Chapter III

THE STUDY AREA

3.1. Geography
Sonitpur district has rich diversity of flora and fauna and is situated in the north bank of river Brahmaputra. It is located between 92° 16' - 93° 43' East and 26° 30' - 27° 01' North. The area is about 5324 sq km. It is bounded in the north by Arunachal Pradesh, south by river Brahmaputra, east by Lakhimpur district and west by Darrang district. The district is located between mighty Brahmaputra River and Himalayan foothills of Arunachal Pradesh and consists of mostly plain land with small part of hills. Brahmaputra River forms the southern boundary of the district. The district has 1615 villages under 3 sub-divisions viz. Tezpur, Biswanath Chariali and Gohpur.

3.2. Physiography
The projected area is low-lying and it is inundated during rainy seasons. Large and small water bodies and ponds are abundant in the district. The region is mainly plain land dotted with hills and hillocks. The region has trees, tea-plantations and agricultural fields. The northern side of western direction has eight reserve forests, such as Chariduar, Naduar, Balipara, Behali, Sengelijan, Sengelimara, Biswanath and Gohpur (State Land Use Board, Assam, 1997) with hills and hillocks marking the starting of the Himalayan foothills. According to Assam forests at a glance (2011-12) there are about 12 reserve forests in both east and west Sonitpur. But presently it has been observed that Behali, Sengelijan, Biswanath and Gohpur reserve forests are in maximum degraded condition. Some parts of reserve forests in the district are now converted to sparsely populated forest-villages. Kar et al., (2010) reported a sacred grove Hudupar from this region. The major rivers are Brahmaputra, Jiabharali, Gabharu, Borgang and Buroi. A number of rivers which originate in the Himalayan foothills flow southwards and ultimately enter into the mighty Brahmaputra River. There is a National Park (Nameri) and also have wildlife sanctuaries (Sonai-Rupai and Bura-Chapori) in the study site. There are a number of river islands in the river
Brahmaputra, known as Chars which are fit for habitation and cultivation. The major lakes are Rowmari, Dighali, Borsola, Rongapani and Dhandi. The plain land is at an average altitude of 80-100 meters from the mean sea level. (Map-Fig. 3.2.1 and Fig.3.2.2 of the study area).

### 3.3. Historical background of the district name

The district is the symbol of romantic legend of Usha and Anirudha. Lord Krishna rescues his grandson from Banasura in a fierce battle hence, the name is Sonitpur or Tezpur, i.e. ‘The city of blood’.

### 3.4. Geology and soil

Geologically the landscape is not a homogeneous unit. The hill and hillock are made up with varied rock types ranging from Precambrian to Tertiary. The river valleys are developed during the past geological ages depending upon uplift and erosion. The Brahmaputra valley mainly consists of older and alluvial deposits. Sonitpur belongs to the middle part of Assam and all the plains are broken parts of isolated hills. The soil types found are Entisoles (flood prone plain areas), Inceptisols (sediment deposit of river), Alfisols (foot hill region), Ultisols (reddish colour hill soil) and Histosols (water logged bodies).

### 3.5. Climate

The vegetation types and its floristic composition are mainly depend on the climatic condition of the area. District falls in the tropical climatic region and enjoys monsoon type of climate. Temperature ranges from maximum 38°C to minimum 7°C with an average temperature of about 29°C. Nature provides irrigation to the agricultural field on one hand and on the other it causes the rivers to overflow their banks and cause floods. Sky is mainly clear with bright sunshine hours varying between 7 and 8.3 hrs/day. The annual rainfall in the district is about 2393 mm. Relative humidity ranges from 67% in March to 87% in July. Maximum average rainfall occurs during the months of July-August and minimum in December-February. Maximum average temperature occurs during
the months of June-October and minimum in December-January. The rainfall and temperature records are given in Figures 3.5.1 and 3.5.2.

3.6. Vegetation of Assam

Total recorded forest area of the state is 27673 sq km. which covers 35.3% of the total geographical areas (Statistical Handbook of Assam and Assam Forest at a Glance, 2011-2012). On the other hand forest and tree cover is 36.67% of total geographical areas including homestead forest land. The vegetation types of the state may be broadly classified in to:

A. Tropical: Tropical zone include various types of moist evergreen forests, semi-evergreen forests (with Sonitpur district), moist deciduous forests (with Sonitpur district), dry deciduous forests, degraded and scrub lands, grasslands and savannahs, hydrophytes in wetlands (with Sonitpur district), bamboo forests (with Sonitpur district) and waste lands. From giant lofty trees to climbers and stratification of floristic elements are found in upper, middle and lower storeys. Some common species found in these areas are Aegle marmelos, Albizia procera, Alstonia scholaris, Arundo donax, Bambusa balcooa, Cynodon dactylon, Dipterocarpus macrocarpus, Duabanga grandiflora, Eichhornia crassipes, Kayea assamica, Melocanna baccifera, Mesua ferrea, Shorea assamica and Shorea robusta.

B. Subtropical: Subtropical zone is mainly a part of moist evergreen forests. These forests are confined only a place where elevation rises above 900 m and mostly found in Karbi Anglong and in North Cachar Hills district. The species common to these areas are Antidesma bunius, Betula alnoides, Cinnamomum tamala, Coelogyn spp, Dendrobium spp and Pteris biaurita.

3.7. Vegetation of the study area

Total forest cover is 1420 Sq km. The region abounds in bio-diversity with evergreen and deciduous trees of several types. Sonitpur district is covered mostly with moist deciduous forests that occupy the maximum area followed by tropical semi-evergreen and rivereine forests (Srivastava et al. 2002) including grassland, agricultural land and tea gardens. The area is mostly low
lying and the southern parts are inundated during rainy seasons. Wetlands are very common in the district. The increase of population and habitat destruction led to the loss of forest trees and other vegetation types. The wild tree plant species are now also declining in national park, wildlife sanctuaries and in most of the reserve forests.

**The tropical semi-evergreen forest:**

These forests are found in the hilly areas of the district towards the north. The forests are of mixed type, with deciduous upper canopy trees. The major tree species are *Albizia lucida*, *Artocarpus chaplasha*, *Castanopsis hystrix*, *Dipterocarpus turbinatus*, *Terminalia bellirica*, *Tetrameles nudiflora*, *Terminalia myriocarpa*, *Vatica lancaefolia* etc.

**Tropical moist deciduous forest:**

These forests are found along Arunachal Pradesh border. This type corresponds to east Himalayan moist deciduous forest. The important species in these forests are *Ailanthus grandis*, *Albizia odoratissima*, *Bombax ceiba*, *Dalbargia sissoo*, *Dillenia indica*, *Gmelina arborea*, *Terminalia myriocarpa*, *Pterospermum acerifolium* etc.

**Rivereine forest:**

These type of forests are confined to the banks of large rivers with large number of plant species. The common species composition of these forests are *Albizia lebbeck*, *Bombax ceiba*, *Dalbergia sissoo*, *Terminalia bellirica*, *Lagerstroemia speciosa*, *Zizyphus mauritiana* etc.

### 3.8. History of the botanical exploration in Assam

Assam is located in the northeastern part of India covering an area of about 78,500 sq.km. It forms a part of global bio-diversity hot spot with its diverse life forms. It covers all level of biological diversity of ecological and evolutionary process, agricultural ecosystems with wild and domesticated species and varieties. Assam has been considered as a centre of classical botanical collections. Many of the explorers enriched the collection of plant species from this region. Buchanan (1820) explored the area of around Guwahati. Griffith
(1847) studied tea species of Assam, *Camellia theifera*. The Head of East India Company Wallich (1820) with his friend Griffith and John McClelland studied the possibility of tea cultivation in Assam. Griffith (1838) published important treatise entitled “The Tract Producing Indigenous Tea Plant” in Transactions of Agriculture and Horticultural Society of India. Some other contributors were Hooker (1872-1897) and Burkill (1965). Watt (1889-1893) also collected plants from Golaghat and Cachar of Assam. The exploration work was done after the establishment BSI in 13th Feb. 1890. Gammie (1895) collected and recorded most of the plants from Lakhimpur district. Clarke (1898) studied the detailed distribution of Cyperaceae of British India. Carter and Carter (1921) made two tours to Lakhimpur District and published their work on Useful Plants of the District of Lakhimpur in Assam. The first flora of NER was made by Kanjilal *et al.* (1934-40) in his Flora of Assam and included about 3500 woody dicotyledonous plants. Bor (1940) collected grasses from various parts of Assam and published the work in fifth volume of Flora of Assam. De (1923) made collection for the Assam Forest Herbarium established in 1927. BSI Eastern Circle was established in Shillong in 1956 and various exploration work done subsequently in the next few years. Some other notable contributors in the field of taxonomic works were Rao and Panigrahi (1961), Panigrahi (1965), Jain (1976), Naik (1965), Rao and Rabha (1966), Hajra (1981) and Chowdhury (1993a). Chowdhury (1988) and his coworkers published various work and identified new species of orchids viz., *Dendrobium assamicum* etc. Some other research works have been done so far in various districts of Assam viz. Gogoi (1978), Gogoi (1997), Sarma (1989), Islam (1990), Baruh (1992), Baishya (1999), Borah and Kumar (2003) and Borah (2009).

orchids, 88 aquatic plant species, 102 endemic species, 43 rare and endangered plant species, 90 non-conventional food plants and 47 plant species having export qualities from Assam.

3.9. People, food and dietary system

Total population of Sonitpur is 1,925,975 as per latest figures released by Directorate of Census Operations in Assam (2011). Major spoken languages are Assamese, Bodo, Mishing, Nepali, Bengali and Hindi. The minor communities scattered in small pockets and border areas are Karbi, Deori, Bengali, Rabha, Mech etc. The area has diverse culture and tradition right through generations which made them unique and interesting. In terms of population, it ranks third in Assam after Kamrup and Nagaon districts. The people mostly depend on agriculture, animal husbandry, pisciculture practices associated silkworm breeding and productions of raw silk which are traditionally practiced by rural women of Sonitpur. Sonitpur has great potential for raising a variety of horticultural and plantation crops due to favourable agro-climatic conditions. Among plantation crops, seasonal vegetables and tea plants are grown on commercial basis. Agricultural based products and seasonal wild food plants are generally available in the food diet of the people in this region particularly wild edible species amongst Bodos and Mishings.

3.10. People and cultural diversity

Sonitpur district of Assam has extraordinarily diverse population of tribes and general castes with distinct cultural identity and language. They have made great contribution towards building of Assamese culture (Bhattacharya, 1997). The inhabitants are mainly belongs to Aryans and non-Aryans. Assamese speaking people occupied the greater parts of the district with their unique life style and tradition. Bihu is the main agricultural festival and is being been celebrated by the people with devotion, song and dances. In the day of Garu Bihu of Bohag Bihu festival (celebrated in the spring usually mid-April), it is believed that the use of about 100 wild and cultivated vegetables for dinner. Musa balbisiana leaves are used by the Assamese people for preparation of fried rice
cake with fruit of this plant. The Santhals are distributed in all three sub-divisions of the district. The Santhals were bought by the British mainly from Orissa and Chotanagpur area to serve as tea garden labourers. They perhaps belong to Proto-Astraloid racial group having spoken languages mainly Munda or Dravidian. They are associated with dance and songs with mainly two types of drums Tamak and Tumdak. Dassai (folk dance perform by man), Lagren (arranged in marriage festival) etc. are the dances which shows their entire community feelings. The main festivals are Karam, Maghe, Sahrai etc. Karam tree branches are collected and planted in front of the house to get rid of the evil spirits. The Jhumur dance is a colourful art that enhance Assamese culture. Bodos form the other group of community of Mongoloid origin scattered in Dhekiajuli, Chariduar, Naduar, Helem and Gohpur Sub-division of the district. Their main festivals are Baisagu (spring time festival in the mid part of April), Domashi (in the mid January) and Katrigacha (in the month of Oct-Nov). The religious festivals are Kherai, Garja and Marai. Kherai is the main festivals of Bodo. Kherai festival is related with the fertility of crops celebrated in the month of October-November just after completion of plantation and before harvesting. In this festival Kham (drum), Siphung (flute) and Jotha (cymbals) are used as musical instruments. In this festival, Bathou-Shibrai is worshipped along with Gods and Goddess. *Euphorbia nerifolia* is worshiped. The main dances are Bagarumba, Daudini and Bordoisikla (symbol of spirit). Leaves of *Sarcochlamys pulcherima* are used by the tribal people with pork to reduce fat and worm of the meat. Mishings are the another group of Mongoloid origin scattered mainly in Biswanath and Gohpur subdivisions. The main festivals of Mishing are Porag, Armrok and Ali-Ai-Ligang. Ali-Ai-Ligang is the chief festival of Mising observed to get blessings of almighty for abundant crops with Gumrang dance. Porag is the harvesting festival of Mishing. They have similar dances with Bihu dance of Assamese people. Dabur Puja is also celebrated at night with feast using various plant species. Leaves of different plant species are used by the Mishing community for preparation of traditional feast in this festival. Deori people observe dances for Shiva and Parbati known as Gira and Girasi. Nepali, Karbi, Muslims, Bengali
Fig. 3.2.1. Map of the study site along with the state and the country.

Fig. 3.2.2. Map of Sonitpur district showing the major locations.

Source: North Eastern Space Applications Centre, Umiam, 793103, Meghalaya.
Fig: 3.5. 1. Monthly average rainfall year wise in (mm).

Fig: 3.5. 2. Monthly average maximum temperature year wise in (C°).

Source: Biswanath College of Agriculture (AAU), Biswanath Chariali, Sonitpur, Assam.
Rabhas, Mechs, etc. are the other minor communities scattered in various parts of the district and living with their own culture and tradition.

Food is one of the most visible and commonly seen cultural expressions of a community. The food values provide an opportunity to know a community and their mode of life. Most of the preparations like ‘Khar’ (from banana plant), ‘Kharisa’ (pickle from bamboo shoot), ‘Tara pitha’ (rice cake of *Alpinia* spp leaf), traditional rice cake for wine preparation, ‘Kol pitha’ (rice cake and banana fruit roasted with banana leaf), meat curry preparation with different plant species, bamboo internodes for storing plant parts and boiling rice etc. have immense scope to reveal the status of a community. Besides these, the crafts, domestic implements, pitchers, clay-lights, weaving architectures (silk thread eri, muga and pat), can and bamboo products etc. are considered as distinct features of the people of North East India.