ALIGARH

GEOGRAPHICAL POSITION AND GEOLOGY

Aligarh is one of the seventy one districts of Uttar Pradesh (North India), at a distance of about 126 km from India’s capital New Delhi. The district of Aligarh spreads from 27°88’N latitude to 78°08’E longitude at an elevation of 178m. The greatest width from west to east is about 116km and the maximum length from north to south is about 72km and forms part of the fertile Ganga-Yamuna ‘Doab’. The district spreads over 4023 square kilometers and this area varies slightly from year to year due to the changing courses of river Ganga and Yamuna. River Ganga separates the district from Budaun for a few kilometers in the northeast while river Yamuna constitutes the dividing line in the North West between Aligarh and Gurgaon district of the state of Haryana to the north, the boundary is formed by Anupshahar and Khurja tehsils of district Bulandshahar. On the west and south west lie Chatta, Mat and Sadabad tehsils of Mathura district while in the southeast and east the boundary is formed by Jalesar, Etah and Kasganj tehsils of Etah district (Map1.).

Structure and relief

Aligarh district lies in an extensive alluvial plain formed by the deposition of alluvium in a fore deep. The plain in Aligarh district, like a true representative of the Gangetic plain, is generally level with imperceptible slope from north to south. It is remarkably homogeneous in character but at some places ridges alternated by depressions are found especially in the western part of the district. These ridges are mostly seen in Khair and Iglas tehsils. There is an imperceptible large depression in the centre of the district, which in the north is narrow but gets wider towards the south and eventually passes in to the adjoining district of Etah. This depression is characterized by the presence of clayey soils with imperfect natural drainage and as a result of this the area is dotted with numerous Jhils (lakes) and is characterized by the presence of usar patches with reh
deposits. On both sides of this depression, there is higher ground. The western higher ground occupies a tract of considerable size containing soils which are lighter and fertile. In the east, the higher ground again descends in to slight depression formed by the river Kali nadi. These depressions have been formed as a result of fluvial action coupled with that of strong westerly winds. A close look at the topography of the district reveals that it has a shallow through of sauce-pan-shape.

**BRIEF DESCRIPTION OF TEHSILS OF ALIGARH**

**Khair**

Khair is located 22.94 km distance from its district main city Aligarh. It is situated at a Latitude 27°.95′ N and Longitude of 77°.87′ E

**Atrauli**

Atrauli is located 26.38 km distance from its district main city Aligarh with a Latitude 28°.44′ N and Longitude of 78°.24′ E

**Iglas**

Iglas is located at 27°43′N and 77°.93′ E. It has an average elevation of 178 metres (583 feet).

**Gabhana**

Gabhana is 19.61 km far from its District Main City Aligarh and is located at 28°05′N and 77°.99′ E

**ALIGARH TEHSIL (STUDY AREA)**

Aligarh tehsil (sometimes called Koil tehsil) attends in 27° 53′ N and 78°08'E at a distance of 1133 km. by railway from Kolkata, 495 km by road from Allahabad, 83 km. from Agra and 128 km. from Delhi. The grand Trunk Road skirts the the eastern border of Aligarh tehsil. Metalled roads lead northwards to Anupshahr, north eastwards to Atrauli, south westwards to Iglas and westwards to Khair tehsil of Aligarh district. Railway station lies close to the Grand Trunk Road.
Aligarh tehsil comprises the parganas of Koil, Baraili and morthel and has a total area of 921.10 Sq. Km. It is bounded on the north by the Khurja tehsil of Bulandshahr district, on the west by the Khair and Hasangerh parganas, on the south by Hathras and Akrabad and on the east by Kalinadi, which separates it from the Atrauli tehsil (Map 1.). The elevation of Aligarh tehsil is 185.31 m. above the sea level.

The following towns, villages and localities within the Aligarh tehsil, are important from vegetation point of view. It is, therefore, desirable to mention these localities in some details.

**HARDUAGANJ:**
The town is situated 27° 65 N latitude and 78° 9 E longitude. It is at a distance of 11 km northeast from Aligarh. Harduaganj railway station is about 6.5 km. to west of the town. The site of the town is near the Ganges canal.

**JALALI:**
The town is situated in 27° 62 N latitude and 78° 15 E longitude at a distance of 20 km east of Aligarh. On either side of town flows a large distributary of the Ganges canal.

**BUDHANSI:**
It is a fairly large village situated in 27° 55 N latitude and 78° 13 E longitude near the left bank of the Ganges canal, 2 km. from Macchua bridge and at a distance of 6.5 km. southeast of Harduagang.

**CHERRAT:**
It is an agricultural village nearly 8 km. north of Aligarh. It is situated in 27° 5 E longitudes. The central Dairy farm is situated in this village.

**ALIGARH FORT:**
The fort of Aligarah stands some 3 km. to the north of the railway station. It is approached by a road branching off from that leading to Barauli. Tracing its history it would appear that the fort was originally built in 1524 by Mohammed Khan, Governor of Koil under the Lodies. It was the rebuilt in 1717 by the famous Sabit Khan. In 1737 it was taken by
the Jats. Under the supervision of De Boigue and Persson, the fort was reshaped by the agency of French engineers and when stormed by Lord Lake in 1803, the fort appears to have the polygon of ten sides with a bastion at each angle. All round a broad and deep ditch, crossed at the entrance by a narrow causeway. Immediately after its occupation by the British the ditch was completed and the causeway was replaced by Draw Bridge, and subsequently the outline causeway was remodeled: the number of bastion being reduced to eight, while a second gateway added on the north. During the recent year the area within the fort has been utilized as an agricultural farm by the university. Now a day the fort is under the control of the Botany Department, and is developed into a Botanical garden. The total area of fort is about 11.5 hectares.

**TOPOGRAPHY AND SOIL**

**TOPOGRAPHY:**

Viewed as a whole, Aligarh district is a plain sloping gently from the north to the south or to north-east. The level of surface is interrupted by the several depressions, Jhils, canals, nadi (river) and some drainage lines.

**Jhils:**

There are numerous depressions and jhils in Aligarh district. The important ones are located at Gopi, Bhagwan Garhi, Shaikha, Ikri and gursikaran. A fairly large size jhil, known as Adhwan is located near the source of the Senger river. The Sheikh jhils on the border of pargana Husain is also of fair size. A few jhils are situated to the north of Aligarh district at Baruly, Cherrat and Sumera. It is important to note that most of the Jhils mentioned in the foregoing account reduce in size during the summer season, whereas in rainy season they or considerably large.

**Rivers:**

The following rivers traverse the area:

1. **Kali Nadi:**
The river popularly known as ‘Kali nadi’ orginates from Muzaffarnagar district. Before entering Aligarh district, it crosses through Meerut and Bulandshaher. In Aligarh the river forms the south-western boundary of the Aligarh district. It is a small river; particularly during the summer months, it is a narrow stream and not very significant, but during rains it becomes a river of considerable dimension.

2. Senger:

Senger is a tributary of the river Jumuna. It arises from a depression located near Gursikaram village. It flows almost in a south-south direction upto the southern border of the district; afterwards it takes a south-easterly course, passing the district of Etah and joining the river Jamuna in Kanpur district. (Map 2.).

SOIL:

Soil of the superficial surface covering the earth crust. There is least doubt that soil plays an important role in determining the type of the vegetation of any particular locality. Therefore, it becomes necessary to discuss the different type of all soil in this area, in order to have a clear understanding of the vegetation. In the district of Aligarh six type of soil have been recognized, as show in table 1.

**TABLE 1. TYPE OF SOIL IN ALIGARH DISTRICT**

<table>
<thead>
<tr>
<th>S. No</th>
<th>SOIL SERIES</th>
<th>SOIL TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Ganga Khader</td>
<td>Aligarh Type- 1</td>
</tr>
<tr>
<td>2.</td>
<td>Eastern Upland</td>
<td>Aligarh Type- 2</td>
</tr>
<tr>
<td>3.</td>
<td>Central lowland</td>
<td>Aligarh Type- 3</td>
</tr>
<tr>
<td>4.</td>
<td>Western Upland</td>
<td>Aligarh Type- 4</td>
</tr>
<tr>
<td>5.</td>
<td>Jumuna Khader</td>
<td>Aligarh Type- 5</td>
</tr>
<tr>
<td>6.</td>
<td>Trans Yumuna Khader</td>
<td>Aligarh Type- 6</td>
</tr>
</tbody>
</table>
Considering Aligarh district only, the eastern half of the district beyond the Grand Trunk Road is included in the central lowland (Aligarh Type 3.), whereas the remaining half (western) is granted in the western upload (Aligarh Type 4.). Besides this, there is narrow strip of “Khadar” along the Kalinadi.

The differential characteristics of these two major types of soil in Aligarh district are represented below;

**TABLE 2. DIFFERENTIAL CHARACTERISTICS OF SOIL TYPE IN ALIGARH DISTRICT**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Type 3</th>
<th>Type 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Central Lowland.</td>
<td>Western Upload.</td>
</tr>
<tr>
<td>1. Colour</td>
<td>Gray to dark gray</td>
<td>Brown to reddish brown</td>
</tr>
<tr>
<td>2. Concretion</td>
<td>Kankar</td>
<td>No</td>
</tr>
<tr>
<td>3. Texture</td>
<td>Loam to clayey</td>
<td>Sandy to sandy loam.</td>
</tr>
<tr>
<td>4. pH</td>
<td>7-8 and above</td>
<td>6-7.5</td>
</tr>
<tr>
<td>5. Drainage</td>
<td>Very poor</td>
<td>Excessive</td>
</tr>
</tbody>
</table>

From the comparative point of view the eastern tract is inferior to the western tract. The substratum is made up entirely of “Kankar” a formation composed of nodules of impure Calcium Carbonate and other compounds which are found everywhere at a few meters below the surface. At several places they cement together forming a stiff impenetrable block in the bottom layers. These “kankar” blocks are very often used for the construction of culvert, house building and metal ling road.

From a survey of the various types of soil in Aligarh district, it is evident that as a result of defective drainage a vast area of barren land, impregnated with noxious salt
which is known as “User” or “reh”, occur more frequently in eastern half of the district than the western. The extent of such user acreage in Aligarh district is tabulated in table 2.

TABLE 3. USER ACREAGE IN ALIGARH DISTRICT

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Total area</th>
<th>User or barren land</th>
<th>% of usar land</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(hectare)</td>
<td>(hectare)</td>
<td></td>
</tr>
<tr>
<td>3 &amp; 4</td>
<td>91924</td>
<td>18813</td>
<td>20.46%</td>
</tr>
</tbody>
</table>

The magnitude of the usar tracts of this district are very prominently seen in huge stretches of uncultivated land on both sides of the Grand Trunk Road when one travels from Sinkandra Rao to Aligarh. User tracts of considerable magnitude are observed covering Musapur, Lodha, Keshapur and Biswan village on the south western boundary of Aligarh district. Similarly other tract of fairly large size are located in the north western boundary include the village of Gokulpur, Sumera and Kalwa. In the eastern part of the Aligarh district the usar tracts are located near Madrak, Gursikaran, Bhojpur and Barouli.

It may be out of place to point out the soil condition in usar lands. Semi-arid climate, poor drainage and the alkaline nature of high ground water are the prevalent conditions in this area resulting in the accumulation of salts, in the form of thick “reh” deposition during the dry season. The chief constituents of “reh” are usually chlorides, sulphate and carbonate of sodium in varying proportion. During monsoon the usar tracts remain submerged. Later in the season the salt are thrown up on the surface when the land is dry. The pH varies from 8.2 to 9.6. The cultivation is almost out of question and at places even grasses refuse to grow. The only economic use of “reh” appears to be the utilization by washer man for washing clothes.