

SOME ASPECTS OF ECOLOGICAL AND HUMAN CHARACTERISTICS OF THE BRAHMAPUTRA CHAR AREAS, ASSAM

(11)

**SPONSORED BY
INSTITUTE OF SOCIAL CHANGE AND DEVELOPMENT
NOWZAN ROAD, UZAN BAZAR
GUWAHATI-1, ASSAM**

1993-94

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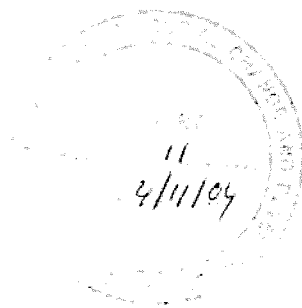
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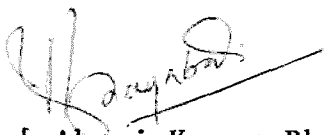
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C E R T I F I C A T E

Certified that the Project Report entitled **SOME ASPECTS OF ECOLOGICAL AND HUMAN CHARACTERISTICS OF THE BRAHMAPUTRA CHAR AREAS, ASSAM** has been prepared by **H M Abdus Shahid, M A** under my guidance and supervision. The Report is an outcome of his personal field investigation in some selected Chars of the Brahmaputra under a short-term research project sponsored by the ISCD, Guwahati.



[Abani Kumar Bhagabati]

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(H. A. Abdus Shahid)

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CHAPTER - 1

INTRODUCTION

1.1 STATEMENT OF THE PROBLEM

The Brahmaputra river-bed in its 720 Km length within Assam is dotted with innumerable sandbars, locally called chars. Among them, as many as 1,200 have so far been identified by the Assam State Char Areas Development Authority as physically and socio-economically significant. These sandy chars with a variety of riverine grasses and temporary swamps constitute unique natural habitats for certain birds and animals. However, most of the chars had been out of human domain till the beginning of the current century. But subsequently, men, especially those who immigrated from erstwhile East Pakistan (Present Bangladesh) started peeping into the almost uninhabited chars. In fact, the Brahmaputra riverine ecology having great resemblance to that in Bangladesh could easily attract the land-hungry peasants from the latter. These peasants being pushed by poverty in their native land started occupying the virgin chars from the western border of Assam gradually eastward. Concomitantly, some Nepali immigrants and indigenous peasants also stepped into some

of the chars for seasonal grazing and cropping. Thus the process of humanisation in the virgin chars began to gain ground slowly and silently. Now, almost all the permanent chars in the Lower Brahmaputra are under direct human occupation. The inhabitants have already adopted agricultural practice befitting to the peculiar ecological setting of the chars. Side by side, Katcha roads, schools and other public institutions have started growing. All these along with the agricultural lands have collectively given rise to a cultural landscape distinct in identity and attributes from other areas of the state.

Although recent in evolution, the cultural landscape of the chars is getting rapidly transformed. The nature of transformation has been basically determined by the ecological make-up of the chars and the cultural characteristics of the char-dwellers. More recently, the growing interaction of the char-dwellers with the relatively rich indigenous culture of the Brahmaputra Valley has accelerated the process of their ecological and cultural transformation. Thus the chars have now assumed great importance as a promising field of ecological and human geographic study. Keeping the physical base and human developments in view it is attempted here to study certain aspects of ecological and human characteristics and the nature of human adaptation to the char ecology of the Brahmaputra valley.

The significance of the study lies in the fact that it is a pioneering work in the above-said line and therefore, would be able to enhance the existing knowledge pertaining to the man-land relation in the chars of the Brahmaputra. The study thus is thought to have both academic and utilitarian values.

1.2 OBJECTIVES

The main objectives of the study are :

1. to explore the characteristics of the char ecology;
2. to examine the nature of the cultural landscape, especially the human characteristics including the agrarian economy;
3. to examine the character of human adaptation to the char, ecology and
4. to suggest some possible measures for overall development of the chars.

1.3 RESEARCH QUESTIONS

1. In what way are the physical (soil, climate, vegetation and animals) and the human elements interacting to characterise the ecology of the chars ?
7. How are the different processes operating in the chars towards patterning their cultural landscapes?

To what extent has the growing interaction between the char-dwellers and the indigenous people been responsible for the rapid socio-economic transformation in the chars ?

3. In what way are the char-dwellers exploring the possibilities provided by nature for their survival? What is the nature and degree of their adaptation to the peculiar physical set-up of the chars ?

1.4 DATA SOURCE AND METHODOLOGY

As the chars of the Brahmaputra are large in number and dimension, case studies have been carried out in some selected chars to arrive at a representative picture of their general character. Towards this end, four chars have been chosen for study on the basis of a-priori field knowledge. They are : (1) Baladmari char in Goalpara District, (2) Kalar char in Nalbari District, (3) Bhangamari char in Nalbari District and (3) Burha Chapari in Sonitpur-Nagaon Districts.

The stratified random sampling procedure has been adopted for household survey in the selected chars. While stratifying the households, special attention has been paid to the landholding structure, the nature of land capability and the pattern of crop occupance.

Primary data from the sample households have been collected through a suitable questionnaire. It is worth mentioning here that equal proportion between the number of households chosen and the total number of households of the respective chars could not be maintained because of paucity of basic secondary data. However, as many as 65, 30, 59 and 50 households were interviewed from Baldmari, Kalaichar, Bhanganmari and Burhachapari respectively. Relevant secondary data have also been collected from the concerned offices of the S.D.C. and E.D.O., and State's Char Development Authority. The data thus obtained are summarised and presented statistically and cartographically with necessary interpretation.

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CHAPTER - 2

HISTORICAL BACKGROUND OF HUMAN SETTLEMENT IN THE CHAR AREAS

Compared to other areas of the Brahmaputra Valley, Assam, human settlement in the riverine tract, especially the char areas, is of recent origin. Chronically affected by flood and poorly endowed by nature from the resource point of view, the chars are, in fact, the last ranking habitat to attract human settlement. In spite of that certain external as well as internal factors caused people to settle down in the chars during the recent past. Consequently, at present, most of the chars having livable spatial dimension are being more or less humanised. It is to be noted here that the settlers of the char areas except for a few, are not of indigenous origin. They are mostly migrants from erstwhile East Bengal (present Bangladesh) and Nepal. Thus the present population of the chars is composed of immigrant Muslims, Bengali refugees, Nepali immigrants and a very small number of indigenous people. All these population groups have respective background of their settlement in the chars of the Brahmaputra.

2.1 IMMIGRANT MUSLIMS

During the nineteenth century Assam was regarded as a region with large virgin tracts, forest lands and rich arable land along the Brahmaputra river. The State remained an area of low population density in contrast to the nearby province of Bengal (present Bangladesh) with high density.

The density of population per km² in East Bengal (present Bangladesh) even in the early decades of the present century was abnormally high. It was 243 in 1911, 253 in 1921, 270 in 1931 and 324 in 1941 (Ahmed, N. 1976). In contrast to the situation in East Bengal the agro-economic situation in Assam in the corresponding periods was altogether different. The density of population per km² in the Brahmaputra valley was 63 in 1911, 76 in 1921, 92 in 1931 and 101 in 1941. The low density of population of Assam valley with its vast virgin lowlying areas had naturally attracted landless peasants from neighbouring regions, especially East Bengal.

The major influx of Bengali Muslims began after 1900. The East Bengal Muslim immigrants mostly from Mymensingh with a sprinkle from Rongpur, Pabna and Bagra districts used to come to Assam. Muslims started settling in their thousands since about 1905 on the uninhabited riverine tracts (Guha, A., 1971). As per estimates of

1931 census about 02.7 per cent of the total East Bengal immigrants in Assam were from the Mymensingh district alone.

Immigration into Assam was affected by both "push" and "pull" factors of migration. The excessive pressure of population, low level of agricultural productivity, high propensity of crop failure, flood hazard, landlessness of the tenants, and increasing unemployment and poverty were the main causes responsible for pushing a sizeable section of the peasants from East Bengal towards Assam. On the other hand, vast virgin tracts of rich arable lands, released Zamindari systems in the district of Goalpara acted as important "pull" factor~~s~~ of migration. From Goalpara, the immigrants gradually moved estward and started reclaiming land and expanded the cultivation of jute, ahu rice, pulses and vegetables to the char areas of the Brahmaputra river.

In the context of that time, however, immigration into Assam was a welcome phenomenon from the economic view point because ^{of} shortage of local labour to use the abundant cultivable land. Landless immigrants from the over populated areas of East Bengal, most of whom were Muslims, began to settle on water-logged, jungle-infested, riverine belts of the Brahmaputra valley

of Assam. The information of the availability of char-lands, waste lands and Zamindari lands awaiting temporary settlement on relaxed terms gradually reached different parts of East Bengal. Non-interference of public and the Government in matters of land occupation in the char areas of the Brahmaputra naturally gave easy way to a long process of peasant migration. The term "adjacent creep" has rightly been coined by Dr. M.C. Bhuyan (1977) to mean this process of peasant migration to a sparsely populated and agriculturally under-developed neighbouring region from a high agricultural density area. Geomorphological and climatic similarity of the then East Bengal and Assam have also helped the immigrants to adjust themselves with the riverine situation of Assam.

The administrative measure known as "Line system" was first mooted in 1916 and adopted in 1920. Under this system, a line was drawn in the districts under pressure in order to settle the immigrants in segregated areas, specified for exclusive settlement. The number of settlers, including, children born after their arrival increased from an estimated 3 lakhs in 1921 to over half a million in 1931. The colonisation policy initiated by the British officials, derived its legitimacy from the deliberations of an all party conference. The first colonisation scheme, thereafter started

in Nagaon in 1928 and was successively followed by one each in Barpeta and Mangaldai subdivisions. Under this scheme, a small family was to be given about 20 bighas of land on payment of a premium.

The Muhammad Saadulla's Ministry adopted a new resolution on land settlement under the slogan of "grow more food". The salient features of this resolution of 24 August, 1943 were as follows:

(i) resumed distribution of waste lands in proportion to needs of different communities in Nagaon and dereservation of select grazing reserves for that purpose, as per Resolution of 21 June, 1940.

(ii) dereservation of professional grazing reserves in Kamrup and Darrang, if found surplus to actual requirements, and

(iii) Opening up of surplus reserves in all the submontane areas and in Sibsagar and Lakhimpur, for settlement of landless indigenous people.

In 1921 Mr. Bentick, Deputy Commissioner in Kamrup, wrote:

"They have reclaimed and brought under permanent cultivation thousands of acres which the local cultivators had for generations past merely scratched

with haphazard and intermittent crops or recognized as exigent of efforts beyond their inclination. The large undulating expanses of char lands to be seen in late March or early April finely harrowed, weeded and newly sown, are something to which the spectacle of ordinary Assemese cultivation is quite unaccustomed. They have, besides their industry, shown examples of new crops and improved methods". (Census of India, 1921, p.41).

A decade later, P.C. Mukerji, the Deputy Commissioner of Nagaon, wrote:

"They have opened up vast tracts of dense jungles along the south bank of the Brahmaputra and have occupied nearly all the lands which are open for settlement in this tract. These people have brought in their wake wealth, industry and general prosperity of the whole district. They have improved the health of the countryside by clearing the jungles and converting the wilderness into prosperous villages. Their industry as agriculturists has become almost proverbial and they extract from their fields the utmost that they can yield. Their care and love of cattle is also an object lesson to others. Government revenue has increased. Trade and commerce have prospered. The lakhs of rupees which annually pour into the district to buy their jute pass out of their pockets into those of the traders who sell

them their food stuffs and imported goods as well as into those of the lawyers and mahajans (money lenders) who look after their litigation and finance"(Census of India, 1931, p. 51.)

Thus the flow continued for a long period and is said to be in continuation resulting in a chaotic type of human settlement peculiar to the char areas of the Brahmaputra valley.

2.2 BENGALI REFUGEES

The migration of Bengali Hindus, i.e., refugee from erstwhile East Bengal (present Bangladesh) to Assam in huge numbers was more a consequence of political events than economic ones. The refugee migration was rather compulsive and was caused by communal conflicts that rocked East Bengal just after the partition of the country. Many refugee colonies had, therefore, to be established in the state. For instance, the Baghbor colony covering about 2,800 hectares in the Barpeta sub-Division was established in 1950. Other two colonies in the same Sub-Division, i.e., Gobindapur and Theka were established in 1965 (Farmer, 1974).

Another major influx of the refugees took place during 1971 when East Bengal became an independent state named Bangladesh. The policy of Islamisation of the then Bangladesh Government also helped in developing a tense situation and communal conflicts among the Muslims and

Hindus. As a consequence Hindus were forced to migrate particularly to Assam. This is a type of forced migration. The rehabilitation measures taken by both the Central and the State Governments have also promoted the tendency of refugees to migrate to Assam. This was further facilitated^{ta} by the socio-psychological support and physical shelter accorded by the Bengali population settled earlier. Many of the refugees, being poor and helpless had to prefer the virgin char areas for their settlement. They started taking up both agriculture and fishing as their prime occupation.

2.3 NEPALI IMMIGRANTS

The process of Nepali immigration to Assam has a historical background. There has been a close and cordial socio-cultural relation between India and Nepal from the remote past. India had established socio-cultural contact with Nepal during the reigns of Chandra Gupta, Vikramaditya and Ashoka. The spread of Sanskrit language in Nepal and movement of Nepali scholars to Nalanda of India for higher learning is a good example of Indo-Nepalese cultural ties in the past. Such relations formed the basis of movement of Nepali people to India including Assam.

During British rule the process of Nepali immigration into Assam was a distinct and well established phenomenon. To maintain external defence and internal law

and order Gorkha soldiers were recruited by the British Government in the Assam light infantry Battalion and the Assam Rifles, which is a landmark in the history of Nepali immigration into Assam (Bhuyan, 1977).

It is quite natural that the information about the presence of luxuriant grassland as well as cultivable wastelands in Assam passed over to the people of Nepal through these pioneer immigrants. Thereafter streams of Nepali graziers and cultivators used to arrive in the State. The influx of Nepali immigrants was rather intense during the period 1901-31 when about 50 per cent of the total Nepali immigrants of the state are estimated to have arrived (Bhuyan, 1977). They were accompanied with herds of buffaloes and cattles of their breed. As pointed out by Bhuyan, it is interesting to note that there were Buffalo Khuti (cattle keeping yard) even in Nongthymai and Maulai near Shillong in Meghalaya as back as 1874.

The availability of grasses on the riverine tracts and char areas of the Brahmaputra facilitated the Nepali graziers to organise Khutis for buffalo and cows. This automatically led the Nepali graziers to settle down on this belt. It is reported that even today there is immigration of Nepali people who are related to the early Nepali settlers.

The foregoing description clearly shows that the process of human settlement in the chars of the Brahmaputra is relatively of recent origin and is yet to attain stability. The process, as has been discussed, has a deep concern with immigration of several groups of people and is, therefore, bound to give rise to a variety of ecological and cultural results.

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CHAPTER 3

PHYSICAL BACKGROUND OF THE CHARS

The chars are an integral part of the very complex fluvial regime of the Brahmaputra. The number, extent and vulnerability of the chars are so significant that they naturally call for a detailed physical geographic discussion, especially on the general course of the river, the process of evolution of the chars, their soil character and vegetal cover.

The river Brahmaputra originating in a glacier called Tamchuk Khambab in the Kailas Range of the Himalayas at an elevation of 5,300 m flows through China, India and Bangladesh for a total length of 2,300 km to debouch into the Bay of Bengal. In Tibet, where it is known as Tsangpo, the Brahmaputra flows eastward for a length of 1,100 km. At the extreme eastern end of its course in Tibet, the Tsangpo suddenly enters a deep gorge and continues south-westward with a bend around the Namcha Barwa Peak in Arunachal Himalaya. The Tsangpo which is called Dihang in Arunachal, traverses 220 km of mountainous tract before entering into the Assam plain near Fashighat (elevation 155 m). Here the slope of

the river is only 0.27 m/km. Then it is joined by two other rivers - Dibang and Lohit and the combined flow, called the Brahmaputra, moves westward for 720 km through the plain of Assam up to Dhubri. Then it enters Bangladesh. The Brahmaputra has a gradient of 0.09-0.17 m/km near Dibrugarh and only 0.1 m/km near Guwahati.

In Assam, the Brahmaputra flows through a highly braided channel with numerous lateral as well as mid channel bars. The floodplain of the Brahmaputra exhibits an array of alluvial features including natural levees, crevasse splay deposits, point bars, meander scrolls and ox-bow lakes. It is the fourth largest river in the world in terms of average annual discharge. The discharge per unit of drainage area in the basin is the highest among the major rivers of the world. The highest flood discharge at Pandu is 720000 cumec. Besides, the Brahmaputra is one of the most sediment-charged large rivers of the World. At Pandu, the river carries an average annual suspended load of 15000 ha.m. during 1955-1979 (Goswami, 1982).

Bank materials of the Brahmaputra are mostly composed of fine sand, silt and little amount of clay. The bankline of the river is, therefore, extremely unstable. The channel is characterised by notable changes in its

bankline at numerous locations and formation of sandbars. The width of the Brahmaputra varies both temporally and spatially.

3.1 THE CHARS AND THEIR FORMATION

The Brahmaputra River in its middle course in Assam is marked by braided channels with divisions and rejoinings of courses around the alluvial islands, locally called as chars. The chars, which are the product of the river itself, are composed of both bedload and suspended sediment. Normally, the chars are triangular in shape. Their axes are oriented parallel to the average flow direction. Generally they are unstable and their locations get changed frequently. But some of the big chars being partly covered by vegetation are semi-permanent. However, the size, shape and location of most of the chars get changed from time to time. Consequently, the cross-sectional area of the river at any point is significantly fluctuated resulting in rapid cutting and filling along the banks. This process is mainly responsible for the formation of the chars.

The shape of the upstream face of the chars are moulded by the variation in flow direction in the vicinity of the island (Coleman, 1909). The slope of the upstream end of the chars is generally steep. The downstream faces of the chars, on the otherhand, are of very gentle

slope and the surface remains covered with ripples and larger bedforms. The height of the chars can never be greater than the height of the highest flood since the chars are built under flood condition (Coleman, 1969). Once they are exposed after recession of flood, most of the chars are immediately occupied by the nearby inhabitants, mostly immigrants, and are brought under cultivation.

The initial location of the chars are determined during the flood. The braiding course of the river leaves landmass in between the divisions of the channel. The area of deposition in the central part of the channel is caused by slack-water conditions (Coleman, 1969). During the flood this area is aggraded significantly. With the recession of flood, the velocity of flow is reduced and the capacity of the river to remove the deposits becomes low and hence deposition of silts takes place.

During the next flood the chars are again submerged. In some cases they are completely wiped away by erosion. But commonly they are subjected to erosion on their upstream and deposition on the downstream end. As a result, the island migrate downstream. Erosion on the upstream face and deposition in the downstream end of the char help maintain their original shape and size. In some cases, however, the whole char may disappear or new char may form.

The migration of channels also may cause formation of new chars. The channel of the Brahmaputra is highly migratory in nature. Various causes like channel aggradation and degradation are responsible for channel migration. There are evidences that the Bhanganmari and Kalarchar were formed due to channel migration of the Brahmaputra after the great earthquake of 1897.

It is interesting to note that sediment transport in the Brahmaputra increases with the progress of flood cycle during the rainy season. The thalweg (the deepest part of the channel) starts to change position and the geometry and location of the chars and channel bars change (Goswami, 1965). As the flow begins to recede, deposition over the bed takes place giving rise to what we call channel bars and islands (chars), many of which are quite temporary, while others are relatively permanent.

3.2 SOIL

The soil of the Brahmaputra chars is composed of alluvium freshly laid by the river. It is a mixture of fine sands, silt and clay. The uppermost layer, if regularly innundated, is normally sandy with little humus content. But the sub-surface layer, where decomposed

vegetal remains are abundant, is rich in humus and favours luxuriant growth of crops. In most of the semi-permanent chars, the soil is generally azonal, because it gets insufficient time to develop a well-developed profile. But the silts continuously deposited by the river during summer make the soil very suitable for the fast growing plants.

So far moisture content is concerned, normally the soil of the chars contains relatively less moisture during winter because of its sandy nature. Porosity of the sub-surface reduces the moisture retention capacity of the soil. The measurement of soil moisture in the Bhangamari and Kalachar by a moisture metre (reading was, however, taken just after a rainy day of December, 1992) reveals that the moisture content of the surface soil of the agricultural fields is around 50 per cent, while it is more than 80 per cent in the areas near the river water. Lack of thick vegetal cover in the vicinity of the chars hinders sufficient biological activity in the soil resulting in low level of humification.

3.3 NATURAL VEGETATION

A variety of shrubby bushes and grasses characterise the natural vegetation of the Brahmaputra chars. As most of the chars are semi-permanent in nature, matured tall

trees can rarely be found there, though the chars fall under the domain of the tropical monsoon climate. The grass and shrubby bushes, locally known as Nol, Khagari, Birina, Kher (thatch), etc. are not ^{only} the sources of scenic beauty, but also the sources of building materials and fodder for domesticated animals. However, tall trees like sigul and bamboo are found to grow in the relatively permanent and spacious chars. Another type of bushy vegetation called Jhaobon abundantly grows in the char areas. The hard stems of this type ^{of} vegetation is commonly used as fuels by the char-dwellers. The water-logged areas, on the other hand, are the breeding grounds of water hyacinth and some other edible flora.

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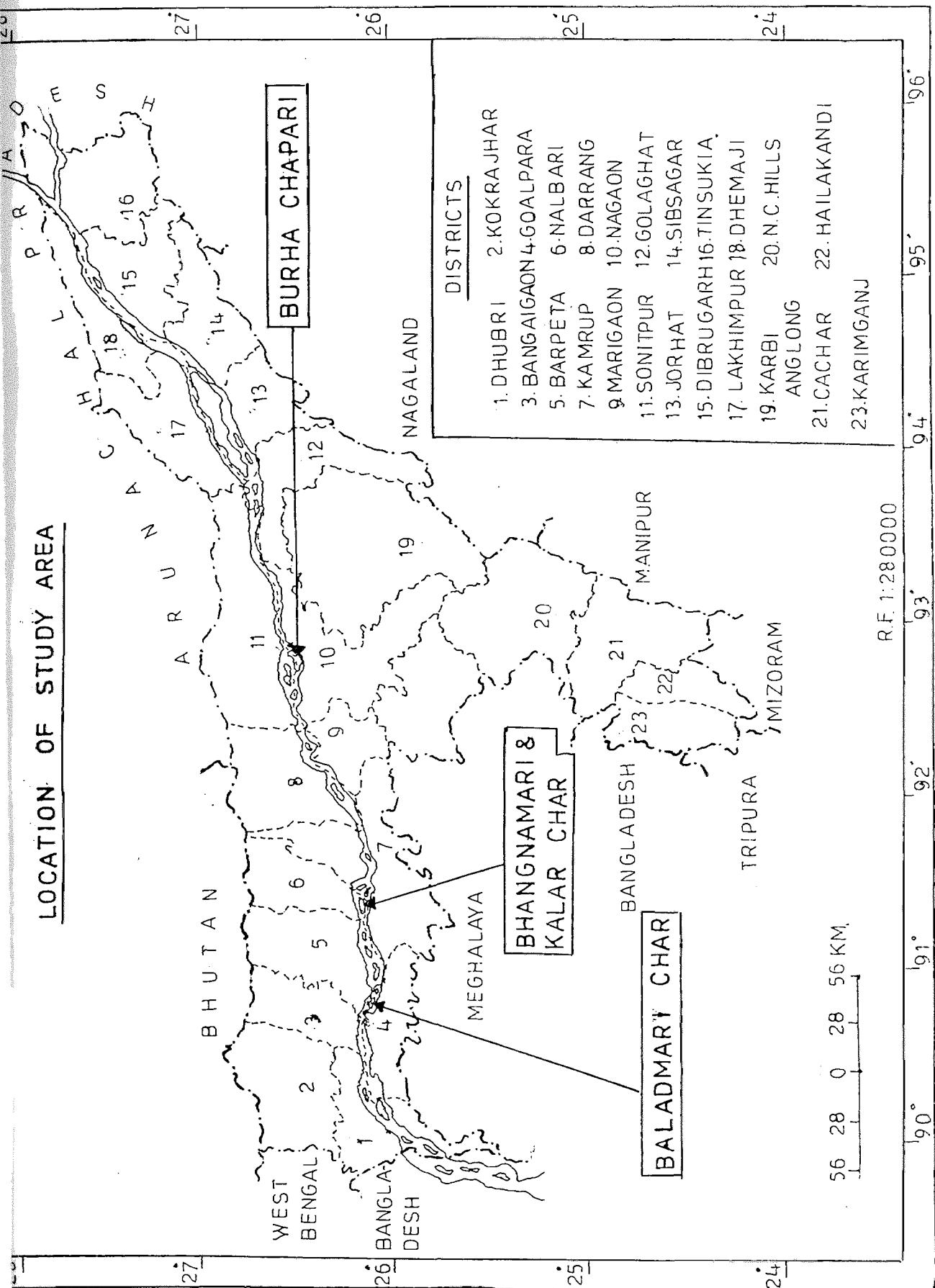


FIG. 1.

CHAPTER 4

THE CHARS UNDER STUDY: AN INTRODUCTORY PROFILE

4.1 BHANGANMARI CHAR

The Bhangamari char, a part of one of the biggest chars of the Brahmaputra, is located amidst the great river south of Mukalmua, a market centre in Nalbari District. The Bhangamari char thus is bounded by two major distributaries of the Brahmaputra on both north and south. To the east of Bhangamari lies the Kurhiamari char while to the west lies the Kalai char (Fig. 2). In 1992, the Bhangamari char was declared as Bhangamari Gaon Panchayat to function under the Borkhetri Development Block of Nalbari District.

The approximate length of the Bhangamari char is about 6 km and its ⁴width is about 7 km. As per estimates of the Block Development Office of Borkhetri the total population of the Bhangamari char is 12,344 (1991).

The char is linked with Mukalmua by ferry service of the Inland Water Transport, Assam, two times a day. Moreover, private motor boats locally known as

CHAR AND KALAR CHAR

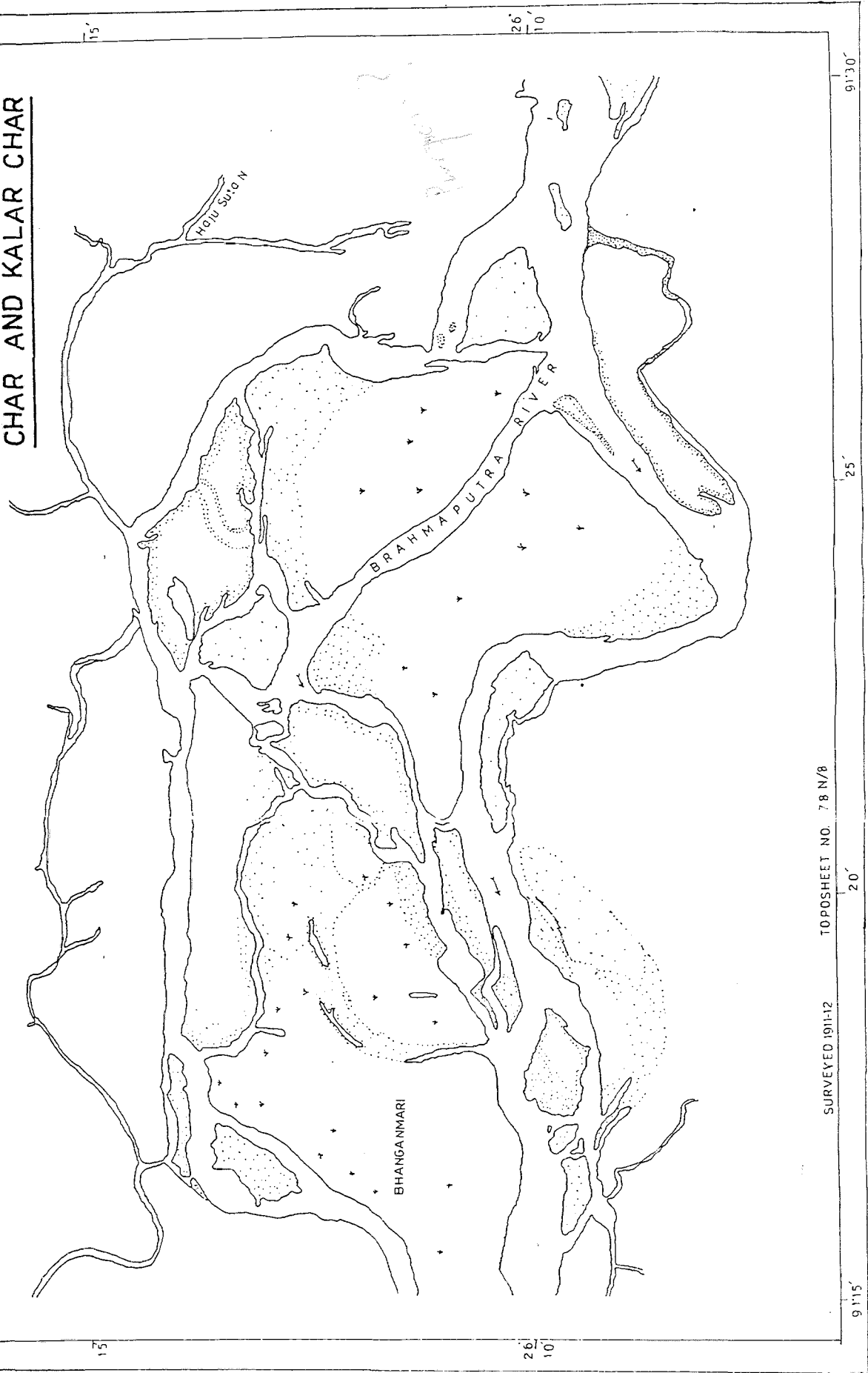


TOPOSHEET NO 78 N/0

SURVEYED 1967-68

FIG 2

PAKI UP BHANGANMARI
CHAR AND KALAR CHAR



SURVEYED 1911-12 TOPOSHEET NO. 78 N/8

FIG. 3

bhut-bhuti also remains at service. But within the char people traverse mostly on foot and rarely on bicycle. The buffello-drawn carts are, however, used to carry bulky goods.

The two bi-weekly markets held on Wednesday and Friday play a vital role not only in exchanging goods but also in the diffusion of information to the whole of the char. These markets begin at forenoon and close at sunset.

4.2 KALAR CHAR

Located in the district of Nalbari, the Kalar char is an westward extension of the Bhanganmari. The distributaries of the Brahmaputra wash its northern and southern boundary. On the west the Kalar char is separated from N.C. Pub Kajia char by a narrow channel (Fig. 2).

The approximate length of Kalar char is 3-4 km. The width, however, varies from area to area. In the middle, its width is 4-5 km. It appears to a width of only 1-2 km in its extreme west.

According to the estimate of the Block Development Office, the population size in Kalar char is 5,373 (1991). The inhabitants of this char belong solely to the immigrant Muslim group.

The ferry service from Mukalmua to Bhanganmari also serves Kalar char. Regular ferry service is also there from Rampur ghat to Kalar char. Many of the people of this area use to go to Guwahati by boat directly through the Brahmaputra.

4.3 BALADMARI CHAR

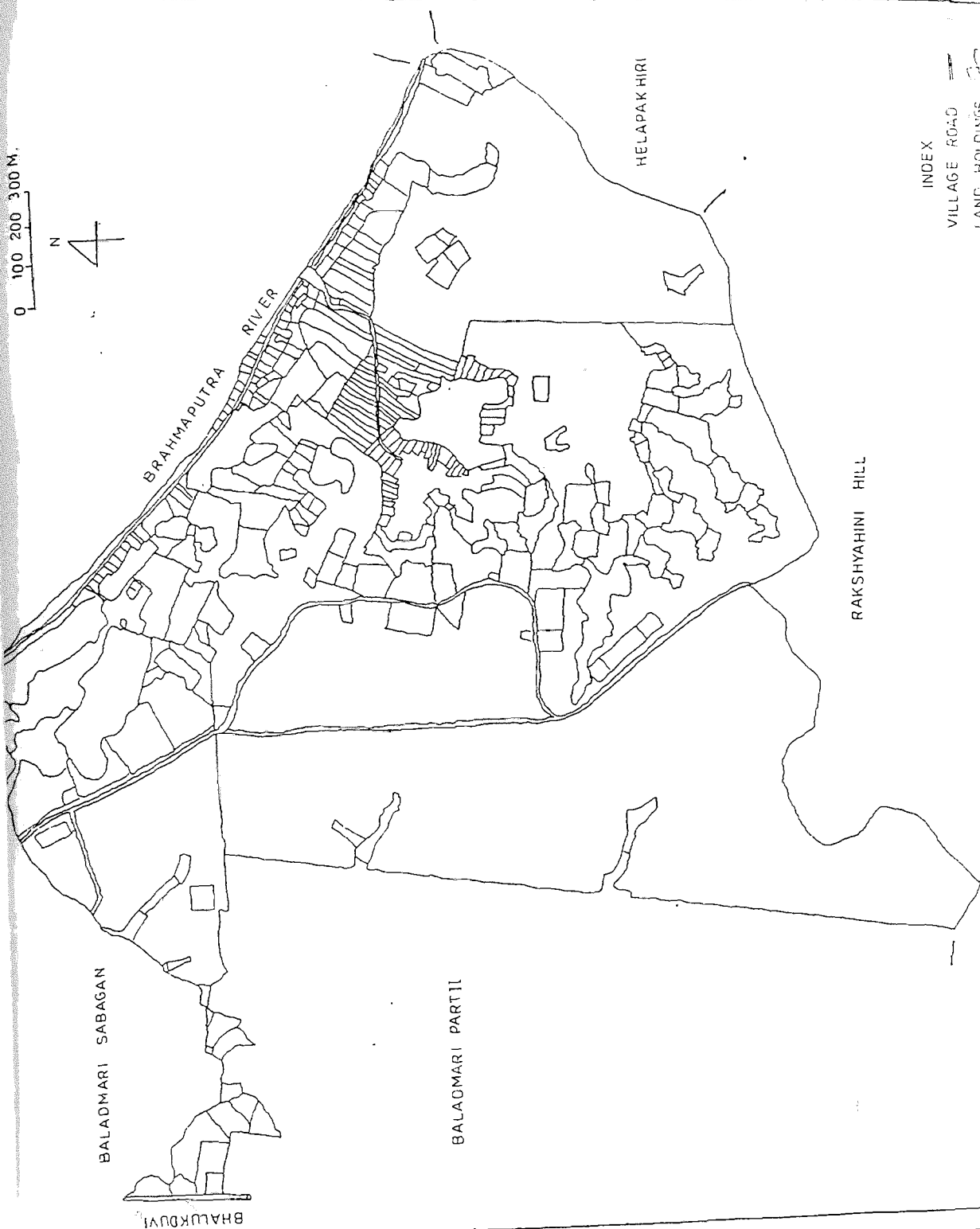
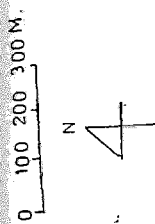
The Baladmari char is located just in the vicinity of the Goalpara town. It is connected with the Goalpara town by an abandoned channel. The main stream of the Brahmaputra passes through the north of the Baladmari char. On its south-east, the Rashyehini Beher is situated. It is separated from the Maukhuwa char on the east by a branch of the river Brahmaputra (Fig. 4). The shape of the Badalmari char is convex.

Badalmari became a Gaon Panchayat in 1992. It is under the Matia revenue circle of Goalpara District.

People of this area can come to Goalpara town on foot. Rickshaw service is also sometimes available.

4.4 BURHA CHAPARI

Burha Chapari is located on the south bank of the Brahmaputra just west of Kalia Bhgmora Bridge. The boundary between the districts of Sonitpur and Nagaon falls on the south of Burha chapari along an abandoned



SOURCE: OFFICE OF THE DEPUTY COMMISSIONER, GOALPARA.

FIG. 4

channel. Burha chapari on its south is attached to the Laokhowa Reserved Forest. The northern, eastern and western boundary of the Chapari is determined by the Brahmaputra. It is almost triangular in shape approximately with a length of ~~and~~ 7-8 km ^{and} a width of 3-4 km in its middle (Fig.5). It is interesting to note that this Chapari acts as a mid-way station for wild animals moving between Kaziranga Wildlife Sanctuary and Orang Wild Life Sanctuary.

To the north of the Dhanai Suti, an abandoned channel of the Brahmaputra, Burha chapari comes under the Tezpur Revenue Circle and from this suti to Laokhowa Reserved Forest it falls under the Juri Revenue Circle of Nagaon District.

Nepali graziers have settled down mostly to the north of the Dhanai suti and beyond that the area is under some Bihari families, immigrant Muslims and refugee Bengalis. This area is noted for supplying milk to Tezpur and its environs.

From Tezpur to the Chapari, ferry service is there two times a day. People can also move to Laokhowa near Rupahi on foot or by bicycle.

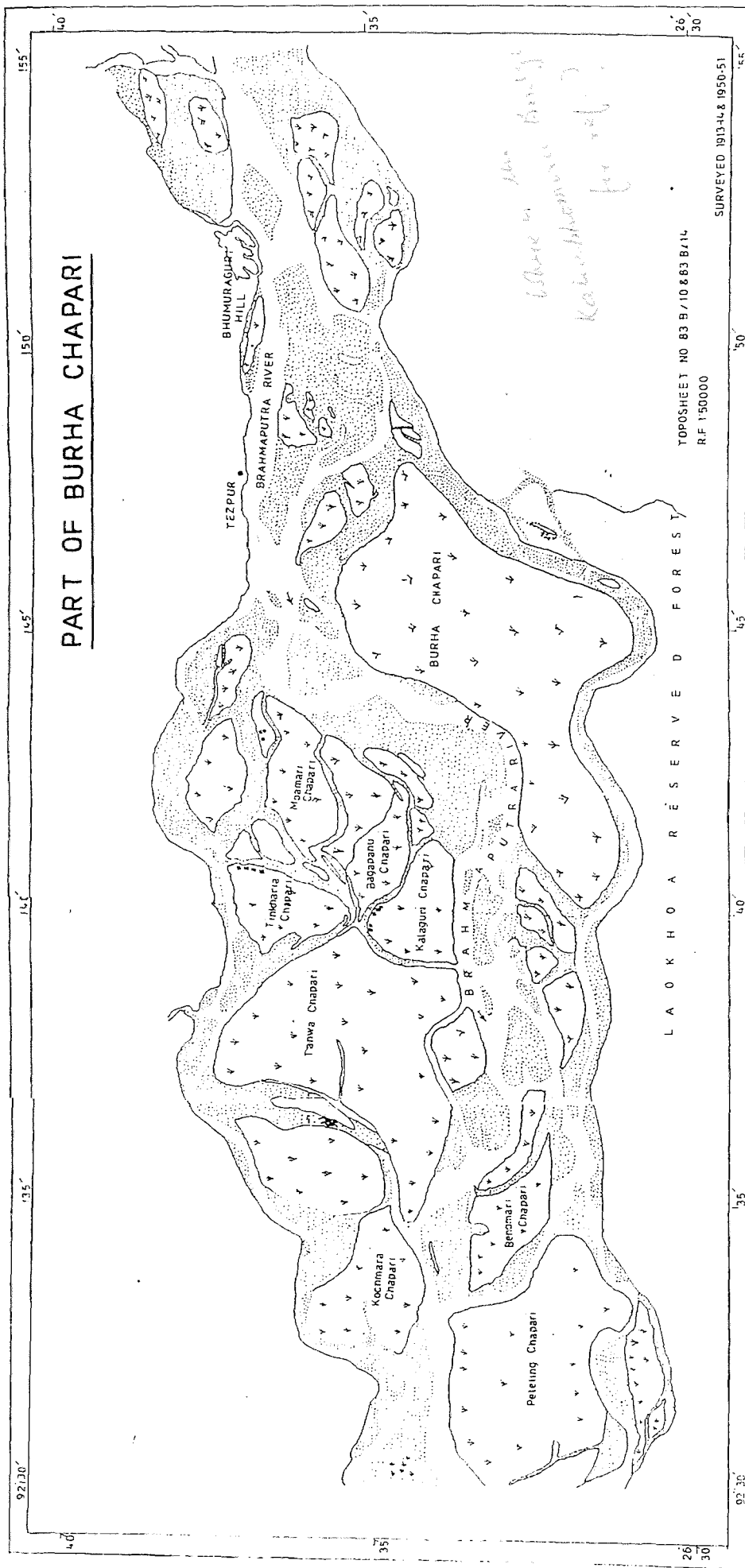


FIG. 5

CHAPTER 5

DEMOGRAPHIC AND CULTURAL CHARACTERISTICS

5.1 POPULATION COMPOSITION

The population composition in the char areas of the Brahmaputra valley is quite different from that of the middle plain and the foothills. While the former is overwhelmingly dominated by the immigrant Muslims, the latter two areas are under the dominance of indigenous Assamese non-tribals and indigenous Assamese tribals respectively. The population composition in the chars under study is discussed below.

The Bhangamari char had a population of 12,844 in 1991 as recorded by the Block Development Office, Barkhetri. More than 90 per cent of the total population are immigrant Muslims who are better labelled as Na Asamiya Musalmans (Ali, 1978). A small group of indigenous Assamese Hindus (60 families) belonging to Kalita caste has also been inhabiting this char. In addition, three Harijan families are found to have settled in the char. The char was also inhabited by a group of Nepali immigrants, all of whom subsequently left for some other more convenient areas. The

area once occupied by them is now under the sole occupance of the Muslims, but it is still known as the Nepali Basti.

The present pattern of human settlement in Bhanganmari is, to a large extent, the result of the great devastating flood caused by the earthquake of 1950. Many of the river bank settlements were wiped away by flood resulting in rearrangement of them in the subsequent period. However, among the Na Asamiya Musalman there are some newcomers who immigrated in the recent years owing to various reasons like channel migration, growing scarcity of land and poverty in their native land.

The Kalarchar on the other hand, is solely inhabited by the Na Asamiya Musalmans. According to the estimates of the Block Development Office, Barkhetri in 1991 the population size of this char was 5,373. These people were given shelter here after the earthquake of 1950 which caused large-scale damage to many of the villages on the north bank of the Brahmaputra. Since then they with their descendants and some new entrants have been inhabiting this area.

The inhabitants of the Baladmari char in Goalpara District belong to immigrant Muslim and Hindu refugee groups. The Muslims here are called Bhatias. They came to settle in this char about 60 years back ^{from} the villages

near Jogighopa. But the Hindu refugees are quite new in terms of their settlement in the char. They migrated to the area only after the communal violence that rocked Bangladesh during its partition from Pakistan in 1971. The size of the total population in Baladmari is 7,547 in 1991 as per the records of the Block Development Office, Matia.

The population composition in Burha Chapari is relatively diverse, the major group being the Nepali. Apart from Nepali, there are scheduled castes (Bihari), Na Asamiya Musalmans (migrating recently from Rupahi, Juria of Nagaon) and Hindu refugees. Nepali graziers have been inhabiting the area for more than 100 years. Other groups arrived at different times, but with the same goal of getting better livelihood.

5.2 AGE-SEX STRUCTURE

The analysis of age-sex structure is very important for understanding the demographic characteristics of an area. Table 5.1 shows the distribution of population in various age groups in the Bhangnamari char.

Of the total 69 persons (13.50 per cent) in the age-group of 0-5 years, the number of males is 35 and females is 34. The number of males in the age-group of 5-10 years is 48 (17.37 per cent) while the number of females is

Table 5.1: Age-Groupwise size of population, Bhanganmari Char
(Nalbari District), 1992

Age Group	No. of Males	No. of females	Total persons
0 - 5	35 (13.51)	34 (13.55)	69 (13.50)
5 - 10	48 (17.37)	31 (12.35)	79 (15.46)
10 - 15	29 (11.20)	31 (12.35)	60 (11.74)
15 - 20	26 (10.04)	26 (10.36)	52 (10.18)
20 - 25	15 (5.79)	35 (13.94)	50 (9.78)
25 - 30	20 (7.72)	30 (11.95)	50 (9.78)
30 - 35	17 (6.56)	21 (8.37)	38 (7.44)
40 - 45	20 (7.72)	10 (3.92)	30 (5.87)
40 - 45	8 (3.09)	11 (4.38)	19 (3.72)
45 - 50	12 (4.63)	3 (1.20)	15 (2.94)
50 - 55	3 (1.16)	6 (2.39)	9 (1.76)
55 - 60	4 (1.54)	5 (1.99)	9 (1.76)
60 - 65	9 (3.47)	2 (0.80)	11 (2.15)
65 - 70	2 (0.77)	2 (0.80)	4 (0.78)
70 - 75	4 (1.54)	3 (1.20)	7 (1.37)
75 - 80	2 (0.77)	1 (0.40)	3 (0.58)
80 - 85	3 (1.16)	-	3 (0.58)
85 - 90	2 (0.77)	-	2 (0. 39)

Source : Field Work

31 (12.35 per cent). In the age groups below 15 years, males constitute 43.24 per cent and females constitute 38.09 per cent, while the number of males and females in the age group of 15-20 years is the same. But the number of females is found to be higher than the males in the age groups of 20-25, 25-30 and 30-35 years (Table 5.1). Males constitute 48.26 per cent of the total male population in the age groups between 15 and 60 years while in the same age range females constitute 58.33 per cent of total female population. The number of males in the 60 + years age group is 22 accounting for 8.50 per cent of total males, while it is only 8 (3.17 per cent) in the case of the females.

The sex ratio^{1*} i.e., number of females per thousand of males, for Bhangarmari char is calculated to be 1,028.

The index of fertility^{2**}, which indicates the nature of population growth, is the ratio between number of children under 15 years and number of females in the age group of 15-45 years. It is expressed in terms of per thousand of females. The index of fertility for Bhangarmari char

$$1* \text{ Sex Ratio} = \frac{\text{Number of males}}{\text{Number of females}} \times 1,000$$

2** Index of fertility =

$$\frac{\text{Number of children under 15}}{\text{Number of Women between 15-45}} \times 1,000$$

stands at 1,529.

Table 5.2 shows the distribution of population in various age groups in Kalarchar. The total number of persons in the age group of 0-5 years is 48 (13.64 per cent of the total population), of which 25 (14.29 per cent) are males and 23 (12.99 per cent) are females. In the age group below 15 years, males constitute 42.30 per cent of the total male population, while females constitute 37.29 per cent of the total females. The number of females and males in other age groups up to 60 years is almost same, except for the age group of 20-25 years in which the number of females is 32 (18.08 per cent) and of males is only 18 (10.29 per cent). In between 15 and 60 years of age the percentage of males to total males is 43.57 per cent and for the females in the corresponding age group it is 55.93 per cent. Above 60 years of age males constitute 8.57 per cent, while females constitute 6.78 per cent.

The sex ratio for Kalarchar is 938 females per thousand of males against a sex ratio of 937 for the whole of Nalbari District in 1991 (Statistical Hand Book, Assam, 1991).

The index of fertility for Kalarchar is calculated to be 1,516.

Table 5.2: Age Groupwise size of population in Kalarchar
(Nalbari District), 1992

Age Group	No.of males	No.of females	Total
0 - 5	25 (14.29)	23 (12.99)	48 (13.64)
5 - 10	33 (18.86)	25 (14.12)	58 (16.48)
10 - 15	17 (9.71)	18 (10.17)	35 (9.94)
15 - 20	14 (8.00)	19 (10.73)	33 (9.38)
20 - 25	18 (10.29)	32 (18.03)	50 (14.20)
25 - 30	13 (7.43)	15 (8.47)	28 (7.95)
30 - 35	12 (6.86)	8 (4.52)	20 (5.68)
35 - 40	11 (6.29)	9 (5.03)	20 (5.63)
40 - 45	6 (3.43)	6 (3.39)	12 (3.41)
45 - 50	3 (1.71)	4 (2.26)	7 (1.99)
50 - 55	3 (1.71)	5 (2.82)	8 (2.27)
55 - 60	5 (2.85)	1 (0.56)	6 (1.70)
60 - 65	4 (2.29)	5 (2.82)	9 (2.56)
65 - 70	1 (0.57)	-	1 (0.28)
70 - 75	4 (2.29)	4 (2.26)	8 (2.27)
75 - 80	2 (1.14)	-	2 (0.57)
80 - 85	2 (1.14)	2 (1.13)	4 (1.14)
85 - 90	-	1 (0.56)	1 (0.28)
90 - 95	2 (1.14)	-	2 (0.57)
Total	175	177	352

Source: Field work

Note : Figures within bracket indicate percentage of total.

Table 5.3 shows the pattern of distribution of population in various age-group in Baladmari char of Goalpara District.

Table 5.3: Age-Groupwise size of population in Baladmari char (Goalpara District), 1992

Age Group	No.of males	No.of females	Total
0 - 5	54 (17.82)	40 (13.20)	94 (15.51)
5 - 10	45 (14.85)	52 (17.16)	97 (16.00)
10- 15	36 (11.68)	28 (9.24)	64 (10.56)
15- 20	36 (11.88)	32 (10.56)	68 (11.22)
20- 25	18 (5.94)	33 (10.89)	51 (8.42)
25- 30	23 (7.59)	33 (10.89)	56 (10.75)
30- 35	16 (5.23)	28 (9.24)	44 (7.26)
35- 40	21 (6.93)	18 (5.94)	39 (6.44)
40 -45	16 (5.28)	10 (3.30)	26 (4.29)
45- 50	12 (3.96)	6 (1.98)	18 (2.97)
50- 55	7 (2.31)	7 (2.31)	14 (2.31)
55- 60	3 (0.99)	3 (0. 99)	6 (0.99)
60- 65	4 (1.32)	4 (1.32)	8 (1.32)
65- 70	2 (0.66)	2 (0.66)	4 (0.66)
70- 75	5 (1.65)	4 (1. 32)	9 (1.49)
75- 80	2 (0.66)	1 (0.33)	3 (0. 50)
80- 85	3 (0.99)	1 (0.33)	4 (0. 66)
85- 90	-	1 (0.33)	1 (0.17)
Total	303	303	606

Source : Field work.

Note : Figures within bracket indicate percentage of total.

The size of population within the age group of 0-5 years in the Baladmari char is 94 (15.51 per cent of total), of which 54 (17.82 per cent of male population) are males and 40 (13.20 per cent of female population) are females. The number of males and females in the age group of 5 - 10 years is 45 (14.35 per cent) and 52 (17.15 per cent) respectively. 44.55 per cent of the total male population is below 15 years of age, while it is 39.60 per cent in the case of female population. Number of females in the age group of 20-35 years is higher than the males. On the whole 50.17 per cent of the total male population and 56.17 per cent of the total female population fall within the age range of 15-40 years. In the age group of above 60 years, males constitute 5.28 per cent of the total male population, while the females constitute 4.29 per cent of the total female population.

The sex-ratio for the Baladmari char is 1,000 females per ^h thousand of males against the sex-ratio of 956 for the Goalpara District as a whole in 1991 (Statistical Hand Book, Assam, 1991).

The index of fertility for the Baladmari char is 1,593.

The table 5.4 shows the distribution of population in various age groups in Burha Chapari.

Table 5.4: Age Groupwise size of population, Burha Chapari
(Nagaon-Sonitpur District), 1992

Age group	No.of males	No.of females	Total
0 - 5	27 (11.02)	23 (11.62)	50 (11.29)
5 - 10	37 (15.10)	22 (11.11)	59 (13.32)
10 - 15	40 (16.33)	21 (10.61)	61 (13.77)
15 - 20	28 (11.43)	18 (9.09)	46 (10.38)
20 - 25	23 (9.39)	24 (12.12)	47 (10.61)
25 - 30	20 (8.16)	18 (9.09)	38 (8.58)
30 - 35	9 (3.86)	19 (9.60)	28 (6.32)
35 - 40	9 (3.86)	19 (9.60)	28 (6.32)
40 - 45	12 (4.90)	6 (3.03)	18 (4.00)
45 - 50	13 (5.31)	6 (3.03)	19 (4.29)
50 - 55	8 (3.27)	4 (2.02)	12 (2.71)
55 - 60	2 (0.82)	5 (2.53)	7 (1.58)
60 - 65	4 (1.63)	4 (2.02)	8 (1.81)
65 - 70	4 (1.63)	6 (3.03)	10 (2.26)
70 - 75	5 (2.04)	2 (1.01)	7 (1.58)
75 - 80	3 (1.22)	-	3 (0.68)
80 - 85	1 (0.41)	1 (0.51)	2 (0.45)
Total	245	198	443

Source: Field Work

Note : Figures within bracket indicate percentage of total.

Males and females numbering 27 (11.02 per cent of total males) and 23 (11.62 per cent of total females) respectively in the age group of 5-10 years together constitute 11.29 per cent of the total population. In the next age group, i.e., 5-10 years, the number of male and female is 37 (15.10 per cent) and 22 (11.28 per cent) respectively. In Burha chapari, the percentages of males and females below 15 years of age to their respective total are 42.45 and 33.33. The percentage share of male and female population in the age range of 15-60 years is 50.61 per cent and 65.15 per cent respectively. In the age group of above 60 years, males constitute 0.94 per cent of the total male population and females constitute 0.57 per cent of the total female population.

The sex-ratio calculated for Burha Chapari is 1,237 against the sex-ratio of 911 and 934 respectively in 1991 for Sonitpur ^{and} Nagaon districts.

The index of fertility for Burha Chapari is estimated to be 1,545.

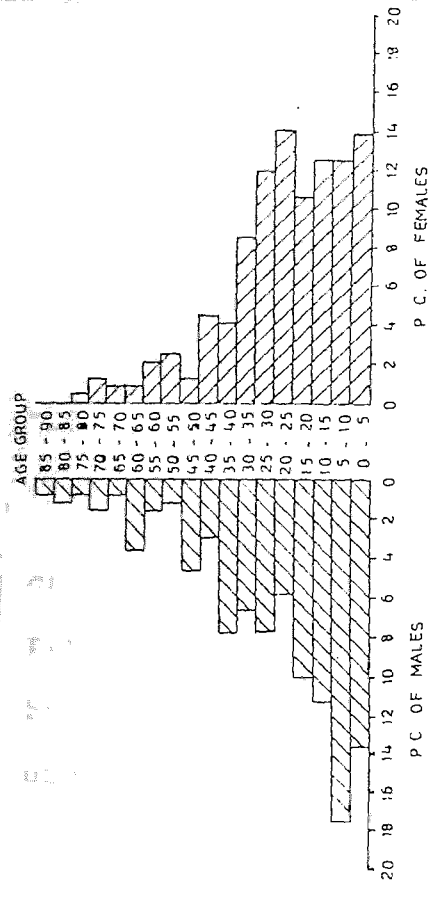
5.2.1 Age-Sex Pyramid:

The basic characteristics of population structure may be illustrated with the help of population pyramid or age-sex pyramid. The shape of the age-sex pyramid describes the structure of population in a visual manner. In the developing or underdeveloped countries, the age-sex

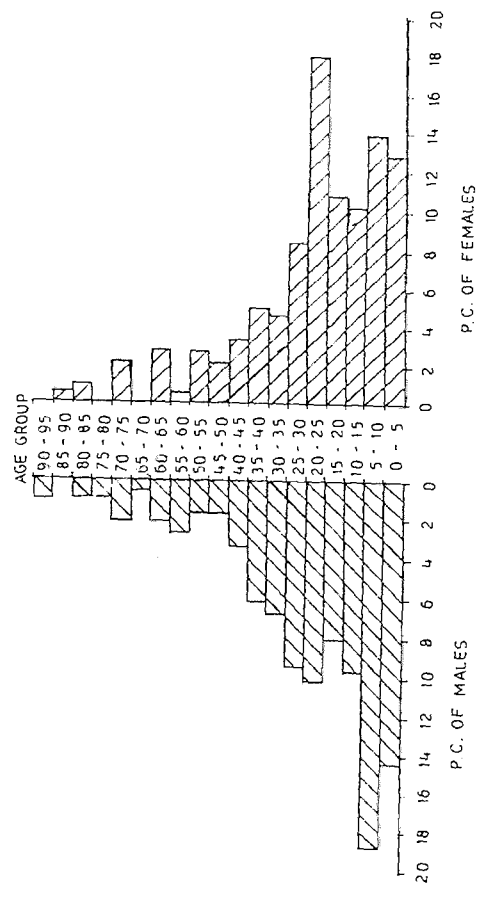
pyramid is characterised by a fattened base and a steeply tapering apex which means the presence of more young population. But in the case of the developed countries, the age-sex pyramid is characterised by lesser number of younger and aged population, which form a shape like "beehive" (Clarke, 1909).

Based on the age-sex characteristics of the chars (Table 1,2,3,4), the age-sex pyramids for Bhangamari char, Kalarchar, Baladmari char and Burha chapari have been prepared (Fig.6). The age-sex pyramids do not present a uniform shape like that of a typical pyramid applicable in the case of the developing and underdeveloped countries. The irregularity in the shape of the age-sex pyramids indicates an instability in the structure of the population of the chars. The shape in the case of the chars, to some extent, corresponds to an "anvil shape" (Clerke, 1909), which reflects a large proportion of rather young children. But the situation in the chars is found to somewhat deviate from this. In the chars, each family has at least 4 to 5 children below 15 years of age. The deviation in the shape of the age-sex pyramids from an envil shape may be attributed to the illiteracy and superstition of the char-dwellers which hinders the success of the family planning process. It is found that the percentage of population in the age group of 0-5 years is lower than that of 5-10 years in almost all the cases of chars under study (Table 5.1, 2, 3, 4). This is

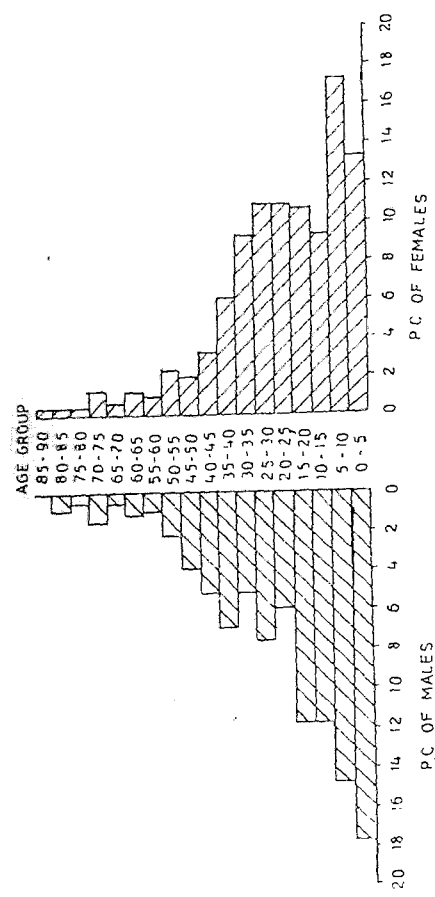
BHAGNAMARI CHAR (NALBARI)



KALAR CHAR (NALBARI)



BALADMARI CHAR (GOALPARA)



BURHA CHAPARI (SONITPUR)

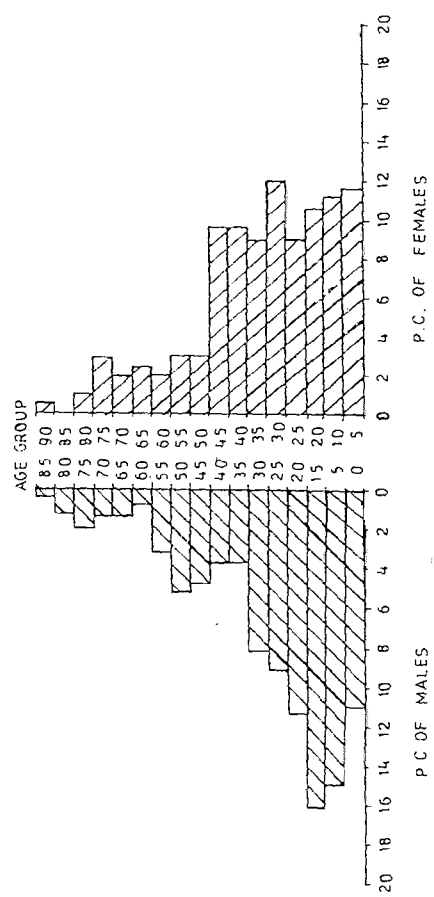


FIG. 6

because of the fact that a considerable number of child die before they attain 5 years of age either due to malnutrition or lack of proper medical facility.

5.2.2. Dependency Ratio:

The dependency ratio³ expresses the size of dependent population on the working force. The dependency ratio is a value obtained from the sum of the population below 14 years and the population above 60 years of age divided by the population between 15 and 59 years multiplied by a constant, 100.

While going to discuss the dependency ratio in the context of the chars under study it is important to note that a male child around 14 years of age considerably participates in various activities associated with agriculture. Most of the females of 14 years of age cannot be treated as children because they get married before they attain puberty. However, following the convention of treating the population below 14 years of age as dependents the dependency ratio for the respective chars has been calculated. The dependency ratio is being calculated on the basis of the data obtained from the

$$3. \text{ Dependency Ratio} = \frac{P_{0-14} + P_{60+}}{P_{15-59}} \times K$$

where - P_{0-14} is the population in the age group of 0-14 years
 P_{15-59} is the population in the age group of 15-59 years
 P_{60+} is the population in the age group of 60+ years
 $K=100$ (constant)

the household survey (Table 5.5).

Table 5.5: Dependency Ratio of certain chars, 1992

Name of the char	Population			Dependen- cy Ratio
	0-14 yrs	15-59 yrs	60+ yrs	
Bhanganmari char	208	372	30	63.98
Kalarchar	141	134	27	91.30
Baladmari char	255	322	29	38.20
Burha chapari	170	253	30	79.05

The dependency ratio calculated for the Bhanganmari char is 63.93, while it is as high as 91.30 in the case of Kalarchar. The dependency ratio for the Baladmari char and Burha chapari is 38.20 and 79.05 respectively.

Another measure having concern with the dependency aspect is the child dependency ratio⁴. It is the ratio between population within 0-14 years of age to young ^{and} adult population that, is population in the age range of 15-59 years.

Table 5.6: Child Dependency and Aged Dependency Ratio of Chars, 1992

Name of the char	Dependency ratio of child	Dependency ratio of aged
Bhanganmari char	55.91	8.06
Kalarchar	70.63	14.67
Baladmari char	79.19	9.00
Burha chapari	67.19	11.84

$$4. \text{ Child dependency ratio} = \frac{P_{0-14}}{P_{15-59}} \times 100$$

Aged dependency ratio on the other hand, is the ratio between population of 60 and above years to the size of working population⁵. Child dependency ratio and aged dependency ratio for respective chars are presented in Table 5.6.

In all the chars, the child dependency ratio is far higher than the aged dependency ratio which indicates a growing demand for occupation and resources in near future on the one hand, and a low life expectancy level on the other.

5.3 LITERACY AND EDUCATIONAL LEVEL

According to Census of India, literates are those above 7 years of age who can read and write. Based on this, the literacy rates are calculated for the chars under study and presented in Table 5.7.

Table 5.7: Literacy rates in the chars, 1992

Name of chars	Male literacy	Female literacy	Total Literacy
Bhanganmari char	47.49	24.60	30.20
Kalar char	46.86	14.69	30.68
Baladmari char	29.04	8.91	18.98
Burha chapari	54.69	41.91	48.98

Source: Field work

$$5. \text{ Aged dependency ratio} = \frac{P_{60+}}{P_{15-59}} \times 100$$

In Bhangamari char total literates account for 36.20 per cent of the total population, while male and female literacy account for 47.49 per cent and 24.69 per cent respectively. 30.68 per cent of ^{the} total population in Kalarchar are found to be literate . Male and female literacy rates in Kalarchar are calculated to be 46.86 per cent and 14.69 per cent of respectively.

In Baladmari char, 29.04 per cent of the total male population and 8.91 per cent of the total female population are found to be literate . The overall literacy rate of Baladmari is 13.98 per cent.

Literacy level is comparatively high in Burha chapari. Here 43.98 per cent of the total population are literates and 54.69 per cent of males and 41.91 per cent of females are literate . This has been possible because of their constant contact with Tezpur town and Nagaon plain.

The char-dwellers are now giving importance on educating their children inspite of economic hardship. They now understand that it is education which would enable them to get assimilated with the main stream of Assam and to have a better livelihood. As a result of this female literacy level is also gaining importance.

Low level of literacy in Baladmari char as compared to other chars is mainly due to economic constraints. As

the area is situated just near the Goalpara town, the inhabitants have a tendency to engage themselves as daily wage labourers. Thus the poor agriculture on the one hand, and job opportunity for unskilled labourer on the other have kept their literacy level at a lower level. In Burha chapari literacy level is comparatively high mainly due to the fact that the area is mostly inhabited by the Nepali immigrants. Nepalis are more in touch with the indigenous people than the immigrant Muslims or refugee Hindu Bengalis.

In the following section an analysis of the levels of education in respect of age groups of respective chars is attempted. In fact, this type of analysis is meaningful because many students have to leave their schools at different stages mainly due to economic constraints and pressure from family members to perform various household and agricultural activities. Table 5.8 shows the distribution of persons in various educational levels in respect of their age in Bhanganmari char. A close observation of the table shows that there is a tendency to educate the new generation. At the higher level still the number is insignificant. Similarly, at the higher age group, the number of educated persons is nil. Only a few people among the aged persons are literate who read only up to primary level. At high school level, the number of female students is lower than that of male students, i.e. there is only 5

Age Group	Primary		Middle School		High School		PU/BSSLC		Graduate		Post Graduate		Professional qualification	
	M	F	M	F	M	F	M	F	M	F	M	F	Level	No.
5-10	27	13	2										1.B.Ed.	1
10-15	14	7	7	6	3	2							2.Basic	
15-20	2	3	5	5	12	5	1	1	3				Trainee-	2
20-25	1	1	1	-	7	4	1	-	3				3.Bisharad	2
25-30	3	1	1	2	5	-	2	-	-		1		4.LLB(student)	1
30-35	1	2	-	1		2	1		3					
35-40	4	2	2	1					1					
40-45	-	3	1	-					1					
45-50	2	1	1	-										
50-55	-	-	1											
55-60	-	-	1											
60-65	2	-	1											
65-70	-	-	-	-										
70-75	-	-	-	-										
75-80	1	-	-	-										

Table 5.9: Number of persons at different educational levels, in Kalarchar (Nalbari District), 1992

Age Group	Primary		Middle School		H.S.		PU/HSSLC		Graduate		Post Gradu.		Professional qualification
	M	F	M	F	M	F	M	F	M	F	M	F	
5-10	20	11											Level
10-15	11	2	2	2		1							No
15-20	2	2	2		3	2							1. Basic Tran- ee 1
20-25	1	3	1		5	2					1		2. Bisharad - 2
25-30	2	-	-		-	2	1	-	5	-			3. Technical Diploma - 1
30-35	2	-	1		3	-			2				4. Veterinary Graduate - 1
35-40	1	-	2		1	-							
40-45	2	1	1		1								
45-50	-												
50-55	2												
55-60	2			1	1								
60-65	-												
65-70	-												
70-75	-	-	-	-	-	1							
75-80	1	-	-	-	1								
80-85	1												

Source: Field work.

Table 10: Number of persons at different educational levels, Baladwari Char, Goalpara District

1992

Age Group	Primary		Middle School		High School		P.U./HSSIC		Graduate		Post Graduate	
	M	F	M	F	M	F	M	F	M	F	M	F
5 - 10	14	11										
10 - 15	19	3	7	2								
15 - 20	5	1	8	1	2	1	1					
20 - 25	-	3	1	2	2		2					
25 - 30	2		2	-	3				1			
30 - 35	1		3	1	-				-			
35 - 40	1		2	1	-							
40 - 45	2		1	-	2							
45 - 50	1			1								
50 - 55	1											
55 - 60	1											
60 - 65	1											
65 - 70	-											
70 - 75												

Source: Field work

Nagaon District, 1992

Age Group	Primary		Middle School		High School		PU/ASSIC		Graduate		Post Graduate	
	M	F	M	F	M	F	M	F	M	F	M	F
5 - 10	20	10										
10 - 15	18	3	13	6	4	4						
15 - 20		2	1	2	13	7	2	2				
20 - 25			3	4	7	5	2	2		3	1	
25 - 30	2	-	5	2	5	6	2	2		2	1	
30 - 35	2	3	1	2	1	2			1	-		
35 - 40	1	4	2	2	1	2			1	1		
40 - 45	3	2	1	1	3	1				2		
45 - 50	2	1	1	2	2					1		
50 - 55	-	-	2	1		1						
55 - 60	-	1										
60 - 65	2	-										
65 - 70	3	1										
70 - 75												

Source : field work.

females in the age-group of 15-20 years, while in the corresponding age group the number of male students is 12. The total number of males at the graduate level is found to be 12. No female is found to be at that level. Only one male candidate completed post-graduation. Apart from these, one of the educated persons is in B.Ed. level, two are each in basic training and Bisharad level and one in LLB level in Bhangamari char.

The number of persons at different educational levels with respect to different age-groups in Kalarchar is presented in Table 5.9. Including one veterinary graduate, the number of graduate is found to be seven. At the post-graduate level, there is only one person.

In Kalarchar, the number of females at all educational level, is insignificant. Even at primary level in the age group of 5-10 years, the number of male is 20^{and} the number of female is 11. Above the high school level there is no female student

Table 5.10 shows the number of persons at different levels of education in respect of age groups in Baladmari char. Only 14 males and 11 females from the age group of 5-10 years are at the primary level. In the next age group, i.e. 10-15 years, 19 males and 3 females are at the same educational level.

At the higher levels number of persons decreases sharply. Among the aged persons only a few are literate in the sense that they can simply put their signature.

The picture of education in Burha Chapari is slightly better than that of the other chars. From among the households surveyed it has been found that 20 male and 10 female students belonging to the age group of 5-10 years are at the primary level (Table 5.11). Number of students, both male and female, at the high school is low but not insignificant. Majority of the students generally forgo their education at this level. Among the 11 graduates only two are female. As mentioned earlier, Burha chapari is inhabited mostly by Nepali people. The Nepalis here are relatively advanced as they maintain close contact with their relatives at Tezpur town. They frequently come to the town either to sell milk or to attend some social functions. In the recent years, schooling facility in the chars is growing gradually. It is important to note that all the schools located in the char areas follow Assamese as the medium of instruction. Barring the primary schools, all other schools are growing at the initiative of the local people. For instance, the Char Anchalik High School of Kalar Char which is the pioneering educational institute of the area serving the whole of Kolar char and its

neighbourhood was established by the local people out of their own resources. They are now interested to upgrade it to ^{the} higher secondary level. Moreover, the inhabitants, inspite of their poverty, voluntarily support the poor but very intelligent students so that they may be Good teacher or doctor to serve the locality in future. Thus, it is seen that there has been a growing interest for formal education among the char-dwellers particularly after the movement on foreigners' issue.

5.4 OCCUPATIONAL PATTERN

The occupational pattern in a given environmental set-up indicates the living standard and the socio-economic status of the inhabitants. People in general, initially select a particular occupation suitable to their environmental condition and in course of time some allied activities starts proliferating. Thus the occupational pattern which is normally diverse in nature, may be a reliable indicator for understanding the economic and social conditions of the area in question.

The following ^{is} a brief discussion on the occupational pattern of the people of Bhanganmari char, Kalarchar, Baladmari char and Burha Chapari.

Table 5.12: Occupational Pattern, Bhanganmari Char, 1992

Occupation	No. of persons engaged
1. Cultivators	90
2. Daily wage labourer	27
3. Teacher	10
(i) L. P	4
(ii) M.E.	4
(iii) High School	2
4. Rice/K.Oil hawker	2
5. Petty Pan shopkeeper	5
6. Pat (jute) Bepari	7
7. Fair price/Grocery Shopkeeper	2
8. Broken material (iron, steel, alluminium)	
Collector and seller	3
9. Bamboo craftsman	1
10. Fishing net maker	1
11. Radio mechanic	1
12. Cycle mechanic	1
13. Tubewell mechanic	1
14. Milk seller	2
15. Sickle etc. seller	1
16. Pharmacist	2
17. Cloth seller (at weekly markets)	2
18. Boatman	5

T-2

Occupation	No. of persons engaged
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19. Leather seller	1
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20. Social worker(including President/ member of Gaon Panchayat)	7
---	---

21. Persons having more than one occupation	01
--	----

Females in different occupation other
than household activities:

1. Anganbadi	3
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2. Health guide	1
-----------------	---

3. Gram Sevika	1
----------------	---

4. L.P. Teacher	2
-----------------	---

Source : Field work.

Table 5.13: Occupational Pattern, Kalarchar, 1992

Occupation	No. of persons engaged
1. Cultivators	56
2. Daily wage labourer	24
3. Teacher	5
(i) L.P	3
(ii) M.E	1
(iii) High School	1
4. Rice/K.oil hawker	1
5. Microphone lender	1
6. Broken material collector and seller	5
7. Umbrella repairing	1
8. Jewellery (at weekly markets)	1
9. Rajmistri	1
10. Peon	1
11. Petty pan shopkeeper	2
12. Pharmacist	1
13. Milk seller	1
14. Tailor	2
15. Flour miller	1
16. Cloth seller (at weekly markets)	2
17. Radio repairing	1
18. Seed seller	1
19. Tea stall keeper	2
20. Grocery shopkeeper	2
21. Egg seller	1
22. Social worker (including president/ member of Gaon Panchayat)	5
23. Persons with more than one occupation	31
Females engaged in other than household activities:	
1. Social worker	1

Source: Field work.

Table 5.14. Occupational Pattern, Baledmari char, 1992

Occupation	No.of persons engaged
1. Cultivator	57
2. Labourer	66
3. (i) Daily wage labourer	23
(ii) Labourer in bamboo transportation	4
(iii) Labourers in vehicles	10
(iv) Helper of Rajmistri	10
(v) Labourer in saw mills	11
(vi) Helper of carpenter	4
(vii) Rajmistri	4
3. Sweets seller	1
4. Cow/buffellow etc. seller	2
5. Rice/ K.Oil etc. hawker	5
6. Fish seller	25
7. Bamboo seller	4
8. Grocery shopkeeper	6
9. Fanshopkeeper	5
10. Ricksaw/Thela puller	9
11. Automobile mechanic	1
12. Chowkider/peon	2
13. Quarrying	1
14. Teacher	3
15. Service (clark)	1
16. Imnam (priest of mosque)	2
17. Social worker (including president/member of Gaon Panchayat)	4
18. Persons with more than one occupation	35

Source: Field work

Table 5.15: Occupational pattern, Burha Chapari, 1992

Occupation	No. of persons engaged
1. Cultivator	48
2. Labourer	10
3. Fish seller	7
4. Vegetable seller	5
5. Pat (jute) Bepari	2
6. Cow/bufellow seller	1
7. Fire wood w seller	4
8. Pan Shopkeeper	3
9. Grocery shopkeeper	4
10. Bufallow cart puller	2
11. Driver	1
12. Dairy farmer	27
13. Rajmistri	1
14. Service (including peon/chowkider/forest gurd/accountant)	4
15. Teacher	6
(i) L.P.	4
(ii) M.E.	1
(iii) High School	1
16. Persons with more than one occupation	19

Source : Field work.

A close observation of the respective tables (Tables 5.12, 5.13, 5.14, 5.15) exhibits diverse pattern of occupations. However, agriculture forms the backbone of occupations in the char areas. But the output of agricultural produces is not enough to meet the demand. Agriculture here is, by and large, dependent on the rhythm of nature. Another important point to be noted is that almost all the family members remain clung to agricultural activities which leads to the growth of disguised labour.

It is important to note that a major portion of the male working force is shifting to the urban areas in search of occupation. They mostly engage themselves as daily wage labourers in the towns. It is evident from table 5.14 that in Baladmari char most of the workers serve as labourers in motor transport or as helpers of carpenter or Rajmistri. Many of the workers of Bhanganmari, Kalarchar and Baladmari generally proceed to Meghalaya to work in the coal mines.

Fishing and fish-selling is often done by the refugee Bengali Hindus. However, some of ^{the} immigrant Muslims also have taken up this occupation. Some people in addition, earn their livelihood by selling different kinds of fishing nets.

So-called pharmacists and traditional herbal medicine dealers are in great demand in the char areas, although they possess no professional qualification. In the weekly markets, they install shops and sell a variety of medicines. During

the field work huge gatherings in front of such shops could be seen.

Other occupations like repairing of cycle, tubewell, umbrella and radio are gradually emerging in the char areas depending upon the needs of the people.

Livestock farming and trading of milk in Burha Chapari is mostly done by the Nepali people. Many of the Nepali livestock farmers possess residential properties in the nearby Tezpur town.

Persons with more than one occupation here means those who are engaged in activities like part-time wage labour, shop-keeping or teaching, etc. in addition to farming. But most of them serve as labourers and get associated with different types of work.

Females mostly perform household activities. Apart from that they also help the male folk in cropping and crop harvesting activities. They help in washing and drying of raw jute and husking of rice, etc. In recent times, the attitude of the society towards female is changing. They are now free to involve themselves in tertiary jobs. It is encouraging to note that there are few lady teachers in Bhanganmari and lady social worker and gaon panchayat members in Kalarchar.

5.5 MARRIAGE FIELD

The spatial span of the marriage field of a population group indicates the extent of cultural exchange of the group and also the location of identical groups elsewhere within a region. Especially in the case of the immigrant population, this may be a meaningful indicator of their distribution, cultural attainments and ~~spatio-~~ socio-spatial relation. In fact, a variety of factors, such as tradition, religion, caste, education, economic status, mobility, etc. decide the extent of the marriage field of a community. In order to arrive at a conclusion in this regard, therefore, an intensive field-based study is needed. Here it is attempted to give a preliminary picture of the marriage field of the different groups of char-dweller. It is worth mentioning that the households surveyed communitywise are not equal in number and, as such, the marriage frequency appears to vary greatly. Whatever may the total frequency be, the distance between the couples would give the picture of the marriage field in respect of each community.

Table 5.16, 5.17, 5.18 and 5.19 give an idea as to the spatial extent of the marriage field of Muslim, Bengali Hindu, Nepali Hindu and Bihari Hindu immigrants of the chars under study.

Table 5.16: Frequency of Marriage with respect to distance
in Bhanganmari ,1990

Community	Distance (in km)	Frequency of marriage
Immigrant Muslims	0 - 1	7
	1 - 2	13
	2 - 3	13
	3 - 4	2
	4 - 5	8
	5 - 6	9
	6 - 7	10
	7 - 8	5
	8 - 9	0
	9 -10	2
	10-20	17
	20-30	1
	30-40	1
	40-50	1
	50-60	6
	60-70	0
	70-80	5
	80-90	
	90-100	

Source : Field work

Table 5.17: Frequency of marriages with respect to distance in Kalarchar, 1992

Community	Distance(in km)	Frequency of Marriage
Immigrant Muslims	0 - 1	26
	1 - 2	8
	2 - 3	17
	3 - 4	5
	4 - 5	7
	5 - 6	3
	6 - 7	3
	7 - 8	2
	8 - 9	0
	9 -10	4
	10- 20	2
	20-30	3
	30-40	1
	40-50	-
	50-60	2
	60-70	2
	70-80	-
	80-90	-
	90-100	1
Total		88

Source: Field work.

Table 5.18: Frequency of marriage in respect of distance in
in Baladmari Char, 1992

Distance (in km)	Frequency of Marriage		
	Muslim	Bangali Hindu	Bihari Hindu
0 - 1	52	9	1
1 - 2	12		
2 - 3	11		
3 - 4	9		
4 - 5	2	1	
5 - 6	1	1	
6 - 7			
7 - 8			
8 - 9			
9 - 10	5		
10 - 20	11	1	2
20 - 30	6	4	2
30 - 40			
40 - 50	5	1	
50 - 60	4	1	
60 - 70		1	
70 - 80	1	1	1
80 - 90			
90 - 100			
> 100		5	1
Total	122	25	7

Source: Field work.

Table 5.19: Frequency of Marriage With respect to distance in Burhachapari, 1992

Distance (in km)	Marriage Frequency			
	Muslims	Nepali Hindu	Bihari Hindu	Bengali Hindu
0 - 1	5	5	-	2
1 - 2	1	-		
2 - 3				
3 - 4				
4 - 5		1		4
5 - 6	4			
6 - 7				
7 - 8	4		1	
8 - 9				
9 - 10	5		3	1
10 - 20	11	2	1	
20 - 30		4		
30 - 40		1	1	5
40 - 50		10		
50 - 60	2	5		
60 - 70		1		
70 - 80	1	1		
80 - 90		2		
90 - 100		3		
100+		2	3	1
Total	33	37	9	13

Source : Field work.

The above tables clearly show that the marriage field in the case of immigrant Muslims is relatively narrow. A large majority of marriages took place within a distance of 10 km. Even within 3 km of distance, 53 per cent (Kalarchar), 33 per cent (Bhanganamari), 00 per cent (Baledmari) and 20 per cent (Burha chapari) of the marriages took place. But in the case of Nepali and Bengali Hindus, the marriage field is far wide. In Burhachapari, more than 35 per cent of the Nepali marriages took place beyond 10 km distance and 40 per cent took place beyond a distance of 50 km. In respect of Bengalis also almost similar is the case. The Biharies, on the other hand, have a far more wide marriage field. This indicates that the Muslim immigrants are still very much spatially concentrated, the Brahmaputra riverine tract being the major area of their concentration. While the Nepalis and the Bengali refugees are scattered more or less in all ^{the} ecological settings, i.e. the Brahmaputra riverine tract, the foothills and the middle plain, ^{the immigrant Muslims are concentrated in the riverine tract.} Thus the Bengalis and the Nepalis have acquired a wider spatio-cultural relationship within the valley than the Muslim immigrants.

CHAPTER 6

LAND USE, CROPPING PATTERN AND CROP PRODUCTIVITY

The pattern of land-use, whatever its mode may be, manifests the character of man-nature relation in an area. Directly or indirectly it exhibits the inherent qualities of socio-cultural traits and economic pursuits of a group of people in a given environmental set-up. In fact, the pattern of human use of land is the result of interplay of four basic variables - land itself, water, air and man. Each variable has its own role to compose its life history. Land constitutes its body, water runs through its veins like blood, air gives it life and man acts as a dynamic actor to reflect the land-use type, pattern and distribution (Singh, 1991).

The spatial analysis of the pattern of land-use provides proper understanding of the modes of man-nature interaction and the character of human adaptation to the ecological conditions.

6.1 GENERAL LAND-USE

The chars of the Brahmaputra with their peculiar environmental set-up exhibit a type of land-use distinct

from the rest of the valley. The nine-fold land classification adopted by the National Soil Survey Authority of India in its entirety is not found to be applicable in the case of the char areas. The char-dwellers, who are traditionally cultivators, generally put their lands into uses in accordance with the characteristics of the local ecosystem.

Agricultural land (net sown area) forms the major component of land-use in the chars although there is significant variation in the type and degree of its use. The other important component is the bastiland (homestead). This may be considered as land put to non-agricultural use. In some parts of the chars, fallow land including current fallow may be there due to heavy deposits of fresh sand during the floods. Normally no land remains as cultivable waste in the chars of the Brahmaputra due to the growing population pressure on the available land. Land categories designated as forest and miscellaneous tree crops and groves rarely exist in the char areas. The following is an attempt to describe the patterns of general land-use in the chars under study.

6.1.1 Bhangarmari Char:

The survey of 59 households in Bhangarmari char of Nalbari District shows that an area of 5.06 ha is under

basti land which constitutes 7.1 per cent of the total land (Table 6.1) The net sown area (NSA) in Bhanganmari char measures 71.62 ha accounting for 91.41 per cent (Fig. 7a), while land under current fallow is only 1.17 ha (1.49 per cent). It is important to note that 52.03 ha of the NSA (i.e. 73.49 per cent of NSA) is sown more than once during an agricultural year.

Table 6.1 : Land Use in Bhanganmari Char, 1992

Land category	Area(in ha)	P.C.of total area
a. Basti land	5.56	7.1
b. Net sown area	71.62	91.41
Land leased in	11.64	
Land leased out	3.00	
c. Current fallow	1.17	1.49
d. Area sown more than once 52.03		73.49 (as P.C. to NSA)
e. Total area	78.35	

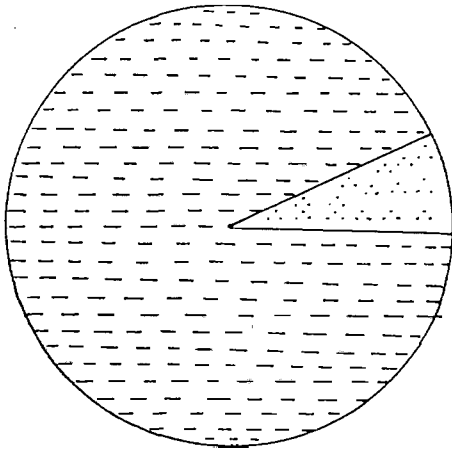
Source: Field work

6.1.2 Kalarchar:

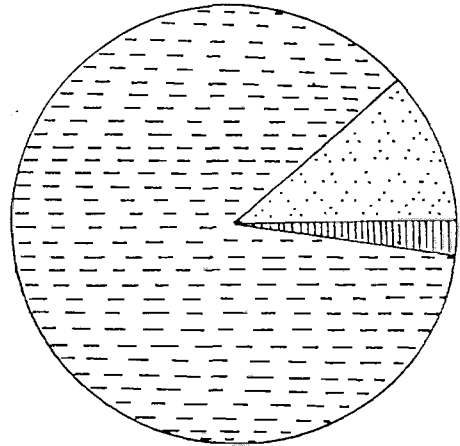
In Kalarchar, which lies just on the west of Bhanganmari, out of 40.88 ha of land (of 36 households surveyed), 3.02 ha (7.72 per cent) are under bastiland

LAND -USE,1992

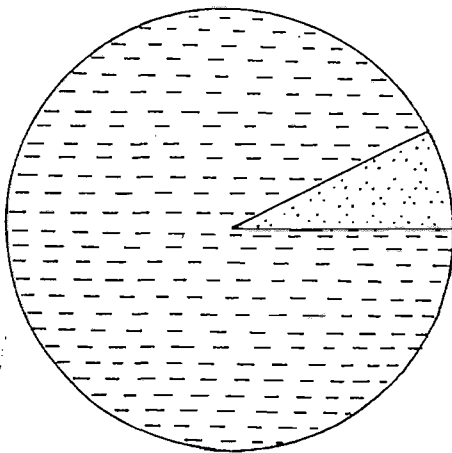
a. BHANGANMARI CHAR



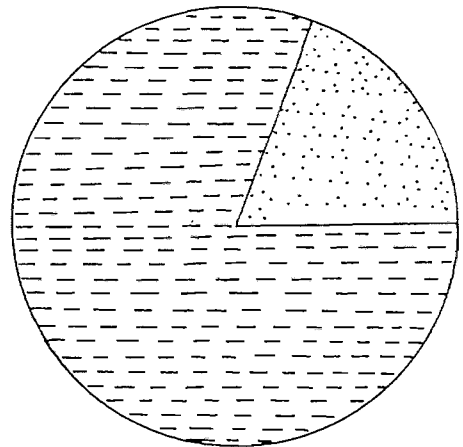
c. BALADMARI CHAR



b. KALAR CHAR



d. BURHA CHAPARI



INDEX

BASTI LAND



NET SOWN AREAS



WASTE LAND



FIG. 7

(Table 6.2). Net sown area covers 43.10 ha (91.94 per cent) of the total land (Fig. 7b). Only a negligible portion of land is found to be under current fallow. With an area of 39.06 ha, the area sown more than once accounts for 90.63 per cent of the NSA.

Table 6.2: Land Use in Kalarchar, 1992

Land Category	Area (in ha)	P.C. of total area
a. Bastiland	3.02	7.72
b. Net sown area	43.10	91.94
Land leased in	0.37	
Land leased out	0.35	
c. Current fallow	0.16	0.34
d. Area sown more than once	39.06	90.63 (as P.C. to NSA)
e. Total area	46.63	

Source : Field work.

6.1.3 Baladmari Char.

In Baladmari char of Coalkpara District, out of 04.13 ha of total land (of 65 households surveyed), 7.04 ha (10.9 per cent) are used as bastiland (Table 6.3). The net sown area measuring 53.43 ha covers 83.25 per cent

of the total area (Fig. 7c). The area under current fallow and waste land has been found to be 2.41 ha and 1.30 ha respectively. More than 75 per cent of the NSA (i.e. 40.35 ha) is sown more than once.

Table 6.3: Land-use in Baladmari char, 1992

Land category	Area (in ha)	P.C. of total area
a. Bastiland	7.04	10.97
b. Net sown area	53.43	83.25
Land leased in	7.14	
Land leased out	1.30	
c. Current fallow	2.41	3.75
d. Waste land	1.30	2.02
e. Area sown more than once	40.35	75.52 (as P.C. to N.S.A)
f. Total area	64.13	

Source: Field work

6.1.4 Burhachapari

In ^{which is} Burhachapari, inhabited mostly by Nepali and immigrant Muslims, (where 50 households were surveyed), the bastiland constitutes 7.9 ha, i.e., 19.51 per cent of the

total area (Table 6.4). The net sown area (32.6 ha) constitutes 80.49 per cent of the total area (Fig. 7d). Area sown more than once covers 79.02 per cent of the N.S.A.

Table 6.4: Land-use in Burhachapari, 1992

Land category	Area (in ha)	P.C. of total area
a. Bastiland	7.9	19.51
b. Net sown area	32.6	80.49
Land leased in	1.79	
c. Areas sown more than once	25.76	79.02 (as P.C. to N.S.A.)
d. Total area	40.5	

Source: Field work

The foregoing description shows that in all the chars except for Burhachapari, the general land-use pattern with a major proportion under NSA (more than 80 per cent), is almost identical. In Burhachapari, where Nepali people predominates, the bastis are relatively spacious leading to a large proportion of land under this category.

6.2 AGRICULTURAL LAND USE

Agricultural land-use contributes a dominant features of the diverse uses of land for productive purposes.

It includes not only the land used for growing crops and fodder, but also that for raising livestock. Farm economy in the agriculturally advanced countries is mainly based on crop and commercial livestock farming. While in the country like India, where small-scale farming predominates, agricultural land-use practically means the land used for growing crops. Even the pastures and grazing lands remain out of the purview of agricultural land-use studies (Bhagabati, 1990).

The pattern of agricultural land-use in the chars of the Brahmaputra is an outcome of the environmental adaptation of crops and the socio-cultural heritage of the char-dwellers. The crops grown in the chars are specially selected to suit the peculiar ecological conditions of the chars. In the following section an analysis of the pattern of agricultural land-use (cropping pattern) in the selected chars is attempted.

6.2.1 Bhanganmari Char:

Here rice is cultivated in 49.48 ha of land which is 89.1 per cent of the NSA. Jute is grown in 10.07 ha, i.e. 22.44 per cent of the NSA. The per hectare yield of Ahu rice and jute are found to be 1,032 kg and 1,167 kg respectively (Table 6.5). In Bhanganmari, Bao and sali rice are also cultivated in a very small proportion of

of land. The yield of Bao per ha is 1,538 kg and of Sali rice is 952 kg.

Table 6.5: Area under different kharif crops and their yield in Bhangamari char, 1992

Crops	Area(in ha)	P.C.of NSA	Production (in kg)	Yield (in kg/ha)
<u>Ahu</u> rice	49.48	69.1	51,060	1,032
Jute	16.07	22.44	18,760	1,167
<u>Bao</u> rice	0.26	0.36	400	1,538
<u>Sali</u> rice	1.89	2.64	1,800	952

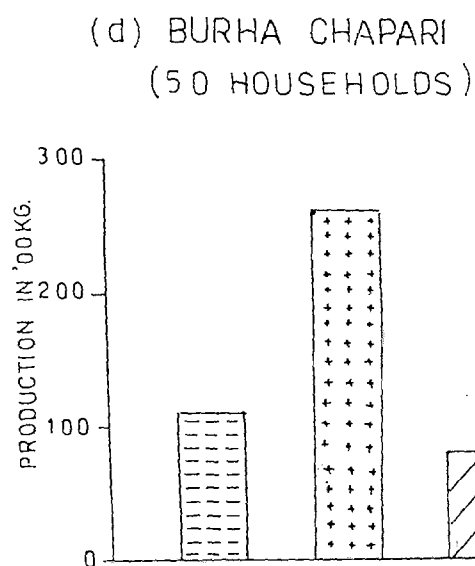
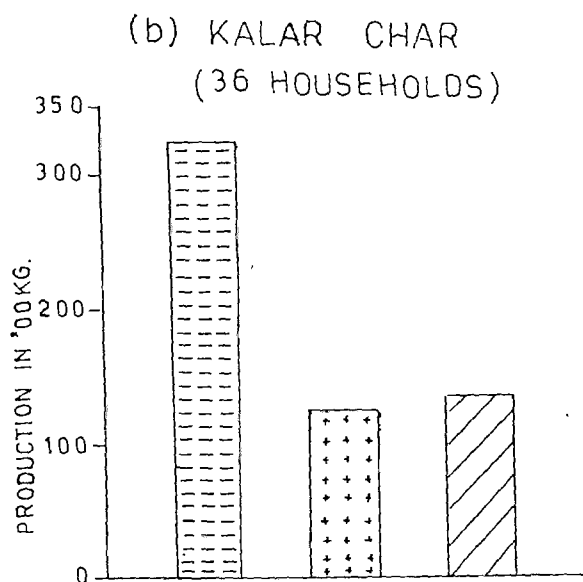
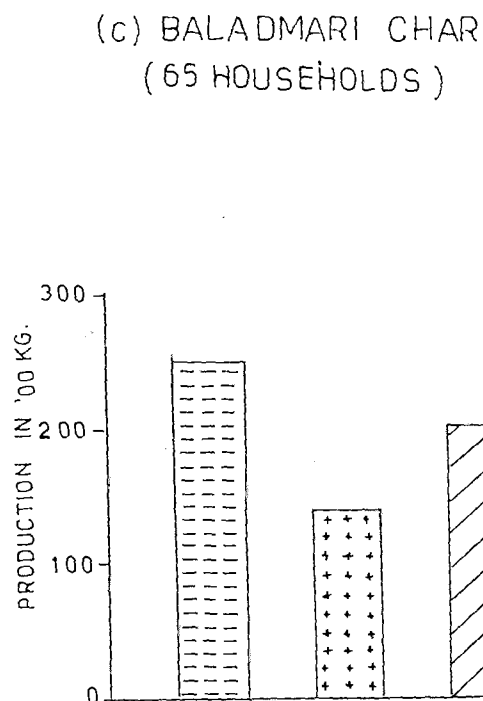
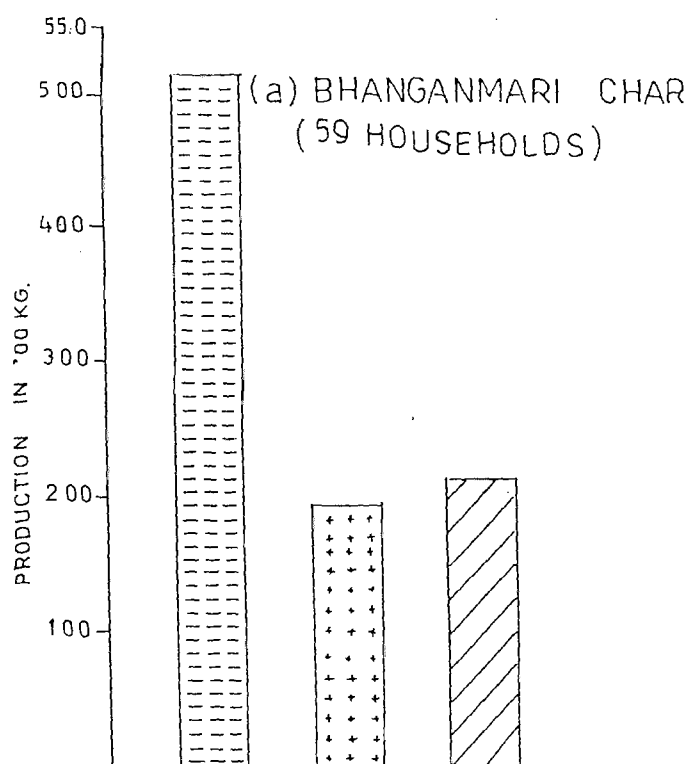
Source : Field work

Among the rabi crops produced in Bhangamari, the most important one is wheat. It is being cultivated in 17.24 ha (24.07 per cent of NSA) with an average yield of 1,253 kg/ha (Table 6.6 and Fig. 8a, 9a).

Apart from wheat, cropping of sesamum (locally known as Til), coriander, rapseed, black gram (Mati kalai) and lentil (Masur) is widely practised. Table 6.6, shows the area under these crops and their yield in the Bhangamari char. The hectareage strength of black gram,

PRODUCTION OF MAJOR CROPS

1992



INDEX

AHU RICE

JUTE

WHEAT

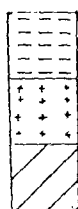
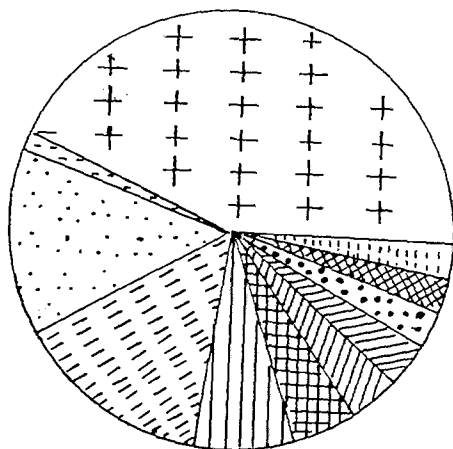


FIG . 8

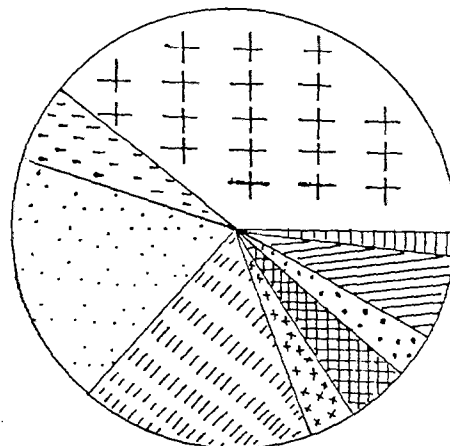
AGRICULTURAL LAND-USE

1992

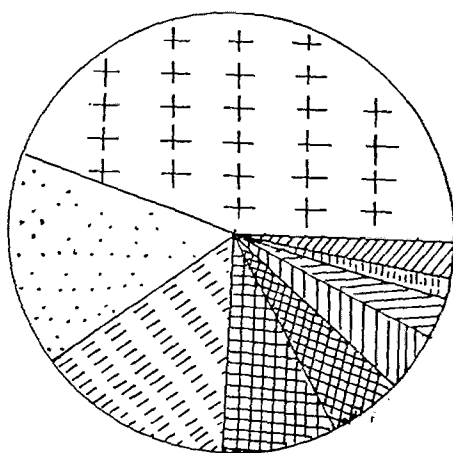
a. BHANGANMARI CHAR



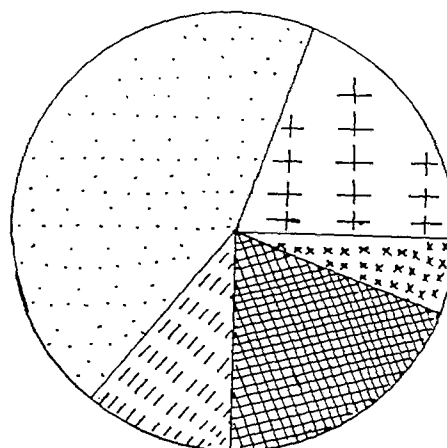
c. BALADMARI CHAR



b. KALAR CHAR



d. BURHA CHAPARI



INDEX

AHU RICE
SALI RICE
JUTE
WHEAT

BLACK GRAM
CORIANDER
LENTIL
RAPSEED

KHECHARI
MUSTARD
SESAMUM
GREEN PEA

FIG. 9

Table 6.6: Area under different rabi crops in Bhangamari
Char, 1992

Crops	Area (in ha)	P.C.to NSA	Produc- tion (in kg)	Yield (in kg/ha)
Wheat	17.24	24.07	21,000	1,253
Coriander	5.76	8.04	1,512	263
Sesamum	1.56	2.19	255	162
Rapseed	3.98	5.56	1,610	405
Mustard	1.90	2.65	720	379
Black Gram	7.92	11.06	3,465	438
Lentil	3.95	5.52	1,660	420
Khechari Kalai (Lathyrus sativa)	3.25	4.54	1,720	529
Chili	0.44	0.61	295	670
Vegetables				
Brinjal	0.67	0.94	2,100	3224
Mesta	0.36	0.50	625	1736
Onion	0.26	0.36	580	2231
Garlic	0.39	0.54	1,155	2962
(Haldhi)	0.07	0.10	80	1143
(Kaljira)	0.20	0.28	70	350
Sone	0.13	0.18	280	2154
Sugar cane	0.10	0.14	700(Nos)	-
Thatch	0.72	1.00	4500(Nos)	-

Source: Field work.

coriander, lentil and sesamum is 7.92 ha, 5.76 ha, 3.95 ha and 1.52 ha respectively. The per hectare yield of black gram, coriander, lentil and sesamum is 433 kg, 203 kg, 420 kg and 102 kg. respectively. The cultivation of chilli, onion, garlic, ginger and various rabi vegetables also play a vital role in the agricultural economy of the char. Table 6.6 gives an idea of area and production of these crops.

6.2.2 Kalarchar:

The dominant Khazrif crops raised in Kalarchar are Ahu rice and Jute. Out of 43.10 ha of NSA, Ahu rice is cultivated in 30.97 ha which accounts for 71.86 per cent of the NSA. The per hectare yield of Ahu rice stands at 1,050 kg (Table 6.7 and Fig. 8b,9b). Ahu rice is followed by jute with an area of 10.94 ha (25.38 per cent of NSA) having an average yield of 1130 kg.

Table 6.7: Area under different kharif crops and their yields in Kalarchar, 1992

Crops	Area (in ha)	P.C. to NSA	Production (in kg)	Yield (in kg/ha)
<u>Ahu</u> rice	30.97	71.86	32,520	1,050
Jute	10.94	25.38	12,360	1,130

Source: Field work

1	2	3	4	5
Rapseed	0.58	1.35	180	310
Mustard	4.11	9.54	2590	630
Blackgram	3.47	3.05	1785	514
Lentil	2.34	5.43	1140	487
Khechari	0.39	0.90	180	462
Onion	0.41	0.95	1280	3122
Garlic	1.31	3.04	2200	1079
Chilli	0.43	0.99	200	465
Kaljira	0.73	1.81	440	564
Sugarcane	0.36	0.84	2600(nos)	
Thatch	0.97	0.16	500 (Nos)	
Sone	0.2	0.46	280	

Source: Field work

6.2.3 Baladmari Char:

In the Baladmari char of Goalpara District, Ahu rice covers an area of 28.04 ha out of the NSA of 53.43 ha. The average yield of Ahu rice is 882 kg per ha (Table 6.9 and Fig. 8c, 9c). Cultivated in 14.02 ha of land (26.24 per cent of NSA), the average yield of jute is 971 kg per ha. A small portion (4.94 ha) is under Sali rice with an average yield of 1,410 kg per ha.

Table 6.9: Area under different kharif crops and their yields in Baladmari char, 1992

Crops	Area (in ha)	P.C. to NSA	Production (in kg)	Yield (in kg/ha)
<u>Ahu</u> rice	28.04	52.48	24,700	882
<u>Sali</u> rice	4.94	9.25	6,920	1410
Jute	14.02	26.24	13,620	981

Source : Field work.

Among the rabi crops cultivated in the Baladmari char, wheat occupies 12.66 ha (23.69 per cent of NSA) with an average yield of 1,608 kg per ha (Table 6.10 and fig. 8c). It is followed by coriander with an area of

Table 6.10: Area under different rabi crops and their yields in Baladmari char, 1992

Crops	Area (in ha)	P.C. to NSA	Production (in kg)	Yield (in kg/ha)
Wheat	12.66	23.69	20,360	1,608
Coriander	3.42	6.40	2,395	700
Green pea	2.41	4.51	1,050	432
Lentil	1.89	3.54	580	307
Black gram	1.11	2.08	540	486
Khechari	2.60	4.87	2,060	792
Thatch	1.11	2.08	12,500(Nos)	
Vegetables	1.18	2.21		

Source: Field work.

3.42 ha (6.40 per cent of NSA). The average yield of coriander is found to be 700 kg per ha (Table 6.10, Fig. 8.c). Apart from wheat and coriander, green pea, lentil, black gram, khesari, etc. are also cultivated (Table 6.10).

6.2.4 Burhachapari:

In Burhachapari, the cultivation of jute plays a dominant role. It occupies as high as 67.79 per cent of NSA with an average yield of 1,176 kg per ha (Table 6.11, fig. 8d, 9d). The area under Ahu rice is 9.38 ha (28.77 per cent of NSA) with an average yield of 1,164 kg per ha.

Table 6.11: Area under different kharif crops and their yields in Burha chapari, 1992

Crops	Area (in ha)	P.C.to NSA	Production (in kg)	Yield (in kg/ha)
<u>Ahu</u> rice	9.38	28.77	10,920	1,164
jute	22.1	67.79	26,000	1,176

Source: Field work

Among the rabi crops, mustard and wheat are the important ones. Wheat is cultivated in 17.58 per cent of NSA, while for mustard it is 30.31 per cent (Table 6.12 Fig. 8d). The average yield of wheat and mustard is 1,301 kg and 489 kg per ha (Table 6.12, Fig. 8d). Green

pea, garlic, onion, lentil, etc. are other rabi crops cultivated in this area. Green pea is cultivated in 1.18 ha (3.02 per cent of NSA) with an average yield of 653 kg. The per ha yield of garlic, onion and lentil is 2,292 kg, 1,667 kg and 356 kg respectively.

Table 6.12: Area under different rabi crops and their yields in Burhachapari, 1992

Crops	Area (in ha)	P.C.to NSA	Production (in kg)	Yield (in kg/ha)
Wheat	5.73	17.58	7,800	1,361
Mustard	9.88	30.31	4,840	489
Green pea	1.18	3.62	770	653
Garlic	0.48	1.47	1,100	2,292
Onion	0.06	0.18	100	1,667
Lentil	0.07	2.05	240	356

Source : Field work.

From the above discussion it has been seen that the crop land-use and productivity scenario of the chars are overwhelmingly dominated by the cultivation of Abu rice in the kharif ^{season} and by wheat and a variety of pulses in the rabi season. The cultivation of Sali rice which is the most dominant kharif crops of Assam, is insignificant in the chars because of the occurrence of regular flood during the period. The peasants are,

therefore, compelled to raise as many as rabi crops as they can during the season. It is interesting to note that some of the rabi crops like mustard , lentil, coriander, etc. are raised through the practice of interculture.

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CHAPTER 7

ADAPTATION OF CROPPING PRACTICE TO THE LOCAL ECOLOGY

The chars of the Brahmaputra with their physical vulnerability and social homogeneity present a geo-environmental set-up, quite distinct from the rest of the Brahmaputra Valley. The char-dwellers, therefore, do practise a cropping pattern suitable to the peculiar environment of the chars. Their cropping practice may be seen from the perspectives of "ecofarming". Ecofarming is a farming practice specially adapted to suit the local ecological conditions. It advocates in favour of the practice of autachthonous land-use systems and is based on ecological cycling process. It holds that plant biomass, weeds, animal dung and rainwater must be constantly integrated into the farming process. It ensures preservation of long term natural soil fertility and a stable state of ecological balance (Bhagabati, 1992).

The farming system in the chars is characterised by multiple cropping method and intercropping. These methods are adopted in accordance with a crop-calender developed by the farmers to suit their local environment. Flood, which is the main constraint, is however, perceived by the char-dwellers in a different ^{way} while deciding the cropping pattern. A timely

flood of low magnitude is not a hazard, but an expected phenomenon which makes soil fertile by depositing humus carried by the river during flood. They select the periods of sowing and harvesting of crops in such a way that the flood damage becomes minimum as most of the char areas get inundated during flood. The peak period of flood from July to early October is almost an agriculturally lean period (Fig.10) in the chars when major part of the valley remains under intensive cultivation of sali rice. Just after the recession of flood, the char-dwellers prepare their agricultural land for cultivation of rabi crops like lentils, blackgram, mustard, rapseed, etc. The cultivation of these crops ^{continues} from late October to late November and early December. From November to March is the main season of rabi cropping. Wheat is sown in November and harvested in March. When wheat attains some height, green pea is sown as an intercrop. Rabi crops, especially vegetables, sesamum, dhania etc. are cultivated during the period from November to early February. The cultivation of Ahu rice which is a major crop, starts in March. It is harvested in the month of June. Jute takes the period from April to early August during which washing and drying of the firbres is also completed.

It is interesting to note that the char-dwellers do not generally grow the same crop in a plot for years

CROP CALENDER

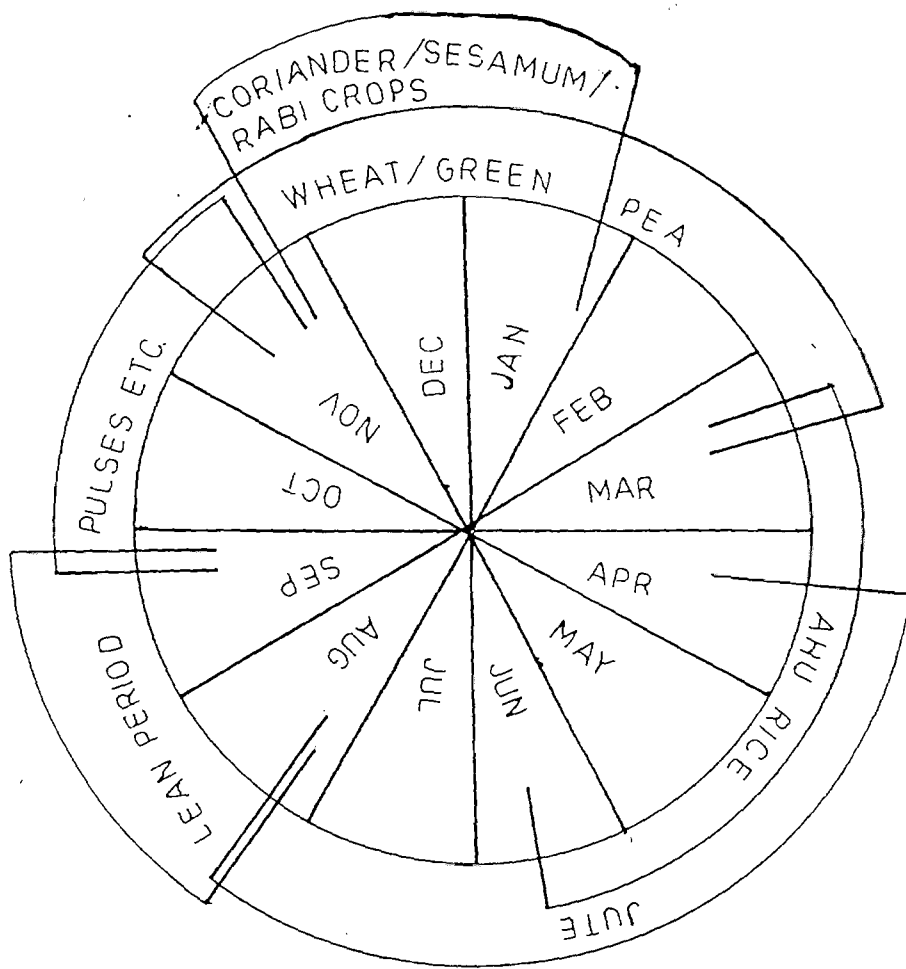


FIG. 10

together. A suitable system of crop rotation is often followed. The plot of land put to Ahu rice this year is never put to it next year. After cultivating rabi crops in the successive years, Ahu is again cultivated in that plot of land. Rabi crops like, sone, dhumsa, khechari etc. having special ability to fix enough of nitrogen in the soil are also cultivated which, considerably enhance the yield of the subsequent kharif crops.

The farmers of the chars use mostly traditional variety of seed, which is cheap and easily available. The adoption of new technology in the chars may have two important dislocative effects for farmers - (i) replacement of traditional farming practices and incorporation of primary producers into a wider network of relations, and (ii) dependency on outside agencies (Govt. organisations). These may create a situation of uncertainty with untimely or inadequate supply or poor quality. The traditional practice has relevance to the skill of the peasants, their life, their environment and their mode of production and is horizontally integrated with their total way of life (Rao, C.R. Prasad and Verghese, S., 1989). In fact, the high yielding varieties of crops have a higher vulnerability to insects and diseases. Moreover, they are more sensitive and cannot withstand stress conditions. They cannot be adopted independently, but must be incorporated

with complementary inputs and agronomic practices which multiply the cost of production. Traditional mode of adaptation of crops to the local physical condition gets disturbed when HYV crops are cultivated haphazardly. Aijong rice, for instance, is now being cultivated in almost all sorts of land of the Brahmaputra valley irrespective of their capability, and consequently its yield has been below expectation in many areas.

During the field observation in the chars, it has been found that an insignificant quantity of chemical fertilisers, pesticides and insecticides are used by the farmers. It is improper to say that they have no interest in using chemical fertilizers, pesticides and insecticides. But their poverty stands as an obstacle in the use of these modern inputs. However, they can be said to be fortunate enough because they are yet to be affected by the perils of the use of chemical fertilisers, pesticides and insecticides.

The agricultural tools and implements used by the farmers of the chars in the process of farming has also great significance, although they seem to be very simple. Bidha, for instance, a very simple tool made of a piece of wood/bamboo, is used to remove weeds, etc. from the jute and paddy fields which help increase the output.

Practice of ecofarming in a more scientific and rational manner will no doubt enhance the agricultural productivity of char areas. The inverse relation between the prices of farm products and farm inputs is the most discouraging factor to adopt the modern measures. The relevant and long-term alternative way left for the poor small farmers of chars may be a scientifically prescribed ecofarming practice favourably on a co-operative basis, the prospect of which is relatively bright in char areas of the valley.

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CHAPTER 8

SUMMARY AND CONCLUSION

The chars of the Brahmaputra having distinct physical and human characteristics constitute interesting fields of study from geographical, social, anthropological and sociological points of view. The present study is, however, an introductory one in the sense that it simply unfolds certain ecological and human characteristics of the char areas that are probably almost unknown so far to the academicians and planners as well.

The Brahmaputra in its 720 km long course through Assam has as many as 1,200 important chars. Most of these, although get submerged during flood, form seats of settlement particularly for the immigrants. The chars thus present a physico-human situation quite distinct from other areas of the Brahmaputra Valley.

In order to understand the peculiar character of the chars, the present study is being undertaken and carried out with ^aspecial emphasis on certain ecological and human aspects of some selected chars.

The char-dwellers of the valley are mostly from the former East Bengal (present Bangladesh) and Nepal. Being

forced by some political and economic factors they came to the valley with the aim of having a better livelihood. Therefore, their own cultural heritage, economic experience and skill are bound to get reflected in the nature of their settlement and activities.

Based on the present study five population/social groups can be identified in the Brahmaputra chars : the immigrant Muslims, the immigrant Nepalties, the Bengali Hindu refugees, the Biharies and the indigenous Assamese. Among these, while the immigrant Muslims are overwhelmingly dominant in number , the indigenous Assamese are numerically almost insignificant. On the other hand, the Bengali refugees, although smaller in number than the Muslims, are found to settle in the char areas of the lower and the central Brahmaputra valley districts (mainly Goalpara and Barpeta). The Nepalties are mostly concentrated in the chars of the Sonitpur district. The Biharies are, however, numerically very small and are rarely found to settle in the chars.

Generally, the structure of the immigrant population assumes a character distinct from the indigenous population. In the initial stage of immigration, the population is normally dominated by elderly males. And in course of time, side by side, the female and child population also increases. The age-sex pyramids drawn for the chars under study, by and large, suggest that the population make-up has yet to attain

a smooth pyramidal shape like that of the indigenous population of Assam. However, all the pyramids indicate that the majority of the population is under 20 years of age. This indirectly suggests that the process of immigration to the chars has a considerably deep temporal dimension.

So far the literacy rate and levels of education are concerned, the char areas are lagging far behind. The facilities for primary schooling, not to speak of higher education, are still a far cry for the char-dwellers. Among the chars surveyed, the char Anchalik H.E. School (recently recognised by the State Govt.) is found to be the most well-maintained^{one} and that too mainly by the fund generated from the local inhabitants. However, the literacy rates (30.20 per cent for Bhangamari, 30.68 per cent for Kalarchar, 18.98 per cent for Baladnari and 48.98 per cent for Burhachapari) clearly indicate that there is a growing tendency among the char-dwellers for acquiring formal education. The Nepalis are particularly interested in education and inspite of all the barriers they try to educate their children. The literacy level of Burhachapari is relatively high, primarily because of the presence of a large number of Nepali immigrants. The educational level, on the other hand, is extremely poor in all the chars.

It is interesting to note that the immigrants still have been maintaining their own tradition in respect

of their economic pursuits. The main occupation of the Muslims is cultivation, while it is dairy farming for the Nepali. The Bengali refugees are engaged in farming, fishing and petty business, while the Biharies are, by and large, farmers. But during the recent years, there has been a perceptible occupational shift particularly among the Muslims. Many of them are now engaged in rickshaw/thela pulling and daily wage earning in the urban areas. They usually come home once a week and thus maintain their families.

The nature and degree of interaction over space between the immigrants and the indigenous population and more particularly among the immigrants of different places are found to vary from group to group. The very simple but meaningful study of the marriage fields in respect of all the population groups indicates that the immigrant Muslims are still very much concentrated in distribution, while the Bengali refugees and Nepali are more or less scattered in all the ecological settings of the valley having wider marriage fields.

The study of land-use, cropping pattern, crop productivity and the adaptation of cropping practice to the local ecological conditions presents some interesting points. The pattern of land use is basically a product of nature-culture interaction. This interaction is of a peculiar type

in the char areas. As a matter of fact, the char areas would not have been chosen for habitation had there been some other suitable alternatives left to the land hungry immigrants. There is severe scarcity of highland for building up settlements. Therefore, the land used for settlement accounts for a very small proportion. The lands under the possession of the immigrants are used for cultivation and grazing and thus the proportion of net sown area to the total land held is found to be maximum. Moreover, as the char areas are chronically affected by several waves of flood during the summer, the peasants are compelled to raise as much crops as possible during the winter. This naturally raises the proportion of area sown more than once. In all the chars, the percentage of area sown more than once is more than 70 . The productivity of the rabi crops, such as wheat, pulses and green vegetables is relatively high in the char areas. The most important point to be noted here is the very way the char-dwellers have adapted their farming practice (including dairy farming) to their local sensitive ecology. Their farming can rightly be called ecofarming. Although it appears to be traditional in nature, this type of farming is found to be the best possible practice in the context of the char areas. They overwhelmingly depend on rabi crops which are raised in accordance with the rhythm of nature, and by applying biological manure and utmost human care.

Whatever may be the physical and socio-cultural variation, the chars are indeed an integral part of the Brahmaputra Valley. Their present state of spatial and cultural existence is the result of a considerably long evolutionary process. Moreover, the future of the agricultural economy of the valley is greatly associated with the prosperity of the char areas. Consequently, inspite of very many political and social factors and barriers, it is undeniable that the spatio-cultural relation ~~of~~ between the chars and the indigenous people and spaces is getting widely spread and strengthened. Proper guidance and rationalisation of this relation in the context of the regional realities, and in a way beneficial to the people and culture of Assam, is now the immediate call of the time.

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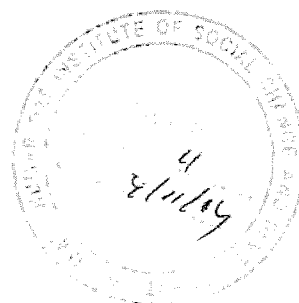
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THE UNIVERSITY OF CHICAGO

Guwahati-14.

HOUSEHOLD SURVEY SCHEDULE

1. Name of the family head :

2. Location : (a) Village/hanLet

(d) Police Station

3. Religion :

4. Caste/Community :

5. Family structure ; Marital Status and Marriage Field.

Household No. •

(c) Revinue circle

(f) Sub-Division

[illegible]

Crops	Area (in Bigha)	Quantity (in Qtl.)	Mode of marketing				Income (in Rs.)
			Quantity sold (in Qtl.)	Where marketed	By whom	Mode of transport	

8. Agricultural inputs and implements used :

[illegible]

9. Livestock and their marketing :

Types of animal/birds	No.	Production (Milk, egg etc.)	Mode of marketing		Income (in Rs.)	Remarks
			Where marketed	By whom		

10. House Type : (a) No. of houses (b) Type (c)
11. Family Type : (a) Joint Family System: (with No. of families) (b) Unitary Family System :
12. Language Spoken : (a) At house : (b) Outside/Educational Institutions :
13. Dress : (i) Male : (a) At home : (ii) Female : (a) At home : (b) Outside :

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[illegible]

10. House Type :

(a) No. of houses

(b) Type

(c)

11. Family Type :

(a) Joint Family System:
(with No. of families)

(b) Unitary Family System :

12. Language Spoken :

(a) At house :

(b) Outside/Educational Institutions : :

13. Dress :

(i) Male : (a) At home :

(b) Outside :

(ii) Female : (a) At home :

(b) Outside ::

14. Residential Stability/Mobility :

- (i) (a) Place 1..... years (b) Place 2..... year.....
(c) Place 3..... years (d) Place 4..... year.....
(ii) Reasons of Shift :

(a) Flood, (b) Bank erosion, (c) Search for better land (d) Others.

(iii) Whether satisfied with the present site of residence : Yes/No.

15. Food Habit, Cooking System and Assets :

- (a) Food Items : (b) Materials used in cooking :
(c) Monthly expenditure (in Rs.) : (d) Fuel used and source :
(e) Utensils and furnitures : (f) Bicycles :

16. Political Behaviour : (c)

Political party voted for (with year)	Political ideology/ involvement and Opinion	Remark

17. Religions Attitude :

- (a) Mode of prayer :
(b) Frequency of prayer ;
(c) Festivals/Functions
observed :
(d) Religions expenditure
(in Rs.) :

Social Interaction :

- (a) Location of relatives :
 i) Village/Town (with distance from home)
 ii)
 iii)
 iv)

- (b) Visit to Relatives :
 Frequency (Mentally)

Alone	With family

Visit to families of other community :

Community	Frequency of Visit	Distance (in km)	Purpose

(d) Visit to Festivals/Meetings :

Festivals/Meetings	Place	Distance (in km)	Purpose

Access to mass media :

- a) Newspaper :

(b) Programmes of Radio/TV usually attended

Programme	Centre

20. Diseases and Mode of Infection (during last three years) :

Patient (M/F)	Disease suffered from	Mode of treatment	Cured/expired

Signature of Supervisor

Date :

Signature of Surveyor

Date :