Chapter-III

The Study Area
THE STUDY AREA

The Eastern Tarai region of Uttar Pradesh extends over 27°3' N to 28°5' N latitude to 81°0' E to 84°3' E longitude covering an area of 4900 Km². Lying along the, Indo-Nepal international boundary, it includes Nanpara in addition to Sadar tehsil of Bahraich district, Balrampur; Shravasti, Dumariaganj and Siddharth Nagar, Pharenda, Maharajganj, Gorakhpur and Padrauna districts. The Tarai area is spread over 260 km. from east to west and 15 to 20 km. from north to south (Fig. III 1 and 2).

TOPOGRAPHY

Structurally, the region forms a small segment of alluvial Indo-Gangetic troughs. It is almost a featureless plain excepting some local topographical variations caused by rivers. Moreover, numerous shallow depressions and elevations in the surface level are due to existence of 'tals' and hillocks. Generally the homogenous plain rises from 70 M in south-east to 100 M in the Dumariaganj tehsil of Siddharth Nagar district, 130 M in Nanpara and 150 M in Katarniaghat of Bahraich district in its north-western part. Thus, the study area imperceptibly slopes towards south-east and south. Because of several rivers and their tributaries as well as low lying, Tarai, however, the preponderance of local slope is well marked. The outermost foothills of the Himalayas (Siwaliks) are merely a few km. away from the northern boundary of the region.

SOIL

The Tarai area exposes nothing beyond immature alluvial soil. This lacks in typical characteristics of soil profile because of their recent deposition.
This soil is formed of pliostocenes and sub recent alluvial deposits of the Ghaghra, the Rapti and the Gandak, which might have started the process of deposition after the upheaval of the Himalayan mountains. Local topographic and drainage variations have brought about significant changes in the soil morphology, resulting in textural differences grading from sands through silts to heavy clay. Soil of the area ranges from low to medium in organic matter and other soil nutrients i.e., medium in potassium, low in phosphorus and low in nitrogen.

The alluvial soil itself is divided into Khadar (newer alluvium) and Bangar (older alluvium). Their further sub-division is a bit different because of minor spatial variations.

On the basis of composition, the soils of the area are classified into the following types:

1. Clayey
2. Bhat or Older Loam
3. Ordinary Loam
4. Sandy Loam
5. Usar or Alkaline soil and
6. Silt loam or Kachhar of Rapti.

1. Clayey— This type of soil is chiefly found in a long and narrow strip of some 15 to 20 km width in northern Tarai and constitutes 15% of the total area. It is extended partly from Nanpara (Bahraich) in west, Bansi (Siddharth Nagar) in middle, Maharajganj in east. A few scattered patches area also seen in other parts of the area. Once overgrown with forest and tall grasses, the
area of these soils in Tarai is now being consistently reclaimed for cultivation.

2. **Bhat or Older Loam**— It covers major parts of Padrauna and Maharajganj in the east, partly Dumariaganj tehsil in the middle and Balrampur in the west and constitutes 10% of the total soil of the area. It is highly fertile, well drained and very much suitable for sugarcane cultivation.

3. **Ordinary Loam**— This soil is extended from Nanpara in west to Padrauna in east and constitutes up to 60% of the total area. Being a mixture of sand and clay, this soil represents a transitional character. It is neither as heavy as clay, nor as light as sand. It is most suitable for 'rabi' crops and rice cultivation.

4. **Sandy Loam**— It differs from the ordinary loam in its higher sand content. It is mostly found along the river Banganga and the Ghaghra and constitutes only 2% of total area.

5. **Usar or Alkaline Soil**— This soil is the least productive because of its low nitrogenous content and is found in small patches in the area of older alluvium i.e., some parts of Dumariaganj in the Siddharth Nagar.

6. **Silt loam or Kachhar of Rapti**— This soil covers parts of Bahraich, Siddharth Nagar and Maharajganj districts extending along the Rapti river, since this is low lying belt it is liable to annual inundations. It consists of fine silts and is capable for being cropped without irrigation. It contains low nitrogen contents, hence not so suitable for cultivation.

**CLIMATE**

The climate of the area is very much influenced by its nearness to Himalayas. The cold waves, associated with winter cyclones and hot summer
winds sweeping the entire Gangetic plains, are rarely experienced. Dust storms rarely occur and the easterly winds, which persist for most of the year, are often cooler. Thus, the area is climatically represents character between the relatively western and humid eastern parts of the Ganga plain. The region enjoys the monsoon type of climate. The years clearly divided into five seasons viz.,

1. Rainy season (Mid June to early October)
2. Rainy-Winter Transition (October)
3. Winter Season (November to February)
4. Winter-Summer Transition (March)
5. Summer Season (April to Mid June).

1. Rainy Season—This season starts abruptly with the bursting of the summer monsoon, usually in the second week of June. It is accompanied by sudden rise in relative humidity (20% approx.), fall in temperature (by 5°C-8°C) and change in wind direction from westerly and north-westerly to easterly and south-easterly). The area receives 16.6 cm rainfall during the month of June.

Most of rainfall can be attributed to summer monsoon, but its distribution, both in time as well as in space, is very much influenced by the proximity of the Himalayas. In general, the rainfall decreases from north to south as well as from east to west. Areas around Gorakhpur in the north receives about 180 cm rainfall, while areas located in other districts receive 100 to 120 cm annually. The average rainfall of the area is 120 cm of which major percentage is due fall during the month of July. Distribution of rainfall varies considerably. Present study reveals that annual rainfall is more than 130 cm in Khaddar area and 110-130 cm in Bangar area. This high amount of rainfall, high relative humidity
and resultant moderate temperature put the region on the safer side, but for
the floods. The variability of the rainfall in the study area is the lowest in
Uttar Pradesh, increasing from east to west.

2. Rainy-Winter Transition— The diagnostic feature of this period is a
wide fluctuation in day and night temperatures, as compared to rainy season.
Mean relative humidity is lower than that in the rainy season.

3. Winter season— The cold weather season is the most charming,
clear and fine with fresh air and blue sky. The days are generally moderately
and sunny and nights usually cold. During October, mean daily minimum
temperature lowers by 4°C. However, there is no appreciable change in the
mean daily temperature. During November, mean daily maximum and minimum
temperature as well as relative humidity decreases further. The relative
humidity increases to 80 percent, because of low temperature, but the
cloudyness still remains less. The bright sunny winter season is occasionally
broken by the rain bearing waterly disurbances and cold waves low
temperature and high percentage of relative humidity results in cloudyness,
fog, mist, rainfall, even frost and hailstorm. There is heavy dew fall and
morning mist during this season.

4. Winter-Summer Transition— There is a gradual rise in temperature
during this period. Diurnal fluctuations in temperature is considerably high.

5. Summer season— After January there is continuous rise in
temperature. The temperature generally increases up to 40°C in May, while
the relative humidity remains the lowest during April (43%). During May-
June dry hot westerly wind, known as 'Loo' increases the temperature
considerably. During this period the maximum temperature of 46.1°C (Bahraich)
and the minimum of 10.1°C (Balrampur) were recorded from the area. The
wind velocity is the highest (71-1 km/hours) in the month of May. The normal rainfall of Balrampur is 4-1 cm during May, which is highest in Uttar Pradesh plains. All these factors combine to create a moderate hot weather season in the area in comparison to other areas of the middle Ganga plain.

DRAINAGE

The river Rapti with its several tributaries is the main stream of the Tarai area of Eastern U.P. The Rapti, originally called 'Iravati' or 'Ravati' is a Himalayan stream. The Burhi Rapti, the Banganga, The Ghonghi and the Rohini are siwalik rivers, the Sikari, the Bagha, the Janswar, the Siswa, the Maha etc. originate from the Bhabhar or Tarai, while smaller and seasonal streams like, the Manwar, the Ravai, the Tarayan, the Kuano, the Gadra etc. originate from the 'tals' of the plains.

The river Rapti, Kuano and Banganga are notorious for their floods and changing courses. Numerous ox-bow lakes, 'tals' and dissected channels of the rivers can be seen all over the area.

FLOODS

The area is frequently subjected to floods. Large number of ponds, 'tals' and 'nalas' occurring in the area, overflow when the rain is excessive. The area is also covered with a network of drainage channels and rivers with their tributaries. During rainy season, the ponds, 'tals', 'nalas', channels and rivers swell up and get connected and overflow causing havoc and devastations.

Flood is caused by occasional high rainfall, poor slopes, defective drainage, high sub-soil water level, quantity of silt in river beds brought down by them from uplands and existence of a number of depressions, ponds and 'tals'. Due to floods, rainy season crop is considerably damaged; some of
the trees get uprooted. Considerable amount of silt brought during the flood period is deposited in the fields, which yields rich vegetation and crop.

**TRANSPORT**

Transport system mainly consists of railways and highways. The area is served by a number of branch lines such as Gorakhpur-Sewarhi via Padrauna, Kaptanganj-Chhitauni Chat via Siswa and Khadda, Gorakhpur-Gonda via Pharenda and Balrampur, Nanpara-Nepalganj and Bahraich to Bareilly via Bichhia, connects almost all the important places of the area. Besides this, there are numerous state highways such as Gorakhpur-Sonauli via Pharenda, Gorakhpur-Nichlau via Mahrajganj, Gonda-Sitapur via Bahraich etc. There are several other metalled and unmetalled roads connecting scattered settlements of different orders. The roads are running mostly from north to south.

**COMMON DISEASES AND PUBLIC HEALTH SERVICES**

Human diseases common in this area are; fever of all types, cough, cold, respiratory diseases, diarrhoea, dysentery, cholera, diabetes, small pox, skin diseases and worms in stomach etc. Some of them appears periodically and were endemic in past, but do now declining due to governement and people adopt various preventive and curative measures.

Annual diseases and ailments as cough, cold, fever, diarrhoea, late estrus self abortion, ectoparasite, foot and mouth disease, wounds due to heavy load and plough, weakness and physical debility etc. are very common in this division.

Medical and health care facilities are very poor in rural and tribal areas. Presence of herbal venders and herbal medicine men shows the importance of herbal medicines in public health-care system.
Fig. III. 1: Map showing the Indian Territory in which U.P. has been shown as of study interest.
Fig. III.2: Tarai region of Eastern U.P.