, bordeaus mixuture and copper fungicide etc. In 1971-72 the total cultivated area was 6,56,646 ha. Out of which 3,34,481 hectares was covered under plant protection programme which was 51% of the cultivated area. Under the plant protection programme in the district spraying of chemicals was done in an area of 80.026 hectares in the year 1973-74.

There are also various leafy growths and weeds which are harmful to the crops. These area usually overcome by systematic and timely weeding, inter culturing and the deep ploughing of the fields. The plant protection staff posted in the district gives frees advice to the cultivators for raising healthy crops, including those of fruits and vegetables. They also provide insecticides, spraying and dusting machines and services of trained staff at moderate charges.

ANIMAL HUSBANDRY AND FISHERIES

Animal Husbandry

Agriculture and animal husbandry are two inseparable units of agricultural development. In the Five-year plans development of animal husbandry has been given due place. The animal husbandry department which looks after development of animal husbandry is divided into two sections viz. veterinary section and animal husbandry section. The veterinary section deals with treatment of sick animals and control of cattle diseases. The animal husbandry section is concerned with the development of cattle, poultry breeding, sheep breeding and allied schemes.

Agriculture by tractors is not popular in the district as the farmers have small holdings. The ordinary cattle of the district are small and inferior in strength as compared to those of the western districts. Animals of the better class are few and are imported mostly from Kheri and Bahraich. The vast majority of animals are fed on pual or rice straw probably one of the poorest kinds of fodder on which cattle are enabled to subsist any where. The first regular cattle census was taken in 1899 when there was a total of 6,02,778 bulls and bullocks and 8,899 male buffaloes giving an average of 2.31

animals per plough. The second census which was taken in 1904 showed a general increase when the number of plough cattle rose to 6,66,827 of which only 5,633 were male buffaloes. Young stock had remained almost stationary rising from 5,05,293 to 5,16,679 but there had been considerable increase in the number of cows, which had risen from 4,11,012 to 4,57,031 while cow buffaloes showed a total of 1,26,170 as compared with 1,17,155 at the former enumeration. The census of 1909 showed an increase when bulls and bullocks aggregated 6,88,321 or 2.33 per plough and male buffaloes 4,044. There were 4,22,693 cows and 1,11,883 cow buffaloes while the total of young stock was no less than 6,12,865. The sheep numbered 58,678 and goats 6,12,865 in 1909.

The statement given below shows the figures of live-stock population in the district according to the census taken in 1956, 1961 and in 1972:

Live-stock	**1956**	**1961**	**1972**
Cows and bulls	7,92,984	8,09,396	7,93,953
Buffaloes	1,40,507	1,86,979	2,13,454
Sheep	25,902	30,398	22,864
Goats	1,45,602	1,77,579	1,75,582

Sheeps and goats are generally reared with the object of obtaining their hide and flesh. Occasionally they are folded on the fields for manure. Goats are of a small and inferior type, yielding little milk and requiring scanty attention. Sheep provide coarse wool which is used by the villagers.

Development Of Live-stock

The agricultural improvement is impossible without cattle development. The cattle provides the required motive power for various agricultural operations including ploughing, harrowing, sowing, irrigation etc., besides providing the farm yard manure and milk. Moreover, the bullocks play an important role as a draught power for pulling carts which are still the chief means of rural transport. Development of cattle both for milk-yield and draught capacity is, therefore, very necessary.

The statement below shows the area (in hectares) covered by various fodder crops during 1969-70 to 1973-74:

1969-70	1970-71	1971-72	1972-73	1973-74
258	325	245	289	372

Cattle development has been receiving government attention since the start of the Five-Year plans and numerous schemes were introduced in the district for the development of cattle. stud bulls and cattle of good breed are imported in the district mostly from Haryana and Punjab. A number of schemes for intensive cattle development have also been launched in the district.

To improve the breed of cattle the government started artificial insemination scheme in the district. There being 17 such centres and 27 artificial insemination sub-centre in 1973-74 where 30,401 cattle were artificially inseminated in that year. There were 48 stock-man centres and stock-man training centres in 1973-74. Bulls,bucks,boars and rams are also provided at a very nominal price to private breeders. There was one semen collection centre for improvement in the breed of cattle. Deshi and inferior type of cattle are castrated. Improved type of natural and artificial insemination is done for which no fee is charged by the government.

The following statement shows the number of cattle castrated and that provided with artificial insemination service during the period from 1969-70 to 1973-74:

Period	No. Castrated	No. Inseminated
1969-70	20,111	15,296
1970-71	27,130	19,839
1971-72	36,906	24,262
1972-73	41,989	29,142
1973-74	43,865	30,401

Natural breeding by barbari bucks is dine at veterinary hospitals of the blocks for which a fee of 50 paisa is charged. At present 78 rams are operating for improved breeding. The work of artificial insemination in goats is done at the veterinary hospital of the district headquarters. There were 31

natural breeding centres and one artificial breeding centre of goats in the district in 1973-74.

The following statement shows the number of cow, bulls, bucks and rams distributed from 1969-70 to 1973-74:

Name of cattle	1969-70	1970-71	1971-72	1972-73	1973-74
Cow bulls	27	5	15	14	1
Bucks	23	4	16	8	10
Rams	4	6	27	55	--

The government also provides loans and taqavi for purchase of cattle and buffaloes. In 1973-74 the amount of taqavi and loans was Rs 6,840 for purchasing cattle and buffaloes.

Poultry breeding as an important subsidiary occupation is becoming very popular among farmers for some years.

According to the live stock census of 1972 the poultry numbered 1,02,381 out of which 20,157 were cocks, 42,362 were hens, 32,616 were chickens, 5,212 ducks and 2,034 other species. The district has a government poultry farm where there are 1,200 such hens which give 27 lacs of eggs. Besides, the total number of improved varieties of cock and hens was 65,866 in 1974. The total number of improved birds distributed by government poultry farms was 43,877 and by other sources was 31,720.

In 1973-74 there were two village group blocks at Sandar and Bhathat where cross breeding was done through jersy bulls. At the only veterinary hospital at Siswa Bazar the female pigs were naturally inseminated through white Yorkshire boars and a fee of 10 paisa each was charged.

For the development of sheep there were two government sheep wool extension centres in the district in 1973-74 where there were 50 Bikaneri sheep in each. These sheep were distributed among shepherds during tapping season for improvement in their breed. To control parasitic disease among sheep the programme of giving medicine collectively was launched.

Housing and Feeding

Cattle are generally housed in kutcha sheds with thatched roof. Only few well-to-do persons have pucca and well ventilated byres for their cattle.

Government also provides financial assistance to the cultivators for construction of community cattle sheds.

The husk and dried and crushed stalks of various crops are also used to feed the cattle. Due to increase in cultivated land, waste land pastures are decreasing. Grazing facilities for cattle are also provided by the government and the gaon panchayats in the forests and waste lands under their respective control. Grazing is allowed in private groves and harvested or fallow fields. On canal banks and within the precincts of the railways grazing is permitted according to stipulated conditions. In 1970-71 the permanent and other pastures measured 467 hectares and fallow lands measured 16,604 hectares. In 1972-73 the total area covered by cultivable waste lands, pastures and grazing grounds, forests and fallow land was 62,669 hectares and barren and uncultivable land was 4,573 hectares. Under the scheme of Development of Nutritious Fodder the seeds of improved fodder crops such as M.P. Chari, lobia berseem and jaee etc. are provided to cultivators at subsidized rates in order to encourage their cultivation.

The agriculture is badly affected by stray cattle and wild animals. The old and disabled animals are liability on farmers and thus affecting look-after of other strong animals. A district Gosadan has been established at Madhwalia (Nichlaul) for this purpose where stray and old animals of the whole district are kept. About 200 cattle had been sent there till 1972-73.

To strengthen the feeling of having animals of good breed cattle exhibitions are organized every year.

CATTLE DISEASES AND THEIR TREATMENT

Due to unhealthy climate the district has never been free from cattle diseases in some form or other. The most common cattle diseases are foot and mouth diseases which is least deadly. Rinderpest and anthrax and Haemorrhagic septicemia or malignant nose throat prevalent in the low-lying areas are also not uncommon. Occasionally rinderpest assumes an epidemic form during or immediately after the rains particularly in the Mahrajganj and Gorakhpur tahsils. The district is known to be unhealthy for horses and in certain localities tetanus is prevalent while glanders and worm in the eye occur with considerable frequency. Fowl pox and ranikhet disease are common among the birds of the district. Old superstitious practices and taboos are still rife among the villagers of the district . Consequently, they do not always take recourse to modern medicines and methods of treatment for the prevention and cure of animal diseases.

The treatment advocated by rural cattle doctors for foot and mouth disease is the application of lime to the feet, the fomentation of the mouth and the surrounding parts with a hot decoction of the bark of the polas or dhak tree and also occasionally to make the affected cattle stand in pools of muddy water.

Scientific remedies included vaccination against various diseases.

With the establishment of 33 veterinary hospitals and 48 stock-man centres where first aid is given to animals, the rural folks are realizing the efficacy of modern methods of prevention and treatment of cattle diseases A pashu nirodhak kendra has been established with a view to avoid infection in cattle from Nepal. For prevention of infectious diseases thousands of animals and fowls are vaccinated free of cost every year. The statement below shows the number of animals treated and vaccinated against various diseases in the district during the period from 1969-70 to 1973-74:

Year	No.of animals treated	No.of animals vaccinated
1969-70	1,16,779	1,91,434
1970-71	1,84,169	2,89,226
1971-72	1,92,009	1,91,831
1972-73	1,71,017	3,47,046
1973-74	1,85,104	3,39,100

Fisheries

This district is quite rich in natural fisheries resources. A good portion of the district is comprised of low-lying, water-logged areas which get inundated during the monsoon. The main river of the district are Ghaghra, Rapti, Rohin, Ami, Kuwano and Taraina. These and other rivulets and Nalas get flooded each year and although they create havoc in more than one respect, they certainly increase the fisheries resources of the district. Besides, there is a very large number of lakes and big tanks in the district which get naturally stocked during the natural floods. When the water recedes, a large number of fishes of various varieties get stranded and remain in the said lakes and tanks till the next floods. More than thirty different species ate commonly found in the district of which rohu (Labeouohita) and mahsir (Barbas spp), are good for table. Besides there are many other such as bhakur(catla catla) karaunch (Lobeo calbasic), tegar (Mystus batrachus), patra (Notoplerus notopterus), putia (Materognathus aculeatum).

Fish are caught with the rod and line, with bamboo spears, and with nets of varying size and pattern. One kind is funnel shaped and is pushed in front of the fisherman' s boat. Another, resembling an English shrimping net is employed in shallow water. The maha jal or seine is sometimes used in the rivers and it requires two or three boats, by this means a sweep of about 200 metres is obtained. It is rarely adopted as it is a deadly device, causing for greater destruction of younger fry. According to the live-stock census of 1972 the cast nets numbered 2,898 out of which 287 were made of cotton thread and 58 were made of artificial thread. Fish are caught by Mallahs, kahars, pasis, Musalmans and many others, though fishing as their sole sole means of livelihood is carried on by very few.

According to the live-stock census of 1972 the number of persons engaged in different fields of fishing industry was 1,130 out which 684 were males, 161 females and 285 children. The persons actually engaged in fishing numbered 827 out of which 307 were engaged for full time and the rest were for part time. The persons engaged in allied professions numbered 467 out of which 325 were engaged in selling of fish, 125 in weaving and repair of nets and the rest in protection of fish.

There are 360 tanks which retain water throughout the year and they cover an area of 3,685 hectares. These tanks are very useful for producing fish. These give an yearly yield of about 1,309 quintals of fish. An area of 742 hectares of tanks is managed by fisheries department and scientific pattern of fish production is adopted only in 125 hectares of tanks. Besides, there are 2,288 small tanks which cover an area of 4,616 hectares. Fishing in rivers is not done in a planned way. Seasonal tanks cover an area of 931 hectares where product of fish is negligible.

The following statement gives some details about nurseries, number of fingerlings raised by them and their prices during I,II,III and IV plan period.

Plan	No. of nurseries	No. of fingerlings	Price(in Rs)per thousand
First Five-year Plan	N.A	2,28,719	4.00
Second Five-year Plan	6	13,35,265	10.00
Third Five-year Plan	16	27,75,755	15.00 and 18.00
Fourth Five-year Plan	9	10,09,920	40.00

In 1974 the total production of fish from departmental waters was about 550

quintal. A Matsya jivi sahkari samiti Ltd. at Narharpur P.O. Barhalganj Gorakhpur was established in 1970 for the development of pisiculture.

Forestry

Forests have a considerable influence on the economy and development of the district, though they are far less extensive than was formerly the case. The chief produce of the forest is sal (shorea robusta) in the shape of both timber and fuel besides fodder and other forest produce. They reduce soil erosion and thereby increase fertility of the soil. Besides forests have a moderating influence against floods. Forest provide an industrial base to certain industries besides giving seasonal employment to thousands of people in cutting and felling of trees and expert operations. In addition, about 3,000 landless families have got sustained employment as taungya cultivators. In 1970-71 the total area under forests in the district was 55,628 hectares. The forests are situated in Mahrajganj Pharenda and Gorakhpur tahsils and large proportion consists of scrub jungle most of which lies in Pharenda tahsil. This also includes much grass land,which in many places adjoins the jungle and is of the great value for grazing a great number of cattle. The most important timber species supported by this is sal. The local names of the common associates of sal (shorea rubusta) which forms an almost pure crop are Asna, Bahrea,Kara, Karma,Asidh ,Jigna, mahua,Domsal,Jamun,Bijaisal and Ficus.

The main forest products are railway sleepers, hydel poles,constructional timber, firewood, thatching grass,Fish, boulders, monkeys, honey and wax, hides and horns, cane,flowers and fruits of mahua (Barsia latifolia) and mongoes and medicinal plants. Except for timber which is exported in considerable quantities to outside the district, most of the products have local market. Railway and hydel departments have been the biggest purchaser of timber in shape of railway sleepers and hydel poles in recent years. The total value of sleepers supplied amounted to Rs 9,42,388 in 1972-73. The value of hydel poles supplied in the year 1972-73 was Rs 9,85,200.

The out-turn of forest products during 1972-73 is given below:

Type of produce	Quantity or value
Timber	54645 cm.
Railway sleepers	29860 (Nos.)
Hydel poles	21087 (Nos.)

Firewood	1,10,825 cm.
Thatching grass	6,026 quintals
Fish	1,032 ,,
Flowers and fruits (mahua and mangoes)	Rs. 34,935.00
Hides and horns	Rs. 1,525.00
Medicinal fruits	Rs. 910.00
Honey and was	Rs. 4,240.00
Cane	20 bundles
Boulders	Rs. 63,000.00
Monkeys	Rs. 64,300.00
Wild cattle	Rs. 22,720.00

State Assistance to Agriculture

Cultivators are sometimes not in a position to make permanent improvements on their lands and to purchase improved implements, chemical fertilizers and improved varieties of seeds due to paucity of funds. The State gives assistance to the cultivators of the district in the form of taqavi and loans for purchasing seeds, constructing irrigation wells and improving their lands. In 1972-73 primary agricultural loan committees advanced the loan for agriculture amounted to Rs 1,70,65,565 and the loan for purchasing bullocks amounted to Rs 6,14,855 that year. The amount of taqavi given by agriculture department was Rs 1,03,51,439 in 1972-73.

NATURAL CALAMITIES

The success of agriculture depends primarily on the monsoon rains. An ideal year would be one in which there are no drought or floods. Successful crop production depends not only on the total seasonal rainfall but also on the proper distribution of precipitation in time and space.
The abnormalities or vagaries of the monsoon may either cause floods by excessive rains or drought by scanty rains.

Famines

Droughts of the district have been more destructive than its floods, but its rainless years have not been frequent for only seven have occurred since its cession to the British (in 1801). One befell during the long reign of Aurangzeb (1658-1707) and probably in 1661. It is said that rainfall failed for two years and that the Rapti ran almost dry. The raja of Satasi, the Sarnet chieftain of Satasi whose stronghold was at Ramgarh Tal (Bhauapar)(in the city of Gorakhpur) nearly died of starvation. The second

famine occurred about 50 years later during which a large number of persons are said to have perished. Buchaman tells a somewhat strange story of a famine which in 1769 affected even the beasts of prey. "Most of the herbivorous animals having then perished, the tigers were famished, and fixing in great numbers upon the town of Bhauapar, in a very short time killed about 400 of its inhabitants, the remainder fled leaving the town for years deserted." The partial failure of the autumn crop of 1768 and of the succeeding Rabi caused prices to rise to unprecedented height. It is impossible to say in what degree Gorakhpur suffered during the great famine of 1783 but in all probability the district did not escape unscathed, as the distress was general.

The first drought recorded after cession was that of 1803 when the rains ceased in the middle of August destroying the late rice and injuring the other crops, while fears were entertained for the Rabi sowings. A partial failure of the autumn crop and some trifling difficulty in collecting the revenue were its only out-come. No remission was found necessary. The next scarcity occurred in 1809. Although it affected only the south of the district it was within certain limits severer than that of 1803, and the spring crop was considerably damaged at places where no means of irrigation existed. In 1814 a temporary failure of rain caused some damage to the autumn crop. Similar was the position in 1819 and in 1825 when scarcity was felt in the wet of the province. The next serious drought was in 1837, when the collector reported that the want of rain and consequent depletion of natural water stores had raised the price of grain from 60 seers per rupee to only 15 trees, and that of wheat from 33 to 14 seers, but no relief measures were undertaken, and the remissions of revenue allowed amounted only to Rs 208 for this district. During the next twenty years Gorakhpur suffered more from inundation and excess of water than from want of it, but in 1850 there was again a partial failure of the autumn crop owing to insufficiency of rain. The rainfall was very short in several part of the district in 1860, but the tract was quite unaffected by the famine which raged in the western divisions, nor did the drought of 1864-65 had any more serious consequences than a rise in prices and an increased volume of emigration eastwards. In 1868-69, which was to so many districts a year of exceptional drought and distress, the Gorakhpur district escaped with little injury and was beyond the scope of relief operations. Prices were remarkably high and this must have affected certain classes of population and some difficulty was experienced in collecting the revenue, though no remissions were ultimately found necessary.

The lot of the district was less easy in 1873-74 when the first real famine visited the district.

Famines of 1873-74 reduced the outrun to half the normal. The produce in Mahrajganj tahsil was extremely scarce, many localities obtaining no more then one-eight of the usual amount . The pressure of high prices was greatly enhanced by exportation to Bengal which continued till the rapid rise of prices in January, 1874 caused a cessation, the end of that month witnessing importation from Avadh and the west. This led to heavy emigration.

The results of insufficient or inopportune rain were aggravated by the Bengal famine, which caused an enormous export of grain stored in previous years. The rains of 1873 commenced a fortnight later than usual and stopped prematurely. Sowings were delayed and eventually the crops withered. The cultivators showed the greatest energy energy in preparing and irrigating the land for the Rabi sowing but no rain fell till the beginning of February. Distress was so acute that it became necessary to open relief works and distribute food to a considerable number of persons. It is to be noticed, however, that but for the drain on district produce caused by famine in the Lower provinces, distress would probably have been slight only, that it was chiefly the non-agricultural portion of the population which availed of the relief works. The total expenditure on relief works was Rs 3,20,445 and the aggregate attendance was 5,667,145. The poor houses supported 141,981 persons at a cost of Rs 5,865 raised principally by subscriptions. In the workhouses 103,015 persons, chiefly women and children were fed at a cost of Rs 7,353 and were employed in various occupations such as weaving, rope-making spinning and basket work. In addition, outdoor relief was given to a small number of the poor but respectable women in Gorakhpur, chiefly of Muscleman families. Half the revenue for the year was remitted in the Mahrajganj tahsil, but elsewhere the demand was eventually collected in full, the total loss on this account being Rs 66,111.

In 1875 there was again some distress owing to the same natural causes and had there been a similar export of grain, there would probably have been just the same state of affairs as in 1874.

The famine of 1877-78 was less serious and extensive. The late rice was saved in the north, but the early rice was an almost entire failure in the south and west. The classes which suffered most were the artisans, weavers and day labourers, and in the cold weather much distress was felt, necessitating relief measures. On the first January a work was opened and in the beginning of February a poorhouse was also opened. The total number of persons employed on relief works was 160,739, of whom more than half were women and the cost was Rs 10,708. The famine on this occasion was of a strictly local character though the failure of the crops was almost

general, the northern parganas alone escaping. The revenue was collected in full and the distress was limited to a few classes who suffered much from the extra ordinarily high prices than prevailing.

Scarcity of 1896-97 was caused due to late and uneven distribution of rain which affected certain tracts greatly. Timely aid in the form of advances to the amount of Rs 1,92,214 given for the excavation of wells and the purchase of seed gave an excellent Rabi harvest. High prices necessitated the gratuitous relief and establishment of poorhouses in the distressed tracts. Five test works opened between the 20th of December and the 6th of January could not attract many workers but on the 6th of January famine was declared and after a week the first regular relief work was started. By May the number went up to 23. In May and June an amount of Rs 80,0000 was distributed for the purchase of seed and cattle, while the advent of the monsoon in 1897 removed all further anxiety. Poorhouses and gratuitous relief remained open till the middle of September 1897, and the total amount expended on these was Rs 1,40,000. In addition a large amount was provided from private sources by which the Gorakhpur and Barhaj(now in Deoria) poorhouses were at first maintained and the local committee expended Rs 3,720 on these subjects and subsequently distributed blankets costing Rs 1,156 and Rs 1,138 for seed.

Floods

Though this district rarely suffers from bad harvest due to scanty rainfall, injury to the Kharif crops of the kachhar area by floods is not an unusual feature, and when the floods are abnormal, relief measures become necessary. Such floods damage the Kharif crops but are beneficial to the Rabi by depositing silt and increasing the fertility of the soil near the banks of the rivers. The frequency of flood has rendered the people accustomed to a sort of island life.

The earliest great flood of which any record is extant, occurred in 1823 when a sudden rise in the Ghaghra caused extensive inundation in the parganas of Dhuriapar and Chillupar. The waters of the Rapti were held up and this river reached in a similar manner on the Ami making the city of Gorakhpur an Island in a waste of waters, at the same time much damage being done while at the same time communication with Azamgarh was suspended for several days. In 1839 a flood of great magnitude was experienced in the Rapti valley. This was followed by a similar inundation in the succeeding year, though neither was so serious as that first mentioned. No further flood is chronicled till 1871, in which year, as again in 1873, extensive damage was done to fields and buildings. In 1889 the whole district suffered greatly. The Rapti rose on the 4th August to a height of about 77metres above the

sea near Sahjanwa, while the Rohin at the Chillua bridge rose even higher (84m). Three years later in 1892 the Rapti flooded the city and endangered the pontoon bridge at Bhauapar, while in the same year the Ghaghra ran very high. Another sudden flood of unusual magnitude occurred in 1903, when the water rose at the Rapti and Rohin bridge to about 83 metres each. Flood of 1906 was of more destructive character, when the water rose to within three inches of the maximum recorded in 1889. In the latter half of July 1910 the rainfall, especially in the north of the district was exceedingly heavy. From the 16th to 30th July about 21 centimeters of rains was recorded at the Mahrajganj tahsil. As result two large irrigation drains on the peppi estate in the north of Basti district burst and their contents went to swell the floods in the Rapti valley.

Anxiety was first felt when Rapti rose with great rapidity. By the 31st (July) it reached its maximum which was also the highest flood level on record. It was on the 27 the July that extraordinary efforts were necessary to prevent the water sweeping over the Azamgarh road and flowing back in the city. Notwithstanding the enormous area covered by the floods, only one human being was drowned. Nor was the mortality among cattle serious. The grazing grounds were, however, under water for a long time and there was widespread loss of fodder. Some of the reserved forest blocks were thrown open to free grazing and passes for 13,200 cattle were issued for these areas. A small amount, of relief was granted in the shape of doles of grain, the funds having been obtained by public subscription and administered by committees in the affected areas.

Excessive rains during the monsoon of 1972 caused heavy floods which damaged the low-lying kachhar tracts. Similarly the heavy and continuous rains of July and August in 1924 flooded the Rapti and other rivers which damaged crops of about 405 village of Sadar tahsil and about 71 village of Mahrajganj tahsil. Slight damage was also done to certain villages of Bansgaon and Hata tahsil(now in Deoria district). The heaviest floods known for years in the district which was caused by excessive rains of August, 1925 washed away a number of villages on the banks of rivers and caused the failure of crops in many villages in the normal kachhar areas of Sadar and Mahrajganj tahsils. The ill-distributed and deficient rainfall in 1926 and 1927 injured the Kharif crop and also caused slight damage to the Rabi crop where irrigation was wanting. In 1927 the damage was more widespread and affected chiefly the kachhar area. Revenue of about Rs 3,918 was suspended that year. The monsoon of 1928 was marked by excessive rain in July and scanty rainfall in August and September. The excessive rains caused severe floods in the Rapti and seriously damaged the kharif crop neccessitating measures while the subsequent scanty rainfall injured both early and late rice crops. In 1921 the monsoon was fitful and erratie. There

was a shortage of rain from June to August, but in the second half of September, incessant and excessive rainfall flood the Rapti and Ami rivers and seriously damaged the early and late rice crops, including arhar in the Kachhar and low-lying areas. Similarly the monsoon of 1930 was not satisfactory and caused floods in the Ami and Rapti rivers which damaged Kharif crops in low-lying tracts. The sporadic hailstorms in Bansgaon tahsil caused considerable damage to standing crops necessitating remissions. Excessive rains in July, 1931 flooded the Rapti river injuring the Kharif in Kachhar and low-lying tracts of Sadar and Bansgaon tahsils.

The following statement shows relevant details regarding the calamities that affected the district from 1967-68 to 1973-74:

Nature	Year	Remission in land revenue(in Rs)	Suspension of land revenue(in Rs)
Flood	1967-68	--	9,812.79
Hailstorm	1967-68	1,32,061	--
Flood and drought	1968-69	52,289.90	1,085.28
Flood	1968-69	3,32,996.13	--
Flood	1970-71	2,31,795.72	--
Untimely rain and hailstorm	1970-71	1,42,317.40	--
Flood	1971-72	59,590.17	--
Droughts and flood	1972-73	41,770.66	--
Flood and hailstorm	1973-74	1,17,020.51	--

68,464.16 for land development works