Geographical

Set-up
GEOPHICAL SET-UP AND CLIMATIC CONDITIONS OF ALIGARH DISTRICT

Aligarh district is located in North-West of Uttar Pradesh in fertile agricultural area of Ganga-Jamuna Doab between 27°29'N and 28°11'N latitude and 77°29'E and 78°38'E longitude. It is surrounded by river Ganga on its North-East and by Jamuna on North-West, stretching in East-West direction about 70 miles and from North to South for about 45 miles.

Physiographically the area consists of vast alluvial plain having gentle slopes from north-west to south-east. The highest point at the surface is about 640 ft. above the sea level in the north-west and about 622 ft. on its southern border. It forms a part of the Ganga plain which is a depression between the Himalayas in the North and Deccan plateau in the South. It is filled with alluvium brought down by Himalayan rivers. Topographically, the district represents a trough like appearance with high Ganga and Jamuna at the extreme rims.

(1) CLIMATE - Aligarh district experiences the tropical monsoon type of climate with its characteristic seasonal rhythm marked by North-East and South-West monsoons. Climatically, a year can be divided into two seasons viz. Summer and Winter.
SUMMER - The summer season begins in March and continues till October. Its beginning is marked by an appreciable rise in temperature and decrease in pressure. The monthly mean temperature of March of 10 years (1972-1981) is $21.66^\circ C$ which rises to $26.52^\circ C$ in April and $32.02^\circ C$ in May and $33.47^\circ C$ in June. The months of May and June, thus record exceptionally high temperature (table 1). The days are characterized by intense heat as the day temperature records as high as $46^\circ C$. Air is quite dry and the humidity falls as low as $46.8\%$ (table 1).

In the summer months hot-dry wind of high velocity increases steadily from March. Speed of wind quite often changes during 24 hours. It is usually calm at night and from 8 A.M. to 2 P.M., it increases rapidly and during the next 2 or 3 hours it blows almost with the force of a gale and latter it falls again rapidly by 6 P.M. These winds are locally called as 'Loo'. They become extremely dry and hot and blow with increasing force till the approach of the rains.

A peculiar phenomenon of hot-weather season is the occurrence of dust and thunder storms caused by convective currents. They usually occur in the afternoon, when the air movement is strongest. Their frequency and strength increases with the advance of season. Following such storms the air becomes cool and provides temporary relief from tiring heat of the day.
There is generally no rain during the arly summer months except for the small amount which is brought about by the thunder storms. On account of the excessive heat of the summer months, a low pressure area develops in the North-Western India and by the middle of June it brings a complete reversal in the air movement. As a result, the humid oceanic current begins to blow, which in turn brings rains. The monthly temperature falls from 33.47°C in June to 28.47°C in July while the mean relative humidity increases from 46.8% in May to 76.87% in July (table 1).

The time of onset and retreat of the monsoon varies from year to year. The rains generally set in by mid June and continue till the end of September. It is in these months that Aligarh receives nearly 90% of total annual rain fall. The monthly distribution of rain fall throughout the season is not uniform. The month of June receives an average rainfall of 45.20 mm, for July and August it amounts to 356.20 mm, and 288.00 mm respectively. The amount of annual mean rainfall of 10 years generally ranges from 0.75 mm in November to 356.20 mm in July. By October there is a marked decrease in rainfall, when the average comes to 64.70 mm.

WINTER - By the end of October, the humid currents of South-West monsoon are replaced by the dry continental winds. By the large, this is a period of transition from wet to dry weather. Usually this phase continues till the end of November, when the
whole area comes under the influence of a high pressure belt which develops over whole North India due to low temperature. The beginning of winter weather is marked by a considerable fall in temperature. The monthly mean temperature of 10 years of November falls from 21.41°C to 16.33°C in December. The temperature further falls in January to 13.85°C (table 1). The diurnal range of temperature during the winter months makes the night considerably cold, while the days remain relatively warm.

The direction of the winds during winter is from West and North West to East and South East. The wind is very light and blow generally at an average speed of 2 miles per hour. Since they are continental in origin, they are mostly dry, except for a small amount of rain brought by the cold weather storms. The sky for the most part remains clear. Hails-storms sometimes accompany the cold stores and cause great injury to the flowering plants. In February, the temperature rises with the Northward movement of sun, and hot weather soon begins in March.

(ii) SOIL - The soil of the district is alkaline and it is divisible into two broad geological sub-divisions i.e. old and new alluvial. These soils differ considerably in the texture and consistency ranging from sands through loams and silt to heavy clay that are ill drained and sometimes charged with injurious salts know as 'Reh'.
The drainage in this tract is poor and in the monsoon months it suffers from water logging. The soil is sticky and generally clay or clay loam in texture. The clay contents is maximum at the top and decreases with depth. It is grey, ash grey or dark grey in colour, tending to black moist. The poor drainage results in the deposition of soluble sodium salts on the surface in the form of 'Reh'. During the period of drought, the tracts give the sight of a white salt infested land.
TABLE - 1

Average temperature, relative humidity and rainfall of ten years from 1972 to 1981.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Months</th>
<th>Temperature in centigrade</th>
<th>Relative humidity in percentage</th>
<th>Rainfall in mm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>February</td>
<td>15.29 ± 1.03</td>
<td>57.99 ± 7.03</td>
<td>4.83 ± 3.81</td>
</tr>
<tr>
<td>3.</td>
<td>March</td>
<td>21.66 ± 1.56</td>
<td>42.64 ± 6.38</td>
<td>2.49 ± 2.04</td>
</tr>
<tr>
<td>4.</td>
<td>April</td>
<td>26.52 ± 2.16</td>
<td>36.32 ± 4.20</td>
<td>6.10 ± 10.74</td>
</tr>
<tr>
<td>5.</td>
<td>May</td>
<td>32.02 ± 0.77</td>
<td>46.8 ± 11.70</td>
<td>9.90 ± 16.35</td>
</tr>
<tr>
<td>6.</td>
<td>June</td>
<td>33.47 ± 1.31</td>
<td>52.8 ± 9.02</td>
<td>45.20 ± 27.45</td>
</tr>
<tr>
<td>7.</td>
<td>July</td>
<td>28.47 ± 1.21</td>
<td>76.67 ± 5.18</td>
<td>356.20 ± 70.05</td>
</tr>
<tr>
<td>8.</td>
<td>August</td>
<td>27.54 ± 1.44</td>
<td>80.09 ± 2.11</td>
<td>288.00 ± 85.45</td>
</tr>
<tr>
<td>9.</td>
<td>September</td>
<td>27.65 ± 0.85</td>
<td>73.09 ± 4.36</td>
<td>214.80 ± 73.43</td>
</tr>
<tr>
<td>10.</td>
<td>October</td>
<td>26.59 ± 1.11</td>
<td>55.05 ± 7.85</td>
<td>64.70 ± 35.22</td>
</tr>
<tr>
<td>11.</td>
<td>November</td>
<td>21.41 ± 0.89</td>
<td>57.31 ± 4.65</td>
<td>0.75 ± 1.23</td>
</tr>
<tr>
<td>12.</td>
<td>December</td>
<td>16.33 ± 0.76</td>
<td>57.07 ± 8.14</td>
<td>8.70 ± 14.48</td>
</tr>
</tbody>
</table>
FIG. A.
KOIL TAHSIL SOILS

FIG C

TYPE III - Sandy soils to silt to heavy clay.
TYPE IV - Loams and silt to heavy clay.
THE VEGETATION OF ALIGARH.

The vegetation of Aligarh constitutes an arid open scrub, commonly known as 'Rakhs'.

The perennial vegetation of Aligarh and the adjoining areas exhibits various degrees of xeromorphism. Stunted growth, succulence and thorny nature of plants are the most common features. The perennial vegetation as it stands today include three categories of plants:

(i) Regional species,
(ii) Introduced species from adjoining areas,
(iii) Exotic species.

The regional species included in the present investigations are represented by 48 taxa, the introduced species from adjoining areas include 61 taxa and the exotics constitute the rest 22 taxa.

REGIONAL SPECIES

1. Capparis zelingica Linn.
2. Cahamus cajan Millsp.
3. Bombax ceiba Linn.
5. Ziziphus jujuba Lamk.
6. Mangifera indica Linn.
8. *Butea monosperma* Taub.
11. *Acacia arabica* Willd.
12. *Acacia lecocphloea* Willd.
15. *Prosopis spicigera* Linn.
17. *Syzgium cumini* Skeels.
18. *Alstonia scholaris* Linn.
24. *Ficus benjamina* Linn.
25. *Ficus religiosa* Linn.
26. *Ficus religiosa* Linn.
27. *Artocarpus heterophyllus* Lamk.
INTRODUCED SPECIES FROM ADJOINING AREAS

1. *Dillenia indica* Linn.
2. *Polyalthia longifolia* Benth & Kk.
3. *Crateva nurvala* Buch Ham.
7. *Thepesia populnea* (Linn.) Soland ex. Correa
8. *Pterygota alata* R.Br.
10. *Aegle marmelos* Correa.
18. *Gliricidia maculata* H.B. & K.
20. *Pongamia pinnata* Pierres
21. *Sesbania grandiflora* Poirt
22. *Bauhinia purpurea* Linn.
23. *Bauhinia variegata* Linn.
24. **Cassia auriculata** Linn.

25. **Cassia fistula** Linn.

26. **Cassia nodosa** Roxb.

27. **Cassia siamia** Lamk.

28. **Cesalpinia pulcherrima** Swartz.

29. **Peltoforum pterocarpum** Heyne.

30. **Saraca indica** Linn.

31. **Acacia catechu** Willd.

32. **Albizia lebbek** Benth.

33. **Albizia procera** Benth.

34. **Parkia roxburghii** G. Don.

35. **Prunus persica** Stokes.

36. **Terminalia arjuna** Roxb.

37. **Terminalia belerica** Roxb.

38. **Terminalia tomentosa** Wt. & Arn.

39. **Lagerstroemia spicosa** Pers.

40. **Anthocepalus chinensis** Lamk.

41. **Achras sapota** Linn.

42. **Madhuca indica** Gmel.

43. **Maninkara alexandra** (Roxb.) Daub.

44. **Mimusops elengi** Linn.

45. **Diospyros malabarica** (Desv.) Kostel.

46. **Nyctanthes arboristis** Linn.

47. **Salvadora oleoides** Decne.
49. *Ervantamia divaricata* Burkii.
50. *Cordia dichotoma* Forst. F.
52. *Crescentia cujete* Linn.
53. *Tectona grandis* Linn.
54. *Emblica officinalis* Gaertn.
55. *Putranjiva roxburghii* Wall.
56. *Ficus bengalensis* Linn.
57. *Ficus elastica* Roxb.
59. *Argyreia speciosa* Boj.
60. *Cryptostegia grandiflora* R. Br.
61. *Jasminum sambac* Linn.

**EXOTIC SPECIES**

1. *Swietenia mahogani* Jacq.
2. *Cassia renigera* Wall.
5. *Acacia auriculiformis* Benth.
8. *Callistemon citrinus* Stapf.
12. *Jacaranda mimosifolia* D. Don.
13. *Kigelia pinnata* DC.
14. *Millingtonia hortensis* Linn. F.
17. *Baugainvillia spectabilis* Willd.
18. *Grevillia robusta* A. Cunn.
19. *Populus euphratica* Alivier
22. *Quisquallis indica* Linn.