Chapter II
CULTURAL SETTING

Section A : The People

Distribution of Population

The distribution of population in the district is shown by Fig. 18*. The physiographic control of the distribution of population becomes evident on comparing this map with Figs. 6 and 14 showing drainage and physiographic units, respectively.

The lower levels of the river valleys are not favourable for large human settlement, since they are liable to floods and suffer from frequent changes in the river courses. They are, therefore, the least populated parts of the district. In the areas of sandy and infertile soils also, the population is not dense, so that the bhurlands of the west and the uplands of Thakurdwara in the north-east are among the less densely peopled areas. The bangar uplands are the most densely populated tracts of the district since they comprise areas having fine soils, mostly even topography and safe from floods. Since soils comprise the main natural resource of the district and most people are tied to them in every walk of their life, better soils truly indicate more suitable areas for denser settlement. Higher densities of population, here, have also contributed towards relatively more intensive exploitation.

* The map is based on the Census 1951. The dots have been placed as near the settlement sites as possible on the quarter Inch map, which has been used as the base map.
of soils in these areas by the rural communities.

Density of Population

The Census of 1951 records a population of 1,660,955 and a gross density of 717 persons per square mile in this district. This density is much above the State average of 557*.

If we work out the density of population per acre under tillage, taking the total cultivated area at 1,080,000 acres, the normal since the beginning of this century, it amounts to 1.54 persons. Even the density of rural population amounts to 1.17 persons per cultivated acre.

Appendix table XII gives the density of population in the sample villages. It shows that the distribution of population is quite uneven in various parts of the district. The density varies both from village to village and from tract to tract. The gross density is the highest in the Central uplands, where villages like Baiadurpur (1.40), Khabri Gandu (1.12), Nagla Kathair (2.38) and Khidmatpur Latifpur (2.01) have more than one person per acre. It is also high in the higher levels of the higher levels of Samganga khadar where Birpur Baryar (1.17) and Bachharya (1.52) have more than one person per acre. In the Udla and Panmar tract, it is between 0.50 and 1.00 persons per acre, e.g. Semli has 0.72.

* Population figures are based on the Census of India 1951, Distt. Census handbook, op. cit. Fig.19 shows the main demographic features graphically.
Rizam Bagla has 0.65 and Khaliqpur Kalan has 0.80. In the trans Ramganga tract, it is still lower e.g., Tikhunti has 0.37 and Ramnawala has 0.25. But, it is the least in the bhurland where Bagarhpur Chhoriya has 0.21 and Chakikhora has 0.10. In the Ganga khadar Katena old and new combined have a gross density of 0.60 person per acre but Bhagwanpur khadar is unpopulated so that the average density of this tract works out as 0.38 persons per acre.

The density of population per cultivated acre is somewhat higher than the gross density, but its distribution in various tracts is almost similar to that of the gross density except in the Ganga khadar where Katena old and new combined have 0.93 person per cultivated acre and together with Bhagwanpur khadar the average works out as 0.76 person. In comparison to it, the Sot valley, represented by Pahladpur, shows a gross density of 0.53 per acre and the density per cultivated acre as 0.56.

The difference between the density per cultivated acre and the gross density is the highest in the Ramganga khadar (Birpur Baryar + 184.6%) and the Ganga khadar (Katena + 55.0%). It is also high in the bhurland (Bagarhpur Chhoriya + 23.8% and Chaki khora + 20.0%) and Thakurdwara upland (Ramnawala + 20.0%) in all these areas some land
remains uncultivated owing to the soil defects, floods and vagaries of rainfall. In the Central uplands, bahadurpur shows a difference of +31.4% owing to its extensive orchards, agriculturally unproductive land, etc., which comprise 21.02% of the total area of the village. Elsewhere, the difference is not much marked since a very high percentage of the village areas is cultivated.

**Rural-Urban Population Ratio**

Out of the total population of 1,660,955 as many as 1,264,595 persons live in the villages. In other words rural population amounts to 3.25 times the urban population. There are 15 townships in the district, of which 10 have only five to ten thousand persons each, while the eleventh, hasanpur, hardly exceeds 15,000. There are, actually, four towns worth the name, i.e., Amrcha (59,105), Chandausi (36,689), Moradabad (161,854) and Sambhal (61,429). Thus, present urban population of the district does not, in fact, exceed one-fifth of the total.

**Growth of Population**

The following table shows the rural and urban population of the district during the last six census years and also indicates the trends of growth.
Table 3

Growth of Population

<table>
<thead>
<tr>
<th>Census Year</th>
<th>Population</th>
<th>Variations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urban</td>
<td>Rural</td>
</tr>
<tr>
<td>1901</td>
<td>249,858</td>
<td>942,534</td>
</tr>
<tr>
<td>1911</td>
<td>258,100</td>
<td>1,005,226</td>
</tr>
<tr>
<td>1921</td>
<td>259,610</td>
<td>939,129</td>
</tr>
<tr>
<td>1931</td>
<td>295,042</td>
<td>989,666</td>
</tr>
<tr>
<td>1941</td>
<td>349,782</td>
<td>1,123,369</td>
</tr>
<tr>
<td>1951</td>
<td>396,360</td>
<td>1,264,595</td>
</tr>
</tbody>
</table>

A study of these figures, particularly of those of the last two columns shows that

(i) Until 1921, there was little net gain in the number of people as compared to 1901. Actually, the rural population had decreased somewhat, while the urban population had only slightly increased,

(ii) Since 1921, the population has been growing continuously in both urban and rural areas,

(iii) The rate of increase in the urban population has been quite phenomenal until 1941; that in the rural population was comparatively moderate,

(iv) The rate of increase in the case of the urban population showed a sharp decline at the census of 1951,

(v) The rural population had more or less stabilized its rate of increase at the 1941 level.

Fig. 19A shows these facts graphically.

The population figures pertaining to 1951 may, however, be taken out of date in 1960. On the whole, since 1901, the population of the district has recorded an increase by 39.3%. But, during the ten-year period of 1941-51 the total increase was 187,804 persons or 12.7%. The increase in the rural population was 141,226 persons or about 12.6% and the increase in the town population was 46,578 persons or about 13.3%. If we take the same rate of increase to be operative after 1951, the mid-census total population of the district, in 1960 should stand at about 1,819,150. Out of that as many as 1,384,099 persons must be living in the villages. This means that the present gross density of population in the district amounts to about 794 persons per square mile and the density of population per cultivated acre to about 1.57 persons.

With a view to assessing the rate of growth of population since 1951, the writer conducted a census survey in some of his sample villages in October-November 1958 and the results of survey are summarized in the table below:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahadurpur</td>
<td>459</td>
<td>86</td>
<td>576</td>
<td>121</td>
<td>25.5</td>
<td>40.7</td>
</tr>
<tr>
<td>Khaliqpur</td>
<td>519</td>
<td>102</td>
<td>573</td>
<td>108</td>
<td>19.4</td>
<td>5.9</td>
</tr>
<tr>
<td>Chaki khera</td>
<td>37</td>
<td>6</td>
<td>58</td>
<td>11</td>
<td>56.7</td>
<td>83.3</td>
</tr>
<tr>
<td>Ramnawala</td>
<td>180</td>
<td>36</td>
<td>356</td>
<td>78</td>
<td>97.8</td>
<td>116.7</td>
</tr>
<tr>
<td>Average</td>
<td>299</td>
<td>57.5</td>
<td>391</td>
<td>79.5</td>
<td>50.8</td>
<td>28.3</td>
</tr>
</tbody>
</table>

** The cultivated area in the year 1958-59, was according to the Sadar Ganungo's Milan Khasra, as 1,160,046 acres.
Those figures show that there has been an overall increase of 30.8% in the population of these sample villages since 1951. Taking severally, these villages show a lot of difference in the rate of increase of population but, in none of them it is less than 10%. The least increase is that shown by Khaliqpur Kalan, a sample village from the Udla and Ramnur tract. It seems to be due to the indifferent economic conditions of the village resultant from the defective drainage of the area. The population increase of Bahadurpur (25.5%) seems to be normal for the better villages of the Central uplands. The population increase of Chaki khera (56.7%) and Namnawala (97.8%) is rather abnormal. In the case of Chaki khera it owes to the improving conditions of the village, which was unpopulated in the early part of this century. Its tillers live in the neighbouring villages, particularly Salempur Gosain. Still 89.6% of them are non-residents. The construction of the road and railway line from Gajraula to Lijnor seems to have encouraged the people to settle in the villages of their cultivation, and Chaki khera is one of them. But, only the more enterprising people have settled here so far. Gradually, more of their group are following suit since those who have settled here want more of their relatives and friends to come here in order to make the settlement sufficiently big and secure. An unusual feature
of this settlement is that every family keeps a healthy
dog to keep a watch at the door. This indicates the lack
of the feeling of security in this small settlement.

As regards Hammawala, the story is quite
different. The 97.8% increase in its population during
the period 1951-58 is due to the gradual rehabilitation
of the refugee families from Punjab in this village. By
1951, thirty six families were settled in this, formerly
deserted, village. By 1958, their number had increased to
78 i.e. by 116.7% while the increase in population was
97.8%.

Thus, various factors are working in favour of
the increase of the population in this district and the
pressure on its limited land is increasing day by day.

**Households**

The population is divided among a large number
of household units*. The number of households according
to the Census of 1951 is 255,605 in rural areas and 75,795
in urban areas**. It gives an average of 4.9 persons per
household in the former areas and 5.2 persons per house­
hold in the latter. The rural household has shown an
increase in its size between 1931-51, but the urban house­
hold has shown a decline since 1941 as is clear from the

table below:

* A household is any commensal unit living in a census house
which is a human dwelling having a separate main entrance

** Fig.19b illustrates these figures.
Table 5

<table>
<thead>
<tr>
<th>Census Year</th>
<th>Rural Persons</th>
<th>% difference from last census</th>
<th>Urban Persons</th>
<th>% difference from last census</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921</td>
<td>4,596</td>
<td>-</td>
<td>5,080</td>
<td>-</td>
</tr>
<tr>
<td>1931</td>
<td>4,500</td>
<td>-2.1</td>
<td>5,141</td>
<td>+ 1.2</td>
</tr>
<tr>
<td>1941</td>
<td>4,624</td>
<td>+2.8</td>
<td>5,561</td>
<td>+ 8.2</td>
</tr>
<tr>
<td>1951</td>
<td>4,946</td>
<td>+7.0</td>
<td>5,170</td>
<td>- 7.0</td>
</tr>
</tbody>
</table>

The population survey conducted by the writer has, however, shown that the strength of the rural household is also declining in general. Table 6 compares the results of this survey with the 1951 census.

Table 6

<table>
<thead>
<tr>
<th>Sample Village</th>
<th>Persons per thousand households 1951</th>
<th>Persons per thousand households 1958</th>
<th>% variation over 1951</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahadurpur</td>
<td>5,337</td>
<td>4,760</td>
<td>-10.81</td>
</tr>
<tr>
<td>Khaliqpur Aalan</td>
<td>5,088</td>
<td>5,306</td>
<td>+ 4.29</td>
</tr>
<tr>
<td>Chakihera</td>
<td>6,167</td>
<td>5,273</td>
<td>- 1.44</td>
</tr>
<tr>
<td>Ramnawala</td>
<td>5,000</td>
<td>4,564</td>
<td>- 8.72</td>
</tr>
<tr>
<td>Average</td>
<td>5,196</td>
<td>4,915</td>
<td>- 5.58</td>
</tr>
</tbody>
</table>

From these figures it is clear that excepting Khaliqpur Aalan, all sample villages have shown a considerable decline in the household strength. There is an average...
decrease by 5.58 percent. The largest decrease is noticed at Bahadurpur which is the least in the lot. Only Khalifpur Kalan in the Udla and Panmar tract has shown an increase in its household strength. Seemingly the better the economic conditions of a tract, the greater is the tendency for its household strength to decline. It may also be due to the growing struggle for existence owing to the diminishing size of landholdings with increasing pressure of population. In the case of Bamnavala in the uplands of Thakurdwara, the decline in household size seems to be due to the special conditions of the refugee settlers whose economic resources are so poor that the head of a household cannot afford to keep many dependents and is anxious to separate from even adolescent members of his family so that they might shoulder the responsibility of their living. In the urban areas the growing tendency is for the married young couples to live separately. Thus the number of households is increasing and along with that the problem of housing, too. According to the Census of 1951, in the rural areas, the density of households is 0.18 per acre and that of houses is 0.13 per acre. In the urban areas, the density of households is 3.4 per acre and that of houses is 2.20 per acre.

**Male Female Ratio**

In every thousand households in the rural areas,
there are 2,655 males and 2,291 females showing an excess of 364 males. In every thousand urban households there are 2,736 males and 2,434 females giving an excess of 302 males. In the district as a whole, for every thousand males there are 886 females; that in the villages being 862, while that in the towns being 877. In Moradabad city it is 840 only, but in Sambhal it is 907 and in Amroha 964.

Age Structure.

The population is on the whole progressive; 39.5% of the people are under 15 years of age and 8.5% of 55 years and over. Thus the ratio of the middle aged persons is the maximum, i.e., 52%. If they are healthy they are expected to be doing some work, productive or auxiliary.

Livelihood Pattern.

According to the Census of 1951, of the total population 66.9% people depend on agriculture (rural 83.7%, urban 13.3%) for their means of livelihood, whereas only 33.1% (rural 16.3%, urban 66.7%) depend on non-agricultural pursuits*. Even 13.0% of the towns-people depend on agriculture. Yet this district is one of the

* Listit. Census handbock, cp.cit., p.x
** Ibid., p.vii.
/ Fig. 19B shows these facts graphically.
less agricultural districts of Uttar Pradesh, wherein 74.2% people depend upon agriculture for their means of livelihood, while the population of the district has increased at a rapid rate, almost 40% increase since the beginning of this century, the cultivable area has only slightly changed as shown by Fig. 19A. The increase in the cultivated area between the years 1901 and 1951 has amounted to only 8%. The pressure of population on land has been increasing in a predominantly agrarian area. The situation is alarming in the absence of substantial increase in industrialisation.

The non-earning element in the population is quite large (66.8%). Among the agricultural classes, it amounts to 65.5% and among the non-agricultural classes to 66.9%. The earning dependents are few (3.3%). Their proportion among the agriculturists is slightly larger (3.5%), since agriculture is a family occupation and provides work to all grown up people in the family. Actually, only 30.7% persons are self-supporting*. Their proportion among the agriculturists is 31.0% and among the non-agriculturists 30.1%.

* A 'Self-supporting person' is one who is in receipt of an income and that income is sufficient at least for his own maintenance. To be 'self-supporting' a person need not be able to support his family. All that is necessary is that he should be earning sufficient for his personal needs. Any one who is not a 'self-supporting' person in this sense is a 'dependant'. When the income which he secures is not sufficient to support him that person is an 'earning dependant'. A person who does not earn any income either in cash or kind is 'non-earning dependant', vide bistt. Census Handbook, Op. cit, p. xii.
The peasant communities include wats, sheikhs, Chammars, baghbans, Kuracs and Kalis. The last group comprises the finest husbandmen in the district, though Chammars and wats, too, are cultivators of a very high order. The Chamars are found everywhere. The wats comprise the Deswatis of Lileri and Sambhal who are sturdy peasants of marked skill and the Rachhadas of Amroha and Hesarpur who are comparatively of an inferior stock. The Ahirs of Sambhal, and the Chauhans of Thakurwara and elsewhere are also excellent agriculturists. Turks are fine cultivators in Moradabad, Sambhal and Amroha tahsils. Ahagis till land in the Ganga khadar and khas in the south-west of the district. Other cultivators include Ahirs, Gujars, Rajputs and Brahmins. The high caste cultivators, with the exception of the Tagas, are generally inferior to those of the lower castes.

Non-agricultural occupations

The non-agricultural occupations are of relatively lesser importance. A study of the index of such occupations* shows that only 1,62,506 persons (9.8% of the total population of the district) are self-supporting in this category. Various services employ 37.7% of them, commerce employs 17.1%, transport, storage and communications occupy 6.2%, while construction and utility services engage 5.6%.

Industries

The subdivisions of the industries are given in table XIII of the appendix. Fig. 19C illustrates these facts. The various industries provide employment to only 34% of such persons or 2.9% of the total population of the district. A study of the table and the figure indicates that there are very few industries worth consideration here. Among them, the cotton textiles and wearing apparel, the sugar industries, the processing of food-grains and foodstuffs, the wood working and furniture making, etc., draw their raw materials from the products of the land. The pottery, earthenware and brick kilns use earth for their raw material. Even the copper and brass-ware industry requires earth for its moulds. Actually, few industries in this district are unrelated to the land and its products, besides requiring the floor space for their operations. A reference to Fig. 20 shows that the industries concerned with processing of the local agricultural produce such as the gur and khandsari making, rice husking, flour milling, oil seed crushing are dispersed in the rural areas. Two sugar factories are located at the railway stations of Aroha and Raja-ka-Sahaspur situated in the rural surroundings, where they can get the supply of sugarcane through both rail and road.

* Self-supporting persons from non-agricultural occupations.

** Plates XII & XIII show these features.
Plates XII-XIII.

XII. Using earth for brick making

XIII. Earthen moulds for brass-ware
transport. Handloom industry, originally based on local cotton cultivation, is also dispersed over the countryside though now it draws its raw material in the form of yarn from spinning mills outside the district.

The other industries may be classified as under:

(a) **Extractive Industries:** Among them are included the brick kiln and pottery industries which use clay and loam for their raw material. Their location is based on various considerations such as the proximity of the areas of consumption, easy means of transport, good earth available for them, availability of cheap labour or the residence of skilled potters, etc. The brick kilns are generally located along the roadsides from where their bulky produce can be easily transported to the building sites. Sand for construction work is freely available from river banks and sand dunes. *Aankar* or calcium carbonate nodules are extracted from some localities e.g. Ahabri Gandu, where their formation in the subsoil has been abundant. The same is used for lime and road metal. The crude glass industry uses the sand in the khadars of the Ganga and the Ramganga rivers. *Reh* or *Kallar* for use in the local washing processes is utilized to some extent from the *Kallar* tracts.
(b) Fabricating industries: Such are the brass ware industry of Moradabad city, the horn comb industry of Sambhal and the furniture industry at various places. These industries are localised in the towns where the businessmen, skilled artisans, and the facilities of distributive trades, shopping centres, transport, housing, finance, electricity (recent addition), etc. are available. Raw materials are imported from distant places but manufacture is carried on at the artisans' places of residence or business.

(c) Servicing industries: Transport, Commerce and other services together with such industries as bakery, laundry, servicing of motor vehicles, repair shops, etc., are related to the needs of the population fixed by other factors. They are more developed in the more populous centres and along the more frequented routes. Among such industries must also be counted the railway workshops at Moradabad and Chandausi.

There are few modern factories, excepting the sugar mills referred above and the glass works at Bahjoi, which compete in the national markets. The location of the Bahjoi Glass works at a small railway station has been determined by the facility of railway transport, cheap land, cheap packing material available in the neighbouring bhar lands and the enterprise of the capitalist. There existed few facilities of modern business before the establishment of this factory, here.
Effects of the Population Increase

The effects of the rapid increase of population may be summarised as under:

(a) The per capita gross area, in this district has decreased from 1.23 acres in 1901-02 to 0.89 acre in 1950-51. This means that each person must live on lesser land now.

(b) The per capita net sown area has declined from 0.90 acres in 1901-02 to 0.68 acre in 1951. This means that each person, now, should get less land for the production of his food and other articles of need.

(c) There has been a considerable increase in the proportion and number of people dependent on agriculture for their means of livelihood. In 1901, only 60.0% people were classified as such. In 1951, this class of people amounted to 66.9%. As compared to 1921, however, there is a slight decrease in this ratio. Then it stood at 67.8%. But, the number of people dependent on agriculture for their livelihood has increased by 35.8% over that in 1921.

There appears to be a gradual decline in village arts and crafts, while the pressure on the impoverished soils is increasing.

(d) The proportion of workers has been falling and there has been a corresponding rise in the dependency.

In 1951, the proportion of workers in the total population was only 34.0% against 40.6% in 1921. During the same period the proportion of non-earning dependants has increased from 59.5% in 1921 to 66.0% in 1951. This shows that the unemployment is increasing.

(e) The increase of population and the resultant demand for more land have raised the land value and rents. The increase of rents has been more marked in the case of the Shikmis or subtenants and those who have non-occupancy rights. For example, the average cash rental for the Shikmis and non-occupancy tenants in Bilari tahsil has been as much as Rs.7.50 and Rs.6.62 per acre respectively against Rs.4.50 for the occupancy tenants.

(f) The increasing dependence on agriculture has certainly resulted in the increasing fragmentation of land holdings.

(g) There has been an abnormal rise in prices of agricultural produce, though it is not a local affair. The average prices at Moradabad, in the period 1845-57, were 36 seers of wheat, 55 seers of barley, 57 seers of jowar, and 46 seers of bajra to a rupee. But, after a century, in 1956, they were 2.5 seers of wheat, 3.5 seers of barley, 3.5 seers of gram, 3.5 seers of jowar and 3.5 seers of bajra to the rupee, almost fourteen times higher, though the

---

** Ibid., p. 46.
/ Based on enquiries made personally from the grain market at Moradabad in June-July 1956.
population has increased by 65% only*.

(h) This increase in the prices of land and its products means a higher standard of living for those who have sufficient and fertile land and the knack to manage it, properly. So they have better housing and other facilities. Gradually they have acquired some capital to invest in the improvement of their land and also to introduce scientific methods of cultivation, machinery and fertilizers and thus receive a higher yield.

(i) In the cash rented areas the tenants have derived much benefit from the general rise in the value of agricultural produce. The fact that in many instances they have been able to purchase shares in their villages is a proof of their prosperity. The large occupancy area has protected them from the evils of rack-renting. But, conversely, where grain rents have prevailed and the absentee landlords left the collection of rent to their agents who exploited the tenants to a miserable degree, the tenants have found no impetus to improve their cultivation and have been content to produce only what was sufficient to live on meekly.

(j) The growing population, in the urban districts increased demands on land not only for the expansion of built up areas, roads, railways, schools, parks, hospitals, 

* Enquiries in the grain market at Kharadabad in Oct.-Nov. 1958 showed still higher rates: 1.37 seers of wheat, 1.51 seers of rice, 2.5 seers of maize, 1.3 seers of gur, 2.0 seers of gram, 2.1 seers of barley, 2.35 seers of bajra & 2.86 seers of jowar to the rupee.
etc., but also for certain balanced diets which are, usually, not looked for in the rural areas. Thus we find the development of a highly intensive type of cultivation of the vegetables and garden produce around the urban settlements.

(k) In consequence of the growing pressure of population much land, which used to be as banjar and old fallow formerly has now been reclaimed (cf. sample villages Kandawala, Tikhunti, Hachharya, Bhagwarpur khadar, Bagerpur Chhoyya, Latifpur, Bizeam bagla, Semli, Thakadpur, Khabri Gandu, etc. in table XX).

(l) The government has begun to take keen interest in the problems of land. It has introduced many schemes and passed some laws to facilitate a better utilization of land. The Grow More Food Scheme, The National Extension Scheme, the Zaminderi Abolition and Land Reforms Act, etc., are some examples of such acts.

(m) Irrigational facilities have been extended by the government by the construction of tube-wells and canals. People themselves have also built many new wells and tube-wells.

(n) People have begun to use new techniques and methods of cultivation with a view to increasing the per acre yields e.g. the Japanese method of paddy cultivation and the D.R. method of wheat cultivation. In a way the increasing pressure of population on land is making the nation land conscious and the socio-economic atmosphere is getting more and more suitable for the land use planning schemes.
Roads

Fig. 21 shows the main roads and railway lines in the district as in the year 1954-55. There are many more fair-weather tracks which are of little use during the rains but, at other seasons, sufficient for local requirements. The road connecting Moradabad and Thakurdwara which has been Kacha, so far, has been metalled and the Dhelanaadi has been bridged in 1956 to provide an all-year road in this section.

The District Board maintains ferries at Daulatpur Tigri (Tahsil Thakurdwara), Moradabad and Moghalpur over the Ramganga river and at Sherpur, Gangacholi, Jantauli, Biharipur and Sirsa over the Ganga river. Although there is a lot of traffic between Delhi and Moradabad, yet the Ganga river does not have the bridge for motor vehicles which cross it during the dry season by a ferry of boats. During the rains the khadar tracts in general and parts of tahsil Thakurdwara, in particular, become some of the most inaccessible parts owing to the numerous streams.

Railways

The first railway line to be opened in this district was the portion of the Cudh and Akilkhand system, connecting
Moradabad and Rajghat. It was completed in October, 1872. In November, 1873, the Chandausi-Bareilly connection was completed. It provided Moradabad direct communications with Benares and beyond. In May, 1900, Moradabad-Ghaziabad railway line was opened up to Gajraula and the passage over the Ganga was completed in the following November. This brought Moradabad in close connection with Delhi. The Kashipur line of the Rohilkhand and Kumaun railway was completed in the beginning of 1908. In 1912 a branch line was constructed from Gajraula to Bijnor. It now connects Bijnor with Bijnibad on the Moghul Sarai-Saharanpur line of the Northern Railway. The construction of branch line from Baja-ka-Sahaspur (Bilari) to Sambhal was also completed in 1912.

Accessibility

The various roads and railways focus at the Moradabad town. Lying on the routes of the Panjab-Calcutta Mail, Toofan Mail, Delhi Express and other through trains, it has countrywide connections, which have enhanced its commercial importance. Moradabad and Bilari tahsils have

---

**Courtesy the Divisional Superintendent, H.R., Moradabad.
\^ From this great railway junction daily seven passenger trains run towards Saharanpur, eight towards Bareilly, five towards Delhi, four towards Chandausi and Aligarh, four towards Sambhal and two towards Kashipur. An equal number of trains come here from all sides, vide the Time Table of the Northern Railway current in Oct., 1959.
few places more than six miles from the railway line since the railway lines run in all directions through them. Since roads, almost invariably, follow the railways and more are added to connect the intermediate stations, there remains no question of the inaccessibility of any place within them. But, during the floods, the Ramganga-kosi-Gangan khadar becomes unapproachable. The Amercha tahsil is also served well by railways and metalled roads, but, the western half of Sambhal and the southern two thirds of hasanpur tahsil are devoid of both railways and metalled roads. These areas include the bhurlands, the Udla tract and the Ganga khadar. In Thakurdwara, the wet soils and deep streams make it inaccessible during the monsoons.

Means of Transport

The carts and draught animals are the only important means of transport for the countryside away from the main roads and railway lines. On the roads Motor-trucks serve the people. On the rivers there is only a small local traffic and the small boats are used for the same.

Of late, within a radius of ten miles from the towns the cycle-rickshaw has appeared as a cheap and

*Plates XIV and XV show a motor truck and carts transporting sugar cane. Plate XVI shows a cart track through the bhurland.
Plates XIV-XVI.

XIV. A Motor truck transporting Sugarcane

XV. Carts transporting Sugarcane

XVI. A cart track through the bhurland
convenient means of transport. It is the most convenient means of transport for the petty market-gardener who can take it to his fields. The milk vendors have been using the bicycle for a pretty long time, slinging their milk-wares on either side of its carrier as well as in front of its handle. Yet, however, much of the transport within a radius of two to three miles from the towns is done on human heads. With a greater distance it becomes impracticable.

Effects of the Development of Transport

The development of the means of communication and transport has acted in the following manner:

1. It has improved the accessibility of the district. It has also rendered various parts of the district more easily accessible to each other.

2. Having provided through connections with Lucknow, Allahabad, Varanasi and Calcutta, on the one hand, and with Aligarh, Agra and Bombay on the other, the railways have encouraged the export of agricultural products like wheat and sugar. The following figures show the export of these commodities from the Chandausi railway station during the period when the effect of the development of railway transport was still in infancy:
It is clear from these figures that the export of both wheat and sugar by railway had gained much between the period 1904-1941. Naturally, the cultivation of wheat and sugarcane gained an impetus in this district.

3. The extension of railway connections with Panjab and Delhi via Saharanpur and Meerut respectively, made available cheaper and better cotton and oilseeds from the Panjab. It rendered unnecessary to grow these articles, here. Hence the decline of their production in this district as will be seen in the sequel.

4. By making it possible to establish the sugar mills which draw upon large quantities of sugarcane from the countryside, the development of transport has encouraged the cultivation of this crop on an increased scale.

5. Having introduced speed into the economy of the countryside, the extension of railways, motorable roads and motor transport has facilitated the enhancement of such activities as market-gardening, milk-supply, etc.,

which find markets in distant towns. It has made it possible to specialise locally in the production of more suitable articles instead of repeating the similar pattern of foodgrains and fodder crops everywhere. Formerly, the absence of easy and cheap means of transport necessitated local self-sufficiency in the production of these essential products so that specialization in the particularly suitable crops had a limited scope. Now, on the other hand, the Kachhiana areas near Sambhal, Amroha and other places have begun to specialize in the production of market garden produce, e.g., potatoes, which find market in towns not only in this district, but also outside it.

6. The development of transport and the consequent growth of trade have tended to reduce the difference in prices prevailing at the various markets of the district. Formerly, there used to be great price differences as shown in the table below which gives the average prices of agricultural products prevailing at Moradabad, Amroha and Thakurdwara during the nineteenth century:

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Moradabad</th>
<th>Amroha</th>
<th>Thakurdwara</th>
<th>% difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>36</td>
<td>33</td>
<td>54</td>
<td>63.6</td>
</tr>
<tr>
<td>Barley</td>
<td>55</td>
<td>42</td>
<td>80</td>
<td>90.5</td>
</tr>
<tr>
<td>Gram</td>
<td>36</td>
<td>33</td>
<td>50</td>
<td>51.5</td>
</tr>
<tr>
<td>Okra</td>
<td>57</td>
<td>39</td>
<td>77</td>
<td>97.4</td>
</tr>
<tr>
<td>Bajra</td>
<td>46</td>
<td>37</td>
<td>55</td>
<td>48.7</td>
</tr>
</tbody>
</table>

It is clear from the figures that the difference between the rates obtaining in the various parts of the district was very marked. In the inaccessible Thakurdwara, however, the average rates were the lowest, since there could be little export to the larger markets where the commodities would have sold at higher prices. In contrast, the average prices prevailing from 1845 to 1857 at Moradabad approximated closely to those obtaining at Chandausi.

7. During the 19th century, the prices were extremely low. Later on, a general rise in prices took place owing to the various economic and political factors. But the rise in the price of wheat was comparatively much higher, since it was in demand in Europe and the construction of railways had facilitated its export. Thus, there was an average rise of 41.7% in the price of the principal foodgrains between 1861 and 1905 while in the case of wheat, the rise was not less than 65%**. Since this rise in price had a direct influence on the extension of the area under wheat, it may be attributed in part to the development of the means of transport, which made this possible.

8. The opening of railways has changed the lot of many market towns. The opening of the Aligarh-Chandausi line led to the rise of Chandausi which

* Ibid.
** Ibid.
became a first rate market. In the years 1937-40, its average exports and imports compared well with those of Bapur, the great commodity market of northern India as indicated by the figures noted below:

Table 9

<table>
<thead>
<tr>
<th>Type of Trade</th>
<th>Chandausi</th>
<th>Bapur</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export</td>
<td>864,369</td>
<td>1,101,707</td>
</tr>
<tr>
<td>Import</td>
<td>131,861</td>
<td>406,569</td>
</tr>
</tbody>
</table>

The opening of the Sambhal-Bilari line brought Sambhal in direct contact with the distant markets, while that of the Gajraula-Bijnor line gave commercial importance to the small railway stations of Bachhraon and Dhanaura.

9. The great increase, between 1901 and 1951, in the population of such railway station towns as Bahjci* (149.6%), Dhanaura (35.5%), Bilari (48.1%), and Kurdarahi (40.5%) is a clear reflection of their improved condition owing to the railway connections. In comparison to that, the off-side towns such as Thakurdwara (8.1%) and Banasgar Sadat (21.3%) did not show such an increase. In fact, Thakurdwara records a net decline since 1891. Barauli, on the road connecting Sambhal to Chandausi used to be the headquarter of a parganah in the days of Akbar. Its

* cf. Table XIV in the Appendix

population was 5,197 persons in 1872, but fell to 4,722 in 1901 showing 9.1% decrease. It may be due to the fact that it was rendered off-side settlement by the opening of the Chandausi Aligarh railway line, which gave importance to the railway stations bahuji and Chandausi throwing Sambhal into the background. Later on the railway link between bilari and Sambhal has also circumvented harauli.

10. The development of transport has also laid new demands on land. The roads and railways act as the life-lines of the nation. In every project for planning they have an important role to play so that they must receive a very important consideration. There is a growing need of more and wider roads and new rail-links. It is not difficult to realize that the backwardness of certain areas, like the south-western section of the district, is partly due to the lack of means of communication and transport.

Sample village bahadurpur represents a countryside where roads and railways have greatly extended during the last one century. Now, railways occupy 14.56 acres, pucca road 2.05 acres and kacha roads 5.84 acres in this village. In all, the railways and roads cover 22.45 acres or about 7% of the total area of the village.
The pucha road serves the sugar hills at Kaja-ka-Sahaspur which adjoins this village on the north. The extension of state tube-wells has its concomitant extension of tube-well service roads which are comparatively narrow and kacha, and cut straight to connect the neighbouring state tube wells. The consolidation of land holdings has also provided some straight paths between the adjacent 'chaks'. All these are in addition to the many sinuous older kucha tracks.

11. The super-imposed pattern of railways, roads and tube-well service roads has greatly affected the previous layout of the fields and holdings. The number of the fields has greatly increased owing to the sub-division imposed upon them by these new constructions. Many fields have been cut through diagonally and rendered triangular. Chaki khera is another sample village where means of communication have developed much during the recent past. In the year 1874-75, the roads covered only 8.92 acres and they were all kacha. In the year 1955-56, the roads and railways cover 25.01 acres. Thus, there has been an increase by about 180% in the land under roads and railways. The influence of the new roads and railways on the form of the fields is apparent since consolidation of holdings has not taken place here, so far; the triangular fields and their sub-numbers are persisting along the roads in this village.

* Figures for 1874-75 are based on the settlement Volume of that year; those for 1955-56 on the Ahasra of the village.
Geographical Control of Irrigation

In this monsoonal area where period of drought is long and the rainfall is unevenly distributed, the shortage and uncertainty of moisture supply renders agriculture a gamble in rains unless water deficiency and uncertainty is removed by the provision of irrigation which is needed, here, for

(a) growing rabi crops during the relatively dry winter season,
(b) growing zaid crops in the dry summer season
(c) cultivating the porous soils of the relatively drier west where normal rainfall is insufficient for better crops, and
(d) securing higher yields and making planned cultivation a practical proposition.

The northeastern part of the district, which receives more than 40 inches rainfall and has sufficient amount of surface water and soil moisture, does not need much of irrigation. Only protective irrigation is necessary there. But, there are large areas with light and sandy soils in the central and western parts of the district where ground water is quite accessible but the surface soils are more or less dry. The years of drought are
marked by distress there. Despite the general suitability of rainfall, as indicated by the normal annual figures, the district has suffered from many severe famines in the past. There was a terrible dearth of food-grains in A.D. 1298, 1345, 1761, 1784, 1802-04, 1825, 1837-39, 1860-61, 1868-69, 1877-78 and 1896-97 with the result that thousands of persons died of actual starvation and many more emigrated to the more fortunate parts of the country. Sometimes, the kharif crops failed and, at other times, the rabi crops, exposing the weakness of the cultivation not protected by irrigation. It was this state of affairs, resulting not only in the short collection of governmental revenues but also causing the government a huge expenditure by way of relief measures and takavi loans which put the authorities to a serious thinking about providing irrigation facilities in the area.

There are also certain geographical advantages for irrigation in this area, e.g.,

(i) The large number of streams flowing through it can supply irrigation water as is the case with the western Ramganga water-lifting canal.

(ii) The gradual slopes of most of the uplands are suitable for an easy flow of water over them.

(iii) The absence of rocky ground or rocky subsoil renders canal and well construction easy. The subsoils are saturated with ground water which can be lifted through wells.

(iv) The thirsty surface soils of the uplands repay irrigation by responding to it easily.

**Means of Irrigation**

The facility with which ground water is available through wells and the difficulty of lifting water from the deep lying river channels and obtaining a regular and sufficient water supply in view of their highly changing volumes, however, seem to have decided that the wells of various sorts will comprise the most important means of irrigation, here. Appendix table XV shows the area irrigated by various means during 1953-56 in this district as a whole. Table X gives tahlisewise the percentage of the total irrigated area, irrigated by various means in 1957-58. Both these tables make it clear that the wells and tube wells constitute the chief means of irrigation, here. The canals serve only limited sections in Amroha and Moradabad tahsils. Other means are of relatively little significance as shown by Fig. 22.
Table 10

<table>
<thead>
<tr>
<th>Tahsil</th>
<th>% of the total irrigated area</th>
<th>Total irrigated area (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>wells</td>
<td>Tube</td>
</tr>
<tr>
<td>Amroha</td>
<td>28.6</td>
<td>42.8</td>
</tr>
<tr>
<td>Bilari</td>
<td>23.8</td>
<td>72.7</td>
</tr>
<tr>
<td>Sambhal</td>
<td>34.3</td>
<td>63.7</td>
</tr>
<tr>
<td>Hasangur</td>
<td>79.9</td>
<td>19.2</td>
</tr>
<tr>
<td>Moradabad</td>
<td>41.3</td>
<td>28.0</td>
</tr>
<tr>
<td>Thakurdwara</td>
<td>83.3</td>
<td>-</td>
</tr>
</tbody>
</table>

Total Distt 37.5  58.9  6.5  3.1  221.757

The figures in the above table show that
(1) in the district as a whole 37.5% irrigated area is provided by the wells.
(2) over 70% of the total area irrigated by them is found in the central bangar comprised of the tahsils of Amroha, Bilari and Sambhal.
(3) yet, they play relatively a minor role in these uplands since they provide only 31.3% of the total irrigated area, here.

* Figures based on Sadar sanungo's Milan Ahasra for the year.
(4) they play a more important role in tahsils Hasanpur, Thakurdwara and Moradabad where they provide respectively 79.9%, 83.3% and 41.3% of the total irrigated areas.

(a) Kacha wells

The kacha wells have provided only 1.8% of the total irrigated area in the district in the year 1957-58. They are sunk whenever the season demands. As a rule, they are short lived and seldom last for more than a season. Water from them is lifted mostly by 'dhapali' using a large earthen pot or a leather bag. It is significant to note that in Moradabad tahsil they provide 27.5% and in Thakurdwara 53% of the irrigation by wells. But, elsewhere, they are unimportant. Wherever the provision of irrigational facilities needs a stable basis, the kacha wells have a minor role to play. Such wells are mostly found where the water table is high. They are not found where water table is about 20 feet or more deep as in the uplands of Thakurdwara and the Gangan-Ban doab.

(b) Pukka wells

The pukka or masonry wells have provided 35.7% of the total irrigated area in the district in the year 1957-58. From these wells, water is, generally, lifted by the persian wheel or the charsa worked by oxen, buffaloes or camels*. When water is tapped to the permanent

* Plates XVII & XVIII show water lifting from wells by charsa and persian wheel worked by camel.
XVII. A Charsa used for lifting water from the well

XVIII. Persian wheel worked by a camel
water level (locally known as 'mota'), they are known as 'mota wells'.

**Tube wells**

Tube wells provide 52.4% of the total irrigated area. They are most important in the Katehr bangar, particularly in Bilar T. S. where their development started about 1933 A.D. Both the state and the private individuals have constructed tube-wells for irrigation and there are about 600 of them throughout the central uplands, but, mainly they constitute a state enterprise. On an average (of 1953-56) about 123,573 acres are irrigated by them each year. Out of that about 5.8% area is irrigated by the private tube wells and the rest by the state tube wells. In Bilar T. S., in Sambhal 65.0% and in Amroha 42.6% of the total irrigated area is provided by tube wells. But, in Hasanpur T. S. they are less developed and only 10.2% irrigated area is supplied by them. In Kaushambi T. S., some tube wells are found in the western section but in its trans-Kamganga tract there are very few of them. Thakurgarh T. S. is, however, conspicuous by the absence of tube well irrigation.

The rapid growth of the popularity of the tube-
well irrigation in the Katehr upland may be noted by reference to the following figures:

Table 11

<table>
<thead>
<tr>
<th>Year</th>
<th>Area Irrigated by Tube wells (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1933-34</td>
<td>1,802</td>
</tr>
<tr>
<td>1934-35</td>
<td>9,247</td>
</tr>
<tr>
<td>1935-36</td>
<td>25,477</td>
</tr>
<tr>
<td>1936-37</td>
<td>21,757</td>
</tr>
<tr>
<td>1937-38</td>
<td>45,086</td>
</tr>
<tr>
<td>1938-39</td>
<td>52,891</td>
</tr>
<tr>
<td>1939-40</td>
<td>46,647</td>
</tr>
<tr>
<td>1940-41</td>
<td>83,800</td>
</tr>
</tbody>
</table>

The total irrigated area in the tahsil in 1940-41 amounted 90,000 acres so that 85.5% of it belonged to tube-wells and only 14.5% to all other means. The decrease in the tube well irrigated area in 1939-40 was due to the favourable winter rains (3.36 inches in 10 rainy days) in that year.

Canal Irrigation

Canals provide only 6.5% of the total irrigated

area in the district. At present, there are only two canals, namely the Terai Canal and the Western Ramganga (water-lifting) Canal. The Terai Canal extends over northeastern corner of the Varadabad Tahsil and, annually, irrigates some 500 to 1,000 acres. This canal, however, fails when the demand for water is the greatest, for the Kashi Terai, through which it comes, receives prior attention in a dry season. The Western Ramganga Canal irrigates the Gangan-Ban doab, the upper Gangan valley and the bangar upland between the Ramganga and Karula nadi, latr is lifted from the Ramganga by means of electric pumps, which are worked by power obtained from the Ganga-Ramganga hydro-cum-Thermal Electric Grid. Without the help of this mechanical power, construction of this canal would have been impossible, because the areas to be served lie at a higher level. The Ramganga Canal Dam was built in 1929 from Raini in district Bijnor to Kipli Ganshyam in the north-west of Thakurdwara tahsil. It was meant for improving the agricultural conditions of the tract lying between the Ramganga and the Gangan-Ban streams, where the groundwater is deep and, in time of drought, the tract has suffered very much. The Ramganga Canal Dam is also reducing the evil effects of floods and it has protected the khadar villages below it. Annually, the canal irrigates some 10

-86-
to 15 thousand acres. In some places the canals are deep enough and the water has to be lifted from them for irrigating the fields. Such lift irrigation has averaged about 3% of the total canal irrigated area in these years.

**Other means of Irrigation**

Among the other means of irrigation are included the ponds and streams. Ponds are more important than streams and they provide about 75% of the total area irrigated by these means in this district. On the whole only 3% of the total irrigated area, here, is provided by these means. Most of that (65.9%) lies in the central uplands particularly in the tahsils of Bilari and Sambhal. In the northeast, these means provide 20.7% irrigation in Karadabad tahsil and 16.6% irrigation in Thakurdwara tahsil. In Hasanpur there is the minimum (0.8%) of irrigation by them since surface water is negligible in the dry and sandy parts of this tahsil. In the Ganga khadar, on the other hand, the soil is wet enough and requires little irrigation, though the Bais, the Mahawa and the Likta nadis are sometimes used for this purpose. Among other streams which are used for irrigation, the most important are the Ban, the Gangan, the Karula and the Bot, all of which fall in the
central uplands. In the trans-Ramganga tract, the Rajhera, the Nacna, the Lahalla, the Kurka, the Lapkna and the Bhela are utilized to some extent.

The irrigation by ordinary wells and other means has been declining until 1951, while the canal and tube-well irrigation has been progressing. In the more recent years, however, the masonry wells have regained some importance. Both the government and the people are keen about irrigational facilities. While the state itself maintains the canals, tube wells and masonry wells, it helps the farmers to construct their own wells and tube-wells.

Irrigational Zones

To sum up the foregoing discussion, the following irrigational zones may be distinguished with regard to the means of irrigation and their relative importance in various parts of the district. They are shown in Fig. 22b.

1. The Terei Canal Area: In the north-eastern section of Moradabad tahsil, the terai-canals of Keshipur supply their surplus water to a few hundred acres each year.

2. The Ramganga Valley and the Trans-Ramganga Tract: In the uplands of Thakurdwara mainly the streams and ponds provide some irrigation whenever the
season demands. Climate is wet and there is little necessity of irrigation. During normal seasons, most crops are unirrigated, but drought periods need protection. Water table is quite deep and wells are few. In the lowlands, the water table is quite high. Rainfall is sufficient but, whenever irrigation is required it is easily available from streams, ponds and cheaply dug percolation wells.

3. The Western Ramganga Canal Irrigated Zone:
Between the Ramganga and the Dan-Gangan water-courses, the soil needs water. The ground-water is deep. The area used to suffer from drought. Now, the western Ramganga canal provides the chief means of irrigation. Wells and tube-wells replenish the canal-supply, which is not sufficient for all parts of it.

4. The Central Bargar and Bhur Lands: There wells and tube-wells provide the chief means of irrigation and it pays to irrigate. Tubewells are more popular, since they tap large reserves of deep-seated ground-water. Ponds and streams are also exploited. This area requires much irrigation.
S. The Ganga Ahadar Tract: There irrigation is little practised owing to high moisture content of the soils. Water-table is quite high, when necessary wells can be dug at small cost. Otherwise streams and ponds supply a little irrigation.

Progress of Irrigation

At the beginning of this century, irrigation was quite unimportant. The quinquennial average of 1901-06 showed only 7% of the total cultivated area as irrigated. Out of this about 75% was irrigated by wells and the remaining 25% by ponds, streams, etc.* There was no canal or tube-well irrigation then. The terai canals of Kashipur began to supply some irrigation about the year 1912-13. The western Ramganga canal irrigation scheme started work about 1930-31. The tubewells appeared on the scene about 1933-34. The progress of irrigation may be seen by reference to Fig. 22A and Table XVI in the appendix.

Present Position of Irrigation and Its Regional Aspects

Now, in many parts of the uplands more than 40% of the total cropped area is irrigated as shown in Fig. 22C.*

** This figure has been prepared by spreading the irrigated area as percentage of the total cropped area in the sample villages over the tracts of which they are considered to be representatives. Table XVII in the appendix gives the relevant data. Tables XVIII & XIX show the areas irrigated by the Ramganga canal & a sample tubewell during the last twenty years.
In some, 50 to 60% of it is irrigated as in Baglia Kathair (49.59%) and Bahadurpur (59.41%). The suburban areas have an extremely high incidence of irrigated crops e.g., Daulat Bagh 86.40% and Hauz Badesra 53.48%. But the case is different with the villages in the Khadars and in the trans-Khaganga tract. Excepting Katana Baw, which has a little irrigated sugar-cane and rice in the Kharif, and Machharya, which has a little irrigated wheat in the Rabi, no sample village in the Khadars has any irrigation. Ramnawala, in the Ishakurwara uplands, is conspicuous by all unirrigated crops. Tikhunti, the other sample village in the trans-Khaganga tract also has very little irrigation; only some wheat and potatoes are irrigated in the Rabi while some vegetables and chillies are irrigated in the Kharif.

In the uplands, Rabi has invariably the maximum share in the irrigated cropland. In Semli, cent percent Rabi is irrigated, in Baglia Kathair about 80%, in Bahadurpur and Biza Bagla about 70%, in Akhidmatput about 72%, and in Khabri Gandu about 59%. But, Brahdpur (about 49%), Khaliqpur Salan (about 46%) and Latifpur (about 26%) have less than half of their Rabi as irrigated. The first owes to its situation on the Sot nadi, the second to the natural wetness of its soils after flooding and udla but the third owes to the little development of irrigational facilities.
In the district as a whole, about 79% of the irrigated rabi belongs to wheat alone, 6.2% to mixed wheat, 3.6% to vegetables, condiments and tobacco and about 11% to all other crops in the rabi harvest. Of the sample villages in the central uplands, Semli has cent percent wheat as irrigated. In Naglia Kathair 91.6% wheat alone and 79.6% wheat mixed is irrigated. But in the khadars only Kachharya has 2.7% wheat alone and 5.3% wheat mixed as irrigated. All other khadar samples have all unirrigated wheat. Ramnawala, in the Thakurwara upland, also has all unirrigated wheat. Tikhunti in the lowland of the trans-Banganga tract, has 7.6% of its single wheat as irrigated.

The kharif harvest, too, is considerably irrigated in the central uplands, e.g., Lahadurur 50.7%, Khabri Gandu 30%, Khalipur Kalan 23.6% and Khidratpur 26.6%. In the suburban areas, both the rabi and kharif harvests are mostly irrigated. In Baulat Agh Kusthakam, for example, 96% rabi and 72.5% kharif are irrigated. In Lhauz Badesra 85.5% rabi is irrigated. But, owing to its depressed situation, only 17.6% kharif is irrigated.

In the district as a whole 93.7% of the irrigated kharif belongs to sugarcane, 64.5% of which is irrigated. About 4% irrigated kharif belongs to vegetables, condiments, fruit and tobacco through 97.1% of tobacco is irrigated and
70.4% of the kharif vegetables, condiments and fruit are also irrigated, but, all other kharif crops – food grains, fodder, fibres, etc., together own only about 2% of the irrigated cropland.

In Bahadurpur 91.6% and in Semli 94% of sugarcane is irrigated. In Ababri Gardu, Seglia, Akthair, Abaliqpur, Salan, Alidatpur, and Latipur cent percent sugarcane is irrigated. In Sahadpur (41.5%), Mizam Tagla (53.8%) and Chakli Khera (52.9%), where small streams pass through the lands of the villages, the percentage of irrigated sugarcane falls below the average for the district.

In the Ganga and Ramganga khadars and the trans-Ramganga tract, however, most of the sugarcane is unirrigated. Only Hatena Hew has a little irrigated sugarcane (8.6%).

The zaid harvest is mostly irrigated in most of the sample villages.