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**HOMESTEAD FORESTRY AND RURAL DEVELOPMENT:
A SOCIO-EMPIRICAL STUDY OF BANGLADESH**

A thesis submitted in partial fulfilment of the
requirements for the degree of

Doctor of Philosophy in Development Studies at Massey University, New Zealand.

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Abstract

This thesis is concerned with the role of homestead forests in the development of poor, labour surplus economies. The term 'homestead forest' refers to the collection of vegetation - trees, plants, herbs, creepers and others - which almost all rural households in Bangladesh grow, for their own use as well as for sale, using the land in and around their homesteads and dwellings. The term 'development' encompasses economic, social, cultural and ecological aspects of countries. The thesis therefore examines the role of homestead forests in this wider context.

It starts by reviewing the existing theoretical literature on development drawing on the works of sociologists, social anthropologists, development economists, geographers and others. It argues that many of the theories do not fit the particular conditions of the very poor agriculture-dependent economies such as Bangladesh. This study therefore advances the hypotheses that of 'non-conventional' approaches involving the development of the resources of homestead forests in the rural areas would go a long way towards assisting the poor, landless masses of Bangladesh. An extensive survey of the many and varied uses of homestead forests is undertaken to support these hypotheses on the basis of direct observation and experience. To give further content to the hypotheses, village surveys were undertaken in carefully selected areas of Bangladesh. With the help of scientifically formulated questionnaires the situation of the rural people of the selected villages was examined. This helped to identify the many causes of poverty and helplessness among the rural poor. The methods of survival were also focused on in these surveys of the rural people. It became clear that homestead forests play a major role in the lives and livelihoods of the rural people. The question why the large scale forestry development programmes did not help the rural poor also figured in this investigation. It was found that the large scale commercial types of forests deny access to the majority of the rural people, while homestead forests, being directly owned and controlled by the people, provide them with much needed support. It is true that such support, however valuable, is still inadequate. It is also unevenly distributed among the rural people. The survey therefore looked at the distributional aspects of homestead forestry resources within the survey villages. The findings confirm the need to strengthen this valuable resource base in rural Bangladesh if widespread poverty, and its inevitable concomitant, social and political unrest and instability are to be attacked.

The study ends with a number of recommendations to make the changes necessary for more efficient utilization of the homestead forestry resources for the benefit directly of the poor and, indirectly, the rest of society as well.

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CHAPTER ONE

Homestead Forests in Context

1.1 Introduction

Bangladesh is a small country of about 14.3 million hectares with a large population of 111.4 million people (Bangladesh Bureau of Statistics (BBS), 1993). Out of the total land area of 14 million hectares, around two million hectares, or about 16.7 percent, is under forest cover. It is estimated that the forest cover is reducing at an annual rate of 2.5 percent (United States Agency for International Development, USAID, 1990). As a result, Bangladesh currently has less than 0.02 hectares of forest land per person, one of the lowest figures in the world. The decline from 0.035 hectares per person in 1968-69 is primarily the result of the dramatic increase in population from 64 million in 1968-69 to over 110 million in 1990; the decrease of the total forest area, and also the lack of tree planting and of improved management of forests (USAID, 1990; Ahmad, 1987). The forest cover is too small for the country's overall demand for timber, fuel, food and fodder, and for maintaining the ecological balance which is threatened by the high annual population growth rate of 1.9 percent (BBS, 1993).

The forest land resources fall into six broad categories, namely, Hill Reserved Forests, Sunderbans Forests, Plain Land Forests, Coastal Accretion Forests, Unclassified State Forests and Homestead/Village Forests. Among these, the first five categories are state-owned forests, which have a total area of 2.14 million hectares, or 15 percent of the total land area. These are under the management of the Forest Department of the government. The Hill Reserved Forests cover the largest forest land of 1.38 million hectares, or 9.6 percent of the total land area. The Homestead Forests cover the smallest forest land area of 0.27 million hectares, or 1.9 percent of the total land area (Bajracharya, 1988; Bangladesh Forest Research Institute (BFRI), 1992).

Multi-purpose plants, including fruit and timber trees, and bamboo, which are grown on small plots of private rural land, usually around people's homes, are found all over the country. These are referred to in this study and elsewhere in the literature as **homestead forests**. A number of studies (Ahmad, 1987; Canadian Agency for International Development (CIDA), 1990; USAID, 1990; BFRI, 1992; Mosarraf, 1991; Sadeque, undated) indicate that the Forest Department's reserved forests and other government controlled forests are characterised by low productivity, despite their commercial exploitation, which is usually large scale. By contrast, homestead forests, which are decentralised, are managed intensively and relatively efficiently. They, therefore, have a higher productivity than the large countrywide forests.

The area under the state forests has been declining over time¹, but their exploitation for commercial gain has accelerated. To take one example, as observed by Ahmad (1987), the industrial use of forests and bamboos as raw materials for white paper and newsprint respectively has been increasing steadily. This is related to the steady increase in the demand for, and therefore the production of, paper and newsprint over the last two decades. The output of paper has increased by 31 percent, while that of newsprint has grown 71 percent over the period from 1973 to 1985. Forest resources are declining as a result of such rapid increases in their exploitation. This is further aggravated by the government's low pricing of wood and other wood products.

Further substantial deforestation has occurred since the only hydro-electricity plant of the country was built in the late sixties. A vast area of forests, farms and homestead land was completely submerged under water² which was to be used for electricity generation, as observed by Ahmad (1987). The project also necessitated settling and resettling of the affected people through official patronage. This led to further deforestation. Demand for infra-structural development such as roads and bridges, which are a concomitant part of economic development, also uses up forest land. The hydro-electric project added further pressure on such land. The annual average net deforestation during the period 1975-84 had been about 13,000 hectares in the region of this project which is located in the hilly areas of Rangamati, Khagrachari and Bandarban (Ahmad, 1987).

Logging, fuelwood collection, agricultural expansion and grazing are among the other main causes of massive deforestation. The other fact relevant to this problem is that the country's forest resources are not exploited in a planned manner. The manner of exploitation is perhaps best described as 'plunder'. Natural forests are periodically sold to private parties through permits. Illegal extraction to an alarming extent has always been practised by a section of the permit holders as well as by smugglers, in collaboration with a section of Forest Department officials. This has been threatening the stock and growth of state-owned forests (Ahmad, 1987).

The over-utilization, destruction and degradation of state forests constitute perhaps the most serious manifestation of the general crises of resources which Bangladesh is now experiencing. One of the important constraints for state forests is that these forests are located only in limited geographical areas, and the resources are not distributed evenly among the population. For example, in the North and North-West, eight districts with 37 percent of the population have only 0.6 percent of the total forest area. On the other hand, Chittagong Hilltracts Zone, with only 0.7 percent of the total population, has 55 percent of the state forests (Islam, 1984). Another constraint is that only about 50 percent of the state forests continue to have their original density of trees. Other areas have experienced an increasingly thin forest cover, and are virtually devoid of trees (Bangladesh Agricultural Research Council (BARC), 1991). By contrast, the privately held homestead forests are distributed much more evenly throughout the country. About 10 million households in over 85,650 villages have homestead forests and about 80 percent of them are covered with trees (Asian Development Bank (ADB), 1993). The total standing volume of trees on homestead lands is estimated to be about 79 million cubic metres, or more than seven times the volume of the growing stock in the Sundarban forests which cover nearly twice the area (USAID, 1990).

These homestead forests supply about 80 percent of the fuelwood of the country (Sadeque, undated). The homestead forest woodlot plays an important role in meeting the needs of traditional fuel resources. Within the social context of Bangladesh, the homestead is defined as an area physically occupied by one or more

households³ for habitation. Functional usages of homestead land area are for housing, cooking space, water sources, latrine, post harvest processing of crops, animal sheds, planting areas for trees, herbs, shrubs and vegetables and limited grazing space. On homesteads, people share a number of facilities along with traditional fuel from tree resources (Islam, 1988). Moreover, these homestead forests provide food, fodder, medicinal herbs, building materials as well as income and employment to the rural people. Sometimes these forests help in meeting the rural people's emergency needs and other contingencies such as the expenses involved in social conventions like weddings, funerals and religious festivals, natural or other disasters and physical incapacity. The trees of the homestead forests also make important contributions to rural households. These include agro-forestry, horticulture, vegetable gardens, fisheries and livestock production to better satisfy the full range of household needs as well as to increase the range of its income-generating activities.

Despite their contribution to rural economies, it would appear that a combination of the need to use more of the homestead land for additional homesites and the continued extraction of wood, bamboo and other products from the homestead forests may be leading to an inevitable decline in homestead land holdings⁴. The Agricultural Census for 1977 reported some 304,000 hectares of homestead forests, whereas the Third Five-Year Plan (1985 to 1990) cited 271,000 hectares in 1985, a decrease of 11 percent over the short period of only eight years (USAID, 1990). This decline may have been accelerated in recent years by overuse due to the increasing pressure of population and the changing economic and social conditions of rural people.

However, opportunities still exist to reverse the current trend by adopting more efficient and sustainable management systems. This is one of the important resources which provides the basic needs of an overwhelming majority of the rural poor. In a subsistence agrarian economy where the majority of the people do not have sufficient agricultural land and other resources to subsist on, there is an immediate need for alternative resources. Homestead forests are among the potential resources, and they are therefore an effective means to help achieve social and economic development, particularly of the rural poor.

But government planners and policy makers seem to have overlooked the importance of homestead forests in the rural household economy of Bangladesh. Their emphasis is still primarily on the expansion and development of state forests. Even the measures taken by them for the development of social forestry pay little attention to homestead forests (see the later part of this chapter for details).

The present study therefore aims to fill a major gap in planning and policy making for rural development and change in Bangladesh. Given the scarcity of land and the extremely limited nature of alternative opportunities in rural Bangladesh, people will have to continue using their homestead land to meet their economic needs in rural Bangladesh. In addition, there are social, cultural, religious and other communal uses which are satisfied by homestead forests. The alarming rate at which forestry resources are being depleted in Bangladesh makes it imperative that the importance of homestead forests is recognised, and conscious efforts are made to maintain and enhance their effectiveness as a private and communal resource. This study, therefore, examines all aspects of homestead forestry so that a full picture of this neglected sector is made available for researchers, planners, policy makers, politicians and rural people themselves.

1.2 The Place of Forestry in the Early Civilization of the Indian Sub-continent: A Brief Historical Survey

Before addressing the problems and issues relating to the present day Bangladesh forests, however, it is useful to conduct a brief historical survey of the place of forestry in the early civilization of the Indian sub-continent.

The origin and development of Indian civilization is distinctive because it evolved in the forests, not in the city. As nature provides light, air, food and water the acceptance of life in nature was a precondition for human survival, and it led to the worship of these elements of nature as sacred and venerable. Indian civilization has therefore been cradled by a culture which is adapted to nature in its many manifestations such as, for example, the forests, the mountains, the sun, the moon and

the oceans (Shiva, 1991). Thus, forests, an important component of nature, have remained central to the evolution of Indian civilisation.

Apart from the natural forests, the existence and propagation of communal forests is evident in almost all Indian villages. These communal forests have a critical value in cultural, ecological and economic areas of communal life. Culturally, as Myers (1984) noted, the traditional perceptions of forests conveyed a sense of intimate harmony, with people and forests as equal occupants of a communal habitat, and a primary source of congruity between humans and nature. Ecologically, indigenous and naturalised vegetation provided essential life support by stabilising soil and water systems. And economically, trees have been a source of fuel, food, fodder, fibre, timber, medicines, oil, dyes and so on. The centrality of forests to the socio-economic and environmental well-being of village communities was achieved through the concept of sacredness. This sacredness is reflected for example, in the archaeological remains of the Harappan civilization in the north-west of the subcontinent. It is therefore clear that, even in the third or fourth millennia BC, forests were held in high esteem, treated as sacred and were worshipped (Shiva, 1991) by local people.

Forest resources like other resources, have supported the social, economic and environmental needs of local people in the Indian region. The forest resources have for centuries been utilised and managed as communal assets by the villages. Colonial rule for the first time introduced dramatic breaks in the way in which forests in India were perceived and used. The uses of forest ecosystems, having multiple functions for satisfying diverse and vital human needs for air, water and food, were superseded by the introduction of a linear scientific forestry approach during the colonial period. This approach has as its primary objective the maximisation of profit through the production of commercially valuable timber and wood products, while treating other social, ecological and economic uses of this resource to the local community as less important (Shiva, 1991).

The management aspects of forests and the policies relating to it have changed over time. These are discussed chronologically later in the chapter to emphasise the effects of colonial rule on the management and exploitation of forests in the Indian sub-continent.

We turn next to a review of forest-related research in the context of Bangladesh. This review will outline the many facets of forestry in the economy and society of Bangladesh. These facets will be examined in detail later in this study.

1.3 Forest Related Research

In Bangladesh, serious forestry-related research has only recently been taking place. This could have marked a much needed change from the earlier pre-occupation with wood-technology and industrial forestry, to addressing issues involving agro-forestry, community forestry, the integration of trees into farming systems, the natural forests, as well as drawbacks of the monocultural planting and the issue of conservation of trees in the reserved government land. However, forestry research is still not a part of a unified management system for forest resources. Accurate data on the true extent of tree and forest cover, changes in the productivity of homestead forests, agro-forests, community forests and natural forests as well as the socio-economic factors affecting the expansion of various forestry programmes in Bangladesh are extremely inadequate.

Although only a few studies have so far been done on homestead forestry in developing countries, each of them has specific objectives. Leuschner and Khaleque (1987) in their study suggested that a major step would be to improve the quality of information on the contribution of agro-forestry to the economy of Bangladesh. This study however concentrated attention on only agro-forestry rather than other types of forests such as homestead forests. Some other studies (Shepherd, 1979; Pant, 1980; Noronha, 1981; Romm, 1982; Tiwari, 1984; Farida, 1985; Mercardo, 1987 and Chopra, 1990) have examined the community forestry debate from different perspectives and identified several reasons for the observed lack of effective

implementation of this programme. These studies identified some important social conditions such as the social structure, the land tenure system, ownership rights, social perceptions and attitudes, and power structure which had not been considered as an integral part of community forestry programmes. However, these studies did not come up with any alternative forestry schemes which might achieve the objectives referred to above.

A few other studies (Briscoe, 1979; Islam, 1978 and Douglas, 1982) have analyzed the traditional use of tree products from homestead forests, but emphasising only certain output flows such as fuel products, for example. They do not look at the overall benefits rural people enjoy from the tree and tree products. Social anthropologists, like Khaleque (1984), for example, have tended, until recently, to concentrate much of their attention on tribal people in remote locations where trees and tree products were abundant. These people, therefore had less concern about the pattern of use of trees and tree products. Although the tree tenure problem has recently attracted the attention of some researchers (for example, Fortmann and Riddel, 1985; Fortmann and Bruce, 1988), their studies only emphasise the ownership rights relating to trees. They often tend to separate tree tenure from land tenure arrangements as these latter create many social conflicts among the rural people. A few other studies on the subject (Manowar *et al.*, 1988; Abedin *et al.*, 1988; Alam *et al.*, 1988; Abedin *et al.*, 1991) had a specific narrow focus on such aspects as fuel, fodder and fruit outputs of homestead forests in different regions of Bangladesh.

Thus, most studies have paid little attention to homestead forests, particularly in respect of their relative importance to the rural poor. Moreover, these studies largely overlook the negative role of the conventional forestry approaches to the management of homestead forests, thus ignoring their very special role in the lives and livelihoods of rural people in Bangladesh.

An attempt is made in the present study to highlight some of these special features of homestead forests. These include the role of women in homestead forests, and how homestead forests 'empower' them. Similarly, the traditional medicines, which

are derived from herbs, trees and plants of homestead forests, are an important part of the poor people's health care facilities, and are therefore worthy of systematic investigation such as the one attempted in this study.

Other important and helpful aspects of the homestead forests relate to the support they provide in contingencies and emergencies, or as cooking fuel, food and animal fodder. Similarly, ecological, social, cultural and religious needs are also partly met from the homestead forests. The present study, therefore, seeks to extend these particular issues comprehensively by describing the varied relationship the rural households have with homestead forests. The study seeks also to conduct a critical assessment of government policies relating to homestead forests in Bangladesh.

1.4 Forestry and Rural Development

1.4.1 *Local Resources, Social Structure and the Development Perspectives: An Overview*

The development of any subsistence economy differs from that of developed economies because of the former's heavy dependence on the availability of local resources. Like other resources, homestead forests provide a specific form of localised resource to the rural households. The extent of utilisation of these resources in the local economy determines how much of it is available for future use. The problems inherent in maintaining and enhancing these resources are better understood in the context of the functioning of the rural subsistence economy.

The rural economy is based on the relationship between social, cultural and economic organizations, including the distribution of resources and benefits, the power structure and its relation to the different social classes, and the interactions of local people with land, crops, animals, forests and other productive resources and technologies. The social and economic nature of resource rights, and the distribution of land, trees, livestock, crops and other assets among households determine the welfare of the rural people. Measuring scales to quantify these resources are difficult to construct, and

they are not likely to be uniform in any case. However, how people try to adjust to their unsatisfied needs with the help of the resources they can command, can be ascertained from a combination of available information sources, and from the data collected for this study. This study has attempted to provide such a broad picture of rural life in Bangladesh. We focus next on the relative importance and contribution of local resources in the household economy of the rural people of Bangladesh.

Over 80 percent of the population of Bangladesh live in rural areas (BBS, 1993). Economic and social conditions for most people, both urban and rural, are extremely difficult. The majority of the rural people remain unemployed for at least some months of the year and, as many as 40 percent, most of the time. More than half of the rural people are landless, or nearly so, and a third of the labour force is unemployed or under-employed. Another 25 percent find it difficult to ensure subsistence from their cultivable land, and must seek supplementary sources of income. About three-fourths of the rural households, as a result, are dependent totally or partially on other resources, as opposed to subsistence cultivation, for their livelihoods (Planning Commission, Government of Bangladesh (GOB), 1992).

Seventy six percent of the rural households are deemed 'poor', as their calorie intakes fall below the required minimum daily calorie intake of 2120 calories. There are also considerable income inequalities in the rural areas (Planning Commission, GOB, 1992).

The demand for agricultural labour is highly seasonal, being high during the peak periods of weeding, and the harvesting of the spring rice. Also, during the transplanting of rice paddies and jute in the rainy season, many people can find work. But, in the periods between these, there is little paid work available. This results in a drastic fall in the income of the rural poor which results in chronic malnutrition or even starvation. This lack of what economists call 'effective demand' is in itself a cause of economic stagnation. Families who can hardly afford to eat are not able to afford other basic items such as clothes, footwear and soap, for example.

Yet, agriculture remains the largest sector of the economy. Land, which is the main productive asset in rural Bangladesh, represents both economic and social security for the rural people. Land distribution, however, is highly skewed in favour of a few rich people in the rural areas. According to the Agricultural Census 1983-84, about 56.5 percent of the rural households were effectively landless, with 8.7 percent owning neither homesteads nor cultivable land; 19.6 percent had homesteads but no cultivable land; and 28.2 percent owned homesteads and up to 0.2 hectares of land (Ministry of Agriculture, GOB, 1984). Landlessness is also increasing rapidly as a result of population growth, and other social and economic factors. These and other related issues are covered in detail in chapter three of this study.

The unequal distribution of land, of course, has important implications for the distribution of power in the society. Large farmers (who own, on average, over 3 hectares of cultivable land) dominate local politics, and are able to use their control of land to exert power over the rural poor via share cropping, employment and other means, and to influence local government, cooperatives, and other village institutions. The rural poor are being organized into cooperatives and other informal groups by both the government and the non-governmental organizations to try to improve their access to resources. Despite such efforts, the poor still lack social and economic power. As a result, the landless and poor people represent a terrible waste of the country's greatest potential resource - the rural labour force. As observed by Hartmann and Boyce (1983), little effort has been made to use the largely unused rural labour force of Bangladesh in development projects, despite the recognition that it represents a potentially rich economic resource.

The First, Second and Third Five Year Plans (1973-78, 1980-85 & 1985-90) of Bangladesh were formulated in view of overwhelming problems of massive poverty, unemployment, illiteracy, and malnutrition of the large rural population. It was estimated that over 80 percent of the people in rural areas continued to live below the specified poverty line⁵. All these plans therefore concentrated on several rural development strategies to improve the overall situation of the rural poor. These included actions in the areas of education, health, family planning and agricultural

development. As noted by Ahmad (1987), one of the important strategies of agricultural development has been the rapid transformation from traditional agricultural practices to the use of modern technology such as high-yield seeds, chemical fertilizers, pesticides, mechanical devices for ploughing and modern irrigation facilities. Because the access to new resources such as agricultural inputs and credits is largely determined by the existing distribution of wealth, whose dominant element is land, rural inequality continues due to the concentration of land in the hands of the few.

The landless rural poor had therefore no opportunity to get involved in such projects which could conceivably improve their economic and social condition. Lack of equity in the form of land therefore prevents the poor using their skills and energies productively, and also handicaps the poverty alleviation strategies. Even if more development projects of a similar nature were instituted, the extent to which the landless would benefit is open to question. Such projects provide incomes to the rural poor for a specified period, but they do nothing to change the fundamental economic conditions that produced unemployment in the first place. The projects, however provide long-term benefits to landholders through better access to local markets. For example, many development projects execute 'food-for-work' schemes in rural areas. Under these schemes, wheat and rice are distributed among the workers in return for human labour. The wheat and rice are often purchased from local markets in which the sellers are the local producers, especially the rich farmers.

1.4.2 *Agricultural Development and Deforestation*

How rural development programmes, especially the agricultural development projects, have created incentives for deforestation in developing countries has been discussed by Rowe *et al.* (1992). These authors argue that the commercialization of agriculture in developing countries has typically led to monoculture plantations of export crops⁶ on fertile low land areas. They further argue that the cultivators who are given newly deforested land to cultivate find themselves using a poorer resource base (marginal land) which typically sets in motion a downward spiral of agricultural productivity,

even more increased forest depletion, and worsened rural poverty. As cropland fallow periods are shortened and soil fertility declines, there is increased dependence on chemical fertilizers and pesticides which the farmers can ill afford. An estimated 60 percent of the world's poorest people have been pushed into ecologically fragile environments as a result of agricultural expansion, as observed by Leonard (1989).

1.4.3 Rural Development Programmes and the Poor: A Review

One of the most publicised poverty alleviation programmes in Bangladesh is the Integrated Rural Development Programme (IRDP)⁷ which was initiated by the Bangladesh Academy for Rural Development in the early 1960s. Originally, the programme was limited to only Comilla Kotwali *thana*, but soon after independence in 1971, it was expanded to the rest of the country under an independent Directorate of the Ministry of Local Government, Rural Development and Co-operatives. A number of co-operatives were formed with the landless poor under the banner of *Krishak Samabay Samity* (co-operatives for the peasants), *Bittohin Samabay Samity* (co-operatives for the peasants without wealth) and *Mahila Bittohin Samabay Samity* (co-operatives for the women without wealth). But, in most cases, the co-operatives have failed to change effectively the pattern of poverty, landlessness, inequality, and unemployment. As observed by Islam (1988), the co-operatives almost exclusively benefited a small minority of the peasants and some rich farmers growing cash crops. The landless or the near-landless, who are in the majority, have not benefited at all.

Referring to the example of the Comilla Rural Development Programme, Hall (1988) said that new co-operatives created specifically to aid poor farmers were soon dominated by the rich farmers, money lenders and trader classes, while the pressing problems of marginal and small cultivators were ignored. The same situation arose with India's community development programme too, for example. These programmes emphasised public works, but gave the poor no collective voice to exert pressure on the rest of society, or no incentive to others to provide better opportunities for the poor.

Hall (1988) and Nanavally (1988) separately identified several reasons for the failure of community development programmes (including agricultural development policy) in South and South-East Asian countries including Bangladesh. Among these were over-centralised planning, poor delivery of support services, lack of effective coordination, inappropriate technology and government macro-economic policies. The authors expressed the view that policy making had been technocratic, and dominated by government bureaucrats to the exclusion of specialist social scientists, such as economists, sociologists and anthropologists whose training might make them more sensitive to the social and human aspects of the development process. The authors concluded that rural development policies have been based on free market ideas of the West which benefit the rich farmers while ignoring the majority of the small holders, the landless and the near landless poor.

Long (1988) and Pearse (1975) provided a critical assessment of two analytical approaches of development models viz. the commoditisation approach and the institutional incorporation approach of development models. The authors expressed the view that both the approaches have embedded the rural people in commodity markets through the sales of products and labour and through the purchase of basic necessities and services. They further viewed the process of incorporation of rural people as having come about through their contact with urban centres, through the extension of communication, and government bureaucracy, and through commercialisation of production. The authors concluded that most of the community-oriented rural development projects have experienced this incorporation process. This is because the main objective of these projects was to increase commercial production, the main result of which has been that the rural producers have gradually come to be linked into the functioning logic of the capitalistic market and other capitalist institutions.

1.4.4 *Development Programmes and the Contingency and Emergency Needs of the Poor*

Another factor relevant to the government's anti-poverty rural development programmes is that such programmes do not consider the reduction of the vulnerability of the poor a direct objective. If anti-poverty programmes are ever to be successful, they must seek to reduce the vulnerability of the poor by assuring them food and income which meets their consumption needs at bad times of the year. While many programmes encourage savings and investments, few programmes try to reduce vulnerability directly by enabling poor people to gain disposable assets which they can realize at will to meet contingency expenditures. For example, the Food for Work Programme, first used in Bangladesh in the mid seventies, allowed poor people to earn food or money when they needed it, and so helped them to meet the contingency of seasonal deprivation, but this was done through food or wages for work, rather than through gaining any productive assets. Bangladesh's large scale Rural Development Programme (BRDB) does help the poor people with some useful assets such as livestock, seeds or fertilizer. While these assets help generate incomes which might raise them above the poverty line, they are not much help in conditions of emergency and contingency. It must be conceded however, that a poor country cannot effectively finance large scale emergency and contingency expenditures. Nevertheless, one of the aims of rural development programmes must be to enable the poor people to cope with situations of emergency and contingency out of their own resources as much as possible.

1.4.5 *Basic Needs, Homestead Forests and the Rural Poor*

In considering alternative assets which may meet the poor people's contingency and emergency needs, attention should be given to changes which have been taking place in rural Bangladesh. In many ways, the daily needs of the poor people for such assets have generally become more acute due to the loss of land and other tangible assets such as crops, animals and jewellery. Secondly, the costs of meeting contingencies and emergencies have risen over time. Third, mutual help through

patron-client relations, which existed over a long period, has largely eroded or even disappeared. Even where these relations still exist, they are not cost free, indeed the costs are often quite exorbitant. Poor people, therefore, face a new sense of defencelessness. To overcome this situation, they need substitutes for the support network they used to fall back on in the past. Government programmes have not yet recognised this need. Homestead forests can at least partially meet the rural people's regular and extra-ordinary needs.

It will be argued in the present study that, in a country like Bangladesh, forestry, especially homestead forestry, can play an important role in the overall welfare of the rural poor. Forests, including homestead forests, contribute four percent to the GDP and two percent to the employment of the population (Haque, 1993). Trees provide a large variety of basic necessities as well as being a direct source of protein rich food, fruit, fuel, fodder, timber, other building materials and so on. The other contributions of the forestry sector are even greater. Millions of people are dependent on different forest related activities all over Bangladesh. In the rural areas, various forest products, including bamboo, are used as basic materials for not only house building but in small scale enterprises, transport and communication sectors. It is estimated, as reported by Haque (1993), that a fruit tree, with a life span of about 50 years, contributes about 2.5 million *taka* of direct and indirect benefits to the economy, and also helps to balance the natural environment.

Labour intensive forestry creates different types of employment for the poor, thus helping to alleviate rural poverty. Homestead forestry alone provides many opportunities to improve the quality of life for the marginal farmers and the rural poor. It also plays a critical role in enabling poor rural households to obtain many essential items for daily use and to diversify their income sources.

A nationwide macro survey conducted in 1992 with the financial and technical help of ADB, as part of a Forestry Master Plan, shows that some 10 million households, in over 85,650 villages, annually supply about five million metric tons of wood and 0.53 metric tons of air dried bamboo. Supported by strong traditional and

conventional wisdom, as reported by ADB (1993), these homesteads grow trees and other plants under an intensive and efficient system, combining multipurpose trees, food and forage plants, bamboo, palm, medicinal plants and spices. Today, homestead forests are the single most important source of wood, bamboo and other non wood forest products in the country.

1.5 *The Place of Homestead Forestry in Forestry Development Programmes*

Despite the numerous contributions of homestead forests as discussed in the previous section, this sector has received little attention from government planners and policy makers. Since 1973, the Bangladesh Government has formulated a series of development programmes in the form of Five Year Plans of which the current, the fourth one, was formulated in 1990. One of the important social objectives of these plans has been to achieve an equitable distribution of the fruits of development, and to reduce poverty (Islam, 1988). Although government now places poverty alleviation as a primary goal in its national development policy under the banner of the 'Rural Development Programme', initially (1973 to 1975), it was accepted in health and welfare programmes and, only later on (1975 to 1980), as a critical element in rural agricultural development. The forestry programmes came even later (ADB, 1993) and, even then, the emphasis was on the development of the state forests. These state controlled forests, which occupy more than five times the area of homestead forests produce only one fourth to one third of the production (annual output) of the latter (ADB, 1993). This reflects the relative inefficiency inherent in the management of public forests as compared to homestead forests which are decentralised and depend on individual decisions which, in turn, are based on centuries of experience available in the village societies. The organised public sector forests have access to 'modern' forestry skills and public funds, while the homestead forests have little of either. While this has given the state forests an advantage, the homestead forests have not stopped delivering benefits to the poor. The benefits of the state forests accrue to the better-off rather than to the poor, while the homestead forests are of more immediate use to the poor, who have better access to them.

A modest beginning in the areas of community-centred forestry started in 1978 under the umbrella of 'Social Forestry'. Even here the emphasis has been on 'community forests'⁸, rather than homestead forests. The former have largely failed to provide benefits to the poor due to various factors including existing social structures (for details, see the later part of this study). The homestead forests meanwhile continue to be under the control of the rural households themselves, with people using their skills and resources, and deriving, in return, many benefits in cash and kind.

1.6 Forest Management Systems and Policies

1.6.1 *The Period Prior to European Rule*

No systematic records exist to testify to the prevalence, growth or depletion of forest resources in the sub-continent of India down the centuries. However, forests have always occupied an important place in the lives and rituals of the inhabitants of India from the earliest times, as noted earlier in the chapter.

Records relating to the invasion of India by Alexander the Great in 327 B.C. mention the presence of almost impenetrable forests along the Indus and the Ganges river basins. In Kautilya's time (4th century B.C.) too, the protection of forests, and the planting of trees along roads, and on camping grounds were practised. During the time of Shershah Suri (16th century), trees were planted along the sides of many highways crisscrossing the subcontinent (Sagreiya, 1967).

During the Mughal period (16th to the 18th centuries) forests were still plentiful. Most villages had large forests, and villagers could get their fuel, fruit, fodder and house building materials mainly from the forests on common lands in the villages. However, from the 11th century onwards, there was a steady inflow of persons of Turkish, Afghan, Pakhtun and Persian origins into the country. With the increased number of immigrants, there was pressure on forests, and a significant number of forests were cleared for new settlements. There was also increased demand on home gardens for materials of daily use (Harun, 1991). These pressures further increased

when the Portuguese, who had settlements around the coasts of the subcontinent, expanded their trade in timber starting in the 17th century.

1.6.2 *Forest Management Under British Rule*

The first major commercial exploitation of forests and forest products began in Bengal and other parts of India with the advent of British rule from around 1760. The British rulers, who were merchants of the East India Company, saw the potentialities of the forests both for trade and also for direct use in ship-building and in the emerging railway industry. To meet these demands, forest resources were used in an intensive but unplanned manner.

It was not until 1878 that the British government in India set up a Forest Department, and passed the Indian Forest Act. By then, administration had passed from the East India Company to the British government. Under the Indian Forest Act, a simple system of forest land management and utilization was introduced for the first time all over British India. It included the reservation of important government forests for production, allocation of ownership and control of village forests, and the management of forests under written working plans, as well as the formulation of forest policies and legislation. In those days, forests were relatively abundant, the population relatively small and the needs of the people rather modest. Consequently, forests could be managed conservatively with simple rules of thumb. Nevertheless, local villagers had rights of utilisation which included rights over grazing or pasture, grass cutting for fodder, the collection of fallen leaves for litter or manure, and sometimes even temporary cultivation in government forests.

1.6.3 *Post-colonial Forest Management System: The Pakistani Period*

The end of the British rule in 1947 saw India divided into two sovereign states, India and Pakistan. What is now Bangladesh was a province of Pakistan (East Pakistan). The forests of Bangladesh (East Pakistan), like other forests, came under heavy pressure to supply timber, fuel wood, bamboo and cane for the construction of new

dwelling for the migrants from India after the partition of 1947. Forest resources were also needed for other infrastructural developments and industrial raw materials such as pulp, paper, newsprint and railway sleepers for both East and West Pakistan (Bajracharya, 1988). As a result, substantial deforestation took place. There was considerable clearing for tea gardens in Sylhet and Chittagong, and other agricultural uses, owing to the growing pressure of population, in the Sundarbans, and in the Khulna, Bakerganj, Chittagong, Dhaka and Mymensingh districts. As a consequence, policies were adopted to increase the forest area through afforestation programmes. During the Pakistani period in East Pakistan, large areas of private forests suffered from lack of proper management. In the general interest of the province, the Provincial government was anxious to bring those forests under a proper management system. With this objective, the Private Forest Bill was adopted in 1955 to encourage their revitalisation and development. The government also defined five types of forests in East Pakistan. These were the tidal forests, the open deciduous forests, sal forests, fresh water low level forests and minor vegetational forests such as bamboo (The American Geographical Society, 1956). Although privately owned homestead forests were treated as potential resources of the rural economy, no measures were taken for the improvement and development of these resources.

1.6.4 *Forest Management System: The Bangladeshi Period*

When Bangladesh became an independent nation in 1971, it was realized that the forest resources had been badly exploited. Consequently, the Forest Department took up reforestation and planting activities in the state forests as well as in accredited lands along the coast.

For the first time in Bangladesh, forests were classified as either state-owned, or privately-owned village or homestead forests. The state owned forest areas are mainly concentrated in the south and south eastern parts of the country with very small areas in other parts. The remote location of the state reserved forests, far from the major areas of consumption, poses a significant problem both for extraction and transportation of forest products. Moreover, the productivity of the forests in the

Chittagong Hill Tracts is rather low, compared with its potential, because of the difficult terrain.

The privately owned homestead forests consist of multipurpose plants, including fruit trees, which are grown on small private rural homesteads scattered all over the country. The overall area of these forest lands is estimated to be around 0.27 million hectares. It is estimated that these forests cater for about 70% of the timber consumption, 90% of the fuel wood and 90% of bamboo consumption of the country as a whole (The Third Five Year Plan, GOB 1985).

The First Five Year Plan (1973-1978) focused on resource development and exploitation of natural forests. The plan envisaged maintaining the 1965-1970 level of per capita consumption of 0.40 cubic feet of timber and 0.55 cubic feet of fuel wood respectively, but it failed to achieve these targets. It set targets only in respect of extracting wood and bamboo from inaccessible areas of Chittagong Hill Tracts, and aimed to foster replanting of mono-culture tree species, such as the eucalyptus, in the exploited hill forests, and general afforestation of coastal and unclassified state forest areas. The plan however placed no priority on the need to support or develop homestead forests.

The Two-Year Plan (1978-1980) pursued the objectives of the first five year plan as it was intended, more to complete the on-going projects than to have new projects. But the development of homestead forestry was given particular attention for the first time in a published document. However, only a few schemes were introduced to distribute seeds and saplings among rural people as part of pilot projects. In general, the total programmes suffered shortfalls except in the case of replanting. Homestead forest targets were also under-achieved due to the lack of seeds, planting stocks and organizational weaknesses.

In order to relieve the ever-increasing pressure on land on the one hand, and the increasing demands for fuel wood and timber on the other, the Second Five Year Plan (1980-1985) aimed to maximise production of forest products from the existing

stock of forests in a planned way, and to develop government forest resources as rapidly as possible to stop further decline in forest land. The plan also encouraged the development of tree resources, particularly the fast-growing exotic species and of fruit trees, in the private homesteads and in public places such as strip plantation of roads, highways, railways, canal and embankment sides (The Second Five Year Plan, GOB, 1983). Though great emphasis was laid on the development of homestead forests during this period, the programme was not very successful because of resource allocational, organizational and motivational problems.

The Third Five Year Plan (1985-1990) aimed to further increase the state and homestead forest production of both timber and non-timber crops, to accelerate the programme for development of short cycle plants, and to optimally exploit forest resources without disturbing the ecological balance (Mid Term Review of the Third Five Year Plan, GOB, 1989). The actual performance during the first three years of the plan remained much below the envisaged plan target, and only about one-third of the targets had been fulfilled by early 1989. During this period, the village homestead forests might have been producing at their earlier levels but there can be little doubt that continued exploitation of the village private forests at such levels could only have been possible by over-cutting them, which would be highly undesirable from a long term point of view. Production from government forests became lower owing to their diminishing stocks as well as the failure of past planting programmes.

In the meantime, the Forestry Department launched the Community Forestry Projects in 1978 with the objective of averting fuel crises, restoring ecological balance to the degraded land, and overcoming deficits in respect of food, fodder and timber. Under the scheme, the Forestry Department developed a strategy of cooperation with local groups to establish, manage and protect 'mono-culture and exotic plantings' on public property alongside roads, embankments and railways. In exchange for their investment of effort, villagers were to gain secure rights to use planting products. With these objectives in view, the Forest Department initiated Community Forestry Programmes with specific targets. Most of the schemes, however, failed to achieve

their targets. Even the pilot projects, initiated by the Forestry Department, failed to reach their targets (Mercardo, 1987; Romm, 1991).

There are several reasons for these failures. Under the social forestry schemes, the Forestry Department was responsible for the free distribution of seedlings to prospective users. It is possible that the government imposed restrictions on the free distribution of seedlings of commercial species, which were misplaced and overlooked by the operating staff. It turned out that, in practice, special priorities were given to commercial species to satisfy the demand of rich farmers. Under the original schemes, the landless and the small farmers were to be given the opportunity to share in the benefits coming from the projects but, in practice, they were denied any share. Community plantings were often damaged by allowing livestock to graze on them, thus destroying the trees prematurely. Prior to the planting scheme, the grazing grounds used to be the road side, the railway side, and the embankment. Users displaced from these sites sought to disrupt their new use. It is apparent that the social and management aspects of the projects needed to be better co-ordinated to secure their sustainability.

Although most of the community forestry programmes have failed to provide much benefit to the poorer section of the rural population, the programme is still being promoted by the government with the financial and technical assistance of international donors. It has been stated in the Third (1985-90)⁹ and the Fourth (1990-95) Five Year Plan documents that the development of community forestry programmes are to be given greater priority. Although a few programmes did correspond to the motivations of the poorer people to grow trees on their homestead plots, much more attention was given to the co-operative oriented community forestry projects which were being executed in village common lands and road-sides, rather than on privately owned homestead plots. These projects made the participating people feel betrayed because they participated in them believing that they would receive benefits from the trees when they matured. In most cases however, these projects are organised through small co-operatives which are controlled by rich farmers in their capacities as secretary and/or president. Their influence derives from

their economic and social position. As a consequence, a larger share of the benefits resulting from these projects go directly to them. They are naturally reluctant to share the benefits equally with the poor.

Meanwhile commercial contractors made profits by supplying fences for saplings. Most of the saplings died due to the absence of proper plant care and maintenance. Many of these programmes were implemented through international financial assistance under technical cooperation agreements. Every such programme went through ceremonial inauguration. Ministers or other dignitaries planted the first saplings amid claps and photo flashes. The programme was thus 'successfully launched'. The very next day the plant might have been taken by the cattle! (Ahmad, 1987).

With the belief that this new type of community forests would both check the trend of deforestation and increase the supplies of forest resources, particularly at the local community level, and that the majority of the rural poor of Bangladesh and almost all other developing countries would benefit from such projects, many countries including Bangladesh, introduced these projects with the collaboration of international aid agencies and other development bodies which soon started releasing huge funds to these new projects (Cernea, 1985). Most developing countries, however, have failed to achieve their expected targets with such projects. The causes of failure have been evaluated by a number of researchers (Shepherd, 1979; Pant, 1980; Cohen and Uphoff, 1980; Noronha, 1981; Noronha, 1981; Cernea, 1981; Romm, 1982; Chamber, 1983; Kulkarni, 1983; Noronha and Spears, 1985; Erick *et al.* 1985; Food and Agriculture Organization, 1986; Mercado, 1987; Cernea, 1988; Chopra, 1990) from different perspectives. They have also identified the reasons regarding the less effective implementation of the programmes. Among the factors identified are the following:

Community forestry is overwhelmingly a 'top-down' process characterised by the bureaucratic 'blueprints' which incorporate paternalistic attitudes towards society at large. The poor for whose welfare these programmes are supposed to be launched

are never involved in the drawing up or implementation of them. Their direct experience of learning and working in rural areas is not made use of in these programmes. This approach naturally makes the programmes less effective in dealing with the problem of the poor.

The rural poor are often not helped by over-centralised planning, poor delivery of support services, lack of effective coordination, inappropriate technology, government macroeconomic policies or elitist attitudes which are the general characteristics of government policy making.

There is generally a lack of extensive consultation and building of trust between forest departments and the local people. As a result, villagers typically lack enthusiasm for communal tree planting.

Lack of proper training of forestry department staff in community forestry means that they perceive the project as little different from other commercial plantation projects to be implemented in a conventional manner. Conventional forestry approaches, therefore, need to be moderated by social conditions, and foresters used to conventional approaches need to be made aware of the social dimensions of forestry programmes.

The schemes often fail to identify important social conditions of the local people, such as their social structure, their land tenure system, their ownership rights, their social perceptions, attitudes and political power. For example, elements of social structure such as class, and caste systems, make communal programmes extremely difficult. Land tenure systems may also create problems. Generally, trees are planted on common land but without a clear definition of rights. Who will benefit and what is left for the future is unclear and the rights of the poor families are not established. Sometimes factions within the village became suspicious that their rival factions might gain more favourable treatment from the distribution of sale proceeds.

The main lesson from the above is not that the programmes should be abandoned, but that their design and implementation should be improved. However, it may be concluded that most of the community forestry programmes undertaken in different countries including Bangladesh have failed to achieve their targets satisfactorily. Whatever the strategy adopted, the most important consideration is to avoid falling into the trap of believing that community participation is always the key to alleviate rural poverty. Although the community participation factor has been given much prominence, many sensitive social or human issues such as the power and class structures in the rural areas have been overlooked in designing community forestry projects. This has resulted in the benefits of these projects being diverted from the poor to the richer families.

1.7 Forests, Homestead Forests and Bangladesh: A Critical Summary and Assessment

The foregoing discussion indicates that forest policy in general has developed in several directions with increasing complexity. Although many programmes have been formulated rapidly and largely with the objective of a new role of forests in developmental and environmental imperatives at country or global levels, most of the projects are facing a large number of emerging issues and problems (World Bank, 1991).

Two different approaches have been followed during the last three decades in the planning and formulation of forestry projects. The first approach-called 'forest first', consisted largely of industrial projects aimed at identifying the sources of growth and sustainability. These projects assumed that natural capital i.e., the forest was relatively abundant compared with all other forms of capital in the development effort. As forest was perceived to be an abundant and underutilized resource, forest exploitation was considered to have very high economic returns. The second approach, called 'forest second' (community oriented programme) supposedly takes a more social and environmental direction. People are 'central' in this approach, and the task is to identify new forms of capital accumulation and sustainability. Natural,

human and institutional capital are no longer perceived as abundant (World Bank, 1991), according to the official line.

But both the approaches, however, fail to understand the nature of the poor people's needs. The first approach has patronised the vested group of people by managing and exploiting the natural forests. The second approach failed to provide adequate economic, social and cultural support for the majority of the rural poor (as mentioned in the earlier discussion on natural and community forests). Romm (1986) critically discussed both the approaches and found that they both treated forests in isolation from the welfare and behaviour of potential beneficiaries. Romm expressed the view that forest conditions should be determined by the needs of the common people rather than by capital oriented efforts. Romm also proposed an alternative formulation of 'people-oriented' forest policy at village, regional and national levels in developing countries. Much of what is suggested in the present study is in sympathy with this general view.

In Bangladesh, both the approaches to forestry development have failed to improve the overall situation of the rural poor because both the government-controlled state forests and the much publicised community forests have low productivity due to over-utilization for vested purposes. This contrasts with the high productivity and relatively efficient management and utilization of the homestead forests, as this thesis will attempt to establish.

The government's forestry policy and administration, however, has been directed predominantly to community forestry, and to forestry in the least populated hinterland of national territory which public law and governmental custom define as forest. Although the government of Bangladesh has taken some measures to revitalise the government-owned forest resources, large scale deforestation, over-exploitation of forest resources and lack of effective management have reduced the forest cover of Bangladesh at an alarming rate as has been documented above. Moreover, there is evidence that the government sponsored Community Forestry Projects have failed to enhance the income of the marginal farmers and the landless poor in rural Bangladesh. Therefore, this study argues that measures are needed to overcome this

situation so that the forests may be treated as 'savings banks' or 'insurance policies', especially for the rural poor.

The growing perception of the ineffectiveness of the government controlled natural forests and community oriented forestry schemes must lead to a substantial rethink, and new strategies involving alternative approaches of forestry development planning in rural Bangladesh must evolve. We focus here on individual homestead forestry units, as an additional string to the existing natural and community type of forestry programmes. It is with this latter that most of the literature discussed above is concerned.

In sociological terms, the significance of the homestead forestry strategy is manifold. It replaces joint (community) responsibility for planting with individual (family) responsibility. It replaces joint ownership of trees with individual ownership. It also vests the management authority over the tree planting, management and utilization in a 'real person' rather than in a diffuse entity. The distributional implications of these forests are enormous. In rural Bangladesh, homestead tree tenure arrangements differ only insignificantly amongst the different types of families. In all types of families, including the extended families, the benefits of the trees are always shared with family members, despite the fact that the decisions about the distribution of the benefit is taken by the heads of the families. In most cases, trees such as jackfruit, mango, teak, mahogany, acacia, *karai* and *nim*, which have a high value, are treated as joint property within the family, although family members who plant and care for the high-value trees are supposed to get preferential treatment in sharing their benefits. For the individual household, the correlation between its input and its output shares becomes direct, easily understood, equal proportionate and less risky than in communal forestry. Some forest professionals have remarked that trees planted within homestead boundaries can produce several times more volume per tree than trees from communal and national forests as a result of better management and care given by the homesteads. Resources needed for establishing and caring for homestead forestry are usually less expensive and are available locally. The concept

of homestead forestry is therefore well suited to the needs of the rural poor, especially of those without farmlands, and of small farming communities living in the rural areas.

The rural poor are directly dependent on homestead trees for food and cash for physical survival and for meeting many of their social needs. Villagers are dependent on homestead trees for timber, fibres, fences, building materials, medicinal ingredients and many other useful articles. Since homestead forestry is essentially the product of individual decision making, it is free from difficulties such as factionalism that impedes the collective adoption of community forestry. Adopting homestead forestry does, however, imply a change in behaviour inasmuch as the rural poor have not in the past, planted fruit trees and fuel wood systematically. Since external factors play a potent role in facilitating the rural poor's decision to plant and protect trees, homestead forestry scheme strategies must be concerned with incentives and inputs such as free or cheap indigenous tree seeds or saplings, organic fertilizers and easy credit (long term and interest free) and/or grant availability. Other necessary incentives can be included as dictated by local values and customs.

It is also important to note that, homestead forestry does require relatively small additional farm land, and that family labour, especially female labour, is generally available and inexpensive. Landless rural people have little option for income generation except physical labour which, during the agricultural off season and periods of natural disasters, they cannot sell. To ameliorate this situation, it is possible for these people to initiate a planned forestry scheme around their homesteads through which they can earn at least some cash income, and so alleviate their miserable social and economic conditions.

This study will establish that the direction of a change in policy and attitude is needed in the recognition that homestead forestry is not only a viable option but also a more efficient and sustainable one.

ENDNOTES

1. Annual deforestation rate was 80 sq.km between 1981 and 1985 (Food and Agricultural Organisation of the United Nations (FAO)/United Nations Environment Programme (UNEP), 1985).
2. 125 villages were submerged; 18,000 families were displaced; 22,000 hectares of agricultural land and 2,700 hectares of reserved forest were submerged out of this dam (Ahmad, 1987).
3. A single lineage may consist of more than one household living within the same homestead boundary.
4. The current size of average homestead land holdings, as found in our Survey, are 0.1 hectares, 0.3 hectares and 0.8 hectares for the 'poor', the 'middle' and the 'rich' households respectively.
5. According to the United Nations, the poverty line indicates the level of income below which is not possible from an economic stand point, to guarantee an adequate diet of 2,120 kilocalorie in nutritional terms, as well as providing non-food essentials. In Bangladesh, 86% of the population were estimated to be below this 'economic poverty line' (Third World Guide, 93/94: 1992).
6. Agricultural policies are largely oriented toward improving export crop production on large farms rather than enhancing income on small farms. These interventions have tended to penalize smaller producers, while providing incentives for additional land clearing by small and large property owners alike (Rowe *et al.*, 1992).
7. According to Poostchi (1987), this rural development programme seeks to involve all the rural people, and all the phases of rural life, while the process tries to transfer science and technology to more traditionally oriented rural cultures. The objectives seek to provide a higher quality of life, greater opportunities to earn a living for rural people and to have socio-economic institutions and services similar to those of urban people.
8. These are a part of the afforestation programme supported by the government in which the village people jointly plant and maintain mono-culture trees on public/community lands such as waste lands, degraded lands, road and railway sides, canal banks etc. These trees help meet the fuel and other forest products needs of people in general.
9. There were 29 spill-over and new projects in forestry sectors undertaken during 1985-90 fiscal years and most of them were funded by international agencies or foreign countries. Within these particular projects, for example, a budget of 78.2 million U.S dollars was allocated for state forests and another of 11.4 million was allocated for community forests (United Nations Development Programme (UNDP), 1993).

CHAPTER TWO

Theories of Development and the Place of Homestead Forestry

2.1 Introduction

The present study aims to underpin the analysis of forestry with the relevant theories of development. It starts by reviewing the sociological and social anthropological approaches to development. The factors and forces identified by these approaches are meant to explain the observed patterns of development of poor countries. Yet, when one tries to apply the insights of these theories, one finds a lack of uniformity in the experiences of different developing societies. The purpose of this study will be to focus on the special case of Bangladesh in the context of agriculture, agro-forestry and homestead forestry. This last type of forestry has a special place in the lives and livelihoods of rural people in Bangladesh. An attempt is made therefore to highlight some of these special features. These include the role of women in development, and how the existing power structures leave most women out. Homestead forestry, being part of the individual 'home economy', necessarily includes women and, thereby, empowers them. Our field survey data confirm these observations.

It is also generally recognised that both theoretical analysis and methods of statistical recording and reporting relating to the involvement of women and other workers in the informal sectors of a developing country are inadequate, and often faulty. This is a problem which has only recently been considered seriously, and international bodies including the United Nations have been trying to redress this drawback. The present study, being based on field survey, is able to document the specific roles of women and other workers within the village economy. Thus, it contributes to an understanding of the role of certain key participants in the rural areas of a developing country.

Similarly, environmental conservation and economic development and change often run into conflict with each other. The rural population of Bangladesh have the ability to reduce the extent of these conflicts because a large proportion of the population are directly involved in the management of homestead forests in a fashion that has proved to be sustainable. This study explores the relevant environmental aspects from a theoretical and empirical point of view.

The rural poor obviously need to find food, shelter and other necessities out of the village economy. What is not always so obvious is that their health and cultural needs are often also supplied by the 'gifts of nature' with which their villages are endowed. Traditional medicines, which are based on herbs and other natural products, are an important part of the rural people's relationship with their village economies. Knowledge and experiences of what is useful and valuable is passed down from generation to generation, and used by the rural people in seeking to prevent and cure many ailments. In this study, we have devoted a special section to an examination of the role of forestry, including the homestead forests, in providing these resources. Again, our analysis is backed by the findings of the village surveys. Access to these resources is, of course, made easier when ownership of forest resources is clearly defined. Homestead forests, however small, provide such access and ownership more easily, and they are therefore extremely helpful to the rural people, particularly the poor.

Most rural people lead their lives 'at the margin', i.e. without adequate provision to meet a situation of emergency or contingency. Whether it is a natural disaster, a death, an illness or wedding in the family, resources are not there for people to fall back on. The ownership of homestead forestry resources however can and often does provide a very helpful back-up. The present study brings out these aspects of homestead forests in an analytical way.

Among the many problems the poor people face almost daily is the shortage of fuel for cooking, heating and other daily needs. Wood is often the only fuel readily available to the rural people. At the same time, the demand for fuel is so high that

an unrestricted use of forestry resources as fuel can cause wholesale deforestation. The existence of homestead forests is helpful to both their owners and others. Because of the close relationship between these forests and the home economy, the issue of their sustainability is clearly understood and carefully nurtured by all users of homestead forests. This study goes on to explore these aspects as well in some depth.

Even the very poorest cannot 'live on bread alone'. Cultural, social and religious needs are important in their lives too. Rituals, festivals, meetings, and friendly gatherings all have a place in the daily lives of the rural people. The homestead forests and their resources provide many items needed in the observance of the various rites. What these needs are and how forests and homestead forests help in the provision of them are examined in this study in some detail. Once again, personal observation and field survey reports have been used to explore these complex issues and relationships.

The concept of development that is presented in this thesis assumes that the labour contribution of women, sustainable homestead forestry and the continued production of traditional medicine are vital features of any programme. Furthermore, any argument, explanation or policy that does not recognise the challenge of emergencies, and the rising demand of fuel where the population is growing rapidly will hold little relevance for a country like Bangladesh.

The emphasis of this study centres on the fact that most conventional theories are based on the experiences of 'developed' countries and societies. However logical the predictions and hypotheses of these theories may seem, their application to developing societies is always fraught with difficulties and inconsistencies. The purpose of this study is partly to remedy this gap between the existing theories and the experiences of one poor developing country, Bangladesh. Whether theories exist or not, poor people have to survive and make the most of the opportunities available to them. It is with this conviction that the present study developed the field survey

approach in the way that it did; its idea being to find the facts as they were, and relate them to the general societal links and relationships.

In what follows, a survey of some of the theoretical approaches to 'development' is attempted first. 'Development' being a multi faceted phenomenon, the theories covered in this chapter come from a number of social science areas such as sociology, social anthropology, geography, demography and economics. Since the theories covered here are well-known and readily available in the literature, only a brief survey is attempted here, and only those that have direct relevance to the subject matter of the study are surveyed in a critical fashion.

2.2 Sociological Approaches to Development

Sociology is concerned with the concept of 'development' which contains a number of perspectives on global economic and social change, some of which have emerged, one after another, from a sense of dissatisfaction with the term 'development' itself.

Different schools of thought in the sociology of development have originated in the context of the changing economic and social environment of the world. After surveying the general literature on development approaches, Laite (1988) has identified four major schools of thought on development studies. These are: developmentalism, dependency, modes of production, and political economy. These approaches are examined below.

2.2.1 *Modernisation Approaches to Development*

Underlying the approach of developmentalism is the ideology of modernisation and the economic idea of dualism. As societies evolve from an 'underdeveloped' to a 'developed' state, they pass through several stages. The literature identifies at least two major factors contributing to this stage: differentiation and integration, (Smelser, 1959).

With economic development presumably comes education and skill formation. Such societies are supposed to have bifurcated into two dominant sectors, a modern sector controlled by an educated elite, and traditional sectors, still characterised by older traditions and values (Higgings, 1956). Their economies and methods of operation also differ. The modern sector is market oriented, and guided mainly by the profit motive, while the traditional sector is dominated largely by subsistence production and a fair amount of barter. Any surplus generated from traditional production and exchange is consumed usually through various rituals and other enjoyments without involving the exchange of money (Laite, 1988).

The transition from an underdeveloped state to a developed one is also inevitably linked to the idea of economic and social progress. However, the important change that creeps in during such transition is a capitalist mode of production and exchange which traditional societies have to learn to cope with (Redfield cited by Harrison, 1991). Rostow (1962), the historian of development, gave an explanation of the evolution of western industrial societies which is often regarded as a universally applicable description of economic progress and how it comes about. Yet, a closer examination of the experiences of different countries over the period since the second world war reveals how varied the patterns have been.

Another difficulty in trying to apply the approaches of development sociologists and social anthropologists, such as some of the early evolutionists (Durkheim), the diffusionists (Boas school), the structural functionalists (Parsons, Malinowski) and the late modernisation theorists (Hoselitz, Levy) is that these approaches were not designed for any particular application to developing countries. These theories and the thinkers behind them had based their explanations around the social context of developed societies which had emerged in a different cultural and environmental milieu, and were therefore qualitatively different from the underdeveloped societies of more recent periods. Hence the divergence between many of the insights of these theories and the contemporary experiences of Third World societies which confront a very different world around them than their counterparts did a century earlier.

2.2.2 *Dependency Approaches to Development*

The dissatisfaction with the modernisation approach led to the emergence of another, more critical, school of thought namely the dependency school.

This school has two major intellectual streams: a Marxist stream, close to Lenin and other classical theorists of imperialism; and the structuralist stream, incorporating the thinking of Hilferding, Bukharin and Hobson. These thinkers found support, in a policy context, in the works of Raul Prebisch and some other social scientists, for example, who worked in the United Nations Economic Commission for Latin America (ECLA) in the 1950s. These latter groups have come to be known as the structuralist school.

The Marxist view, primarily articulated by Baran (1973), asserts that the developing countries have to recognise that they are trapped in a capitalist global economy which is basically unequal and exploitative. This implies that economic development efforts of the poorer countries will be resisted because such development is usually against the interests of the capitalists, and even the workers, in the advanced countries. As a way out of this potential impasse, the ECLA structuralist group proposed a development strategy based on import substitution in the Third World countries. This strategy justified restrictive commercial policies such as tariffs and quantitative restrictions on imports by poorer countries seeking to industrialise themselves. This inward orientation of economic policies or development found acceptance in many developing countries in the 1950s and the 1960s. This approach, though not Marxist in its ideological roots, still accepts the unequal nature of the relationship between developed and developing countries. It is this acceptance that is reflected in its policy prescriptions.

An extension of these lines of thinking is embedded in another stream of the so called dependency theory. This branch of the dependency theory maintains that the poorer countries are like 'satellites' of the advanced, more developed, countries which are the 'metropolis'. The former countries are dependent for capital, technology and

market on the industrialised countries in Europe and North America. However, given the unequal economic powers of these two groups of countries, a relationship of inequality and 'unfair exchange' develops. The satellite countries experience a flow of wealth out of them in exchange for goods, services and technology from the metropolis which are not always appropriate for their balanced development or poverty alleviation. So, the poverty and the lack of economic growth which often characterise the satellite nations are linked to the exploitation that results from their dependency on richer nations according to this line of thinking (Laite, 1988).

This satellite-metropolis relationship is often replicated within the poorer countries with the creation of metropolitan towns and their rural satellites. A bourgeois middle class elite is created within the metropolitan society which administers the relationships between the metropolitan and the satellite areas. A consequence of this development is the growing polarisation of real income and wealth between the metropolitan and the satellite groups. Capital accumulation at the centre is often at the cost of the poorer peripheries within the countries. This creates 'internal colonies' in the developing countries (Long, 1977). The 'marginal underclasses' are made up of the urban poor - working perhaps in the informal economy, on plantations or in mines, as well as the peasants many of whom are landless. Economic development largely passes these people by (Laite, 1988).

The notions of dependency were further extended by Andre Gunder Frank, who developed an analysis of underdevelopment based on unequal relationships of nations. Frank argued that colonisation of non-industrial countries created 'modern metropolis' within the peripheries such as in countries like Mexico, Peru, India and parts of Africa, for example. This development suppressed or transformed viable social and economic systems which these countries previously had. Such a transformation enabled capitalist accumulation to be used in the development of the colonising powers. The resulting fate of the colonised countries was and remains characterised by their lack of capital, productivity and inappropriate technology which combine to perpetuate extensive poverty of the masses in an environment of overall underdevelopment, argues Frank (Frank, cited by Corbridge, 1988).

Frank and, later, Wallerstein (1974) have further argued that the economies of the peripheries have been capitalist since they first started to produce goods for the purpose of exchange in the world market. The fact that the production structures in the peripheries are based on several different systems of 'labour control', such as 'free' wage labour, serfdom and slavery, is not thought by these authors to be relevant to the argument. Wallerstein argued that the relations of production that define 'a system' are those of the system as a whole which, according to him, was made up of the industrialised European and North American countries on the one hand, and the poorer developing countries on the other. Free labour is an ingredient of capitalist societies, although it is not a characteristic of *all* the productive enterprises of the developing world.

The dependency approach to analysing economic development in an international context has been widely criticised by both Marxist and non-Marxist writers. The metropolis-satellite relationships, a key element of the dependency theory, is criticised as 'simplistic'. The agents of oppression and subordination in the centre and in the periphery are not identified very precisely, it is pointed out, for example. Also, dependency theory is unable to account for the variety of social structures encountered in the Third World countries. Thus, even where there are dependency relationships, they operate differently in different structural contexts. Furthermore, satellite nations or regions do not often have enough opportunity to accumulate capital and wealth, or to establish strong political institutions as assumed by the dependency theorists. The dependency approach also fails to analyze the process of class formation and the role of classes in the Third World. The emphasis of the dependency approach is the relation of exchange between the centre and the periphery within the international capitalist system. This relation, while an established feature of the international economy, does not necessarily lend itself to the interpretation the dependency approach ascribes to it.

2.2.3 Modes of Production Approaches to Development

As a concept, the 'Mode of Production' was probably first introduced by the Greek philosopher Aristotle more than three thousand years ago to refer to a social and political system specific to a particular geographic area such as Asia, for example. According to Aristotle, the form of political organisation found among the Asiatics was different from the 'tyrannies' known among the Greeks, in that the former as a system was endowed with legitimacy, it enjoyed the acquiescence of its subjects, and had a stability, unlike the tyrannies in Greece.

Aristotle's concept of an Asiatic government was reintroduced into European political thought in the thirteenth and the fourteenth centuries, and the notion of an oriental (or Asiatic) despotism came to be associated with it. Such despotism, in turn, was linked with the absence of private-property rights in these societies. At the beginning of the sixteenth century, Machiavelli, for example, came to draw an interesting distinction between the principalities of kingship (the nobility) of the West from those in the East. In the West, there existed hereditary nobilities, while in the East, there existed only a service nobility, according to Machiavelli.

Another sixteenth-century writer, Bodin, divided kingships into three main types: royal, tyrannical and 'seigneurial' (despotic). The royal monarch is one who respects the laws of nature, and hence respects the liberty and property of his subjects. The tyrannical monarch is one of the most oppressive and unreasonable in nature and always exercises his authority in a tyrannical manner. The seigneurial monarch, on the other hand, is master of both the person and the property of his subjects. Bodin praised the latter system of seigneurial monarchy providing non-inheritable service-lands and privileges to the common people, and argued that this system was a counter example to the contemporary system of feudal privilege in Europe.

Another, quite different, aspect of the Asiatic society at this time (in the sixteenth century) was the prevalence of religious toleration. While the Asiatic state appeared to be more deeply involved in the economic life of its subjects than its Western

equivalent, it appeared less concerned to regulate minutely their religious beliefs and tradition.

In the seventeenth century, two European travellers, Tavernier and Bernier, elaborated and provided concrete illustrations of the already-existing notions concerning the absence of private property in the Asiatic Mode of Production and of the related notion of the existence of a service-based elite, as contrasted with a landed hereditary nobility of the West. Montesquieu's picture of an Asiatic Mode of Production was put together somewhat imaginatively from the contemporary travel and missionary literature available to him. His model of Oriental Despotism (OD) was intended as a negative example for France, rather than a systematic explanation of the principles of the Asiatic mode of production. Nonetheless, the broad sweep of his comparative political theory was powerful enough to guarantee his lasting influence in this area.

The notion of Montesquieu was extended by Herder who described 'Asiatic despotism' as a non-developmental political form, which did not permit the restless pursuit of knowledge which was the driving force of Western nations.

Herder's concept was further systematised by Hegel. According to Hegel's historical schema, the first phase of world history took place in the Orient, but, subsequently, the scene of the development of the world spirit had moved elsewhere in the world. Hegel's conclusion was as follows: the Eastern nations had been the first to attain the phase of 'substantial freedom' embodied in the state. According to Hegel, the principal feature of OD was the absence of any system of corporate or individual rights, *vis a vis* the state, and hence the absence of intermediary bodies. Therefore, the absolute equality prevailing in the East constituted the very foundation of despotism.

It was Adam Smith who first made a serious attempt to analyze OD from an economic point of view. He argued that there existed a distinctive Asiatic political economy, characterised by the fact that the sovereign derived the whole, or a considerable part, of his income from a variable land tax or land rent. A corollary

of this was the particular attention Asiatic sovereigns paid to the interests of agriculture and to public works, in order to maximise the value of produce, and thence their own income. For example, the state controlled the public works, such as irrigation schemes, which was directly concerned with the economic productivity of the state.

In the final analysis, Smith found the Asiatic system different from the system of Europe, where the economic functions were not centralised as they were in Asia.

The Smithian notion was extended in the works of James Mill. His work 'The History of British India' was based on a kind of model of OD. Mill argued that the Asiatic system was one which remained unchanged with conquests or dynastic changes. Although superficial movements had taken place in these systems, the texture of societies, and their basic component, the village community, had remained unchanged. Therefore, in the AMP, the village organization, with its economic self-sufficiency, inhibited the development of a more complex social division of labour, and acted as the linch-pin of the stability of the East.

Smith's notion was further extended by Karl Marx. According to Marx, the importance of the economic functions which developed in the Asiatic Mode of Production enabled the state to exert a claim prior to that of the self-sufficient village community. Hence, the commune, the original 'owner' of the land which its members possessed by virtue of their membership of the community, was reduced to the status of an intermediary in response to the appropriation of the surplus value from the direct producers by the central government. Thus, the key feature of the Oriental society, according to Marx, was that the state, rather than the slave-owner or the feudal lord (as in European pre-capitalist societies), was the 'principal owner of the surplus product'. This, together with the general absence of 'strong' private property rights, which could give rise to powerful social classes, was the basic distinction between the pre-capitalist societies of the East and of the West. The Eastern system conserved, and was conserved by an archaic social base, self-sufficient villages,

which in their communal arrangements bore some relationship to the primitive kinship communities in which they first settled in the land.

Therefore, the combination of the monopoly by the state of economic initiative and the surplus product, and the lingering-on of village communalism, meant that there was a complete and self-sufficient production system in the Asiatic society. There was the possibility neither of the development of commodity production, as in the Western slave-holding formation, nor of the development of the urban manufacturer, and consumer as in Western feudalism.

It was because the English had made themselves masters of world trade and economy, and also because their bourgeoisie had attained political power, that they succeeded in making such so called progress, as observed by Marx (1853). Engels (1847) noted that, since the arrival of the English, and the spread of their commodity based economic system, the Indians had had their livelihoods snatched from their hands, and the consequences had been that they had departed from their stable situation. The villagers and the workers there had already migrated and, through mingling with other peoples, were becoming, for the first time, accessible to so called civilization. The old Indian self-sufficient village system was therefore completely ruined. The impact of European capitalist development was therefore felt both in terms of the destruction of traditional self-sufficient economy and in terms of the penetration and stimulation of so called material wants into the Asiatic Mode of Production (Engels, cited by Sawyer (1977: 41).

Another reconstruction of the Asiatic Mode of Production is found in Wittfogel's (1957) treatise written in the spirit of productionist historical materialism. He described the Asiatic society as 'the natural setting for hydraulic society'. The mechanism for pristine irrigation in the Asian civilization was simple. The river carried mud and silt which, when in flood, deposited fertile alluvium on the land surrounding its bank. This process allowed crop yields to be higher than those produced under plain rain-watered land. But the employment of this 'natural' irrigation mechanism required a centralised and bureaucratised state power. For

example, the Harappan civilization of the Indus valley, seems to be based upon just such centralised structure with hydro-agriculture. Wittfogel therefore argued that the Indus valley civilization had a planned and self-sufficient economy which was based upon hydraulic system with a centralised government (O'Leary, 1989).

Some recent scholars such as Hoogvelt (1982), Wolpe (1980), and Armstrong and McGee (1985) have expressed the view that pre-capitalist modes of production in the periphery can coexist side by side with a capitalist mode of production for a long time, and serve the interest of metropolitan capitalism. This is because the continuation of pre-capitalist systems makes it possible for metropolitan capitalism to provide acceptable real wages to a fully proletarianised labour force. The existence of a largely self-sustaining domestic agricultural sector helps to transfer surplus labour value to the capitalist sector. This explains why the Third World countries often exhibit an extraordinary dualism of form, with pre-capitalist 'underdevelopment' and capitalist 'development', existing side by side in what is called 'suppressed symbiosis' (Corbridge, 1988).

2.2.4 The Political Economy Approaches to Development

The political economy school of thought emphasises the form of production, the nature of the market, the cultural context, the nature of the political organisations, and the role of the state. The major concern of this school is to examine the relations between the units of production and exchange, as well as the social relations within such units. For example, economic relations based on mutual trust are grounded in cultural norms. Likewise, the use of different types of labour, particularly household labour, often depend on cultural rather than economic criteria. Therefore, the socio-economic processes and structures observed in many developing countries have arisen from an underlying production systems which entail more than economic relationships. In this respect, the political economy approach derives more from Weber than Marx. For Weber, social structures arise from historical contingencies which may or may not be revealed through sociological analyses of systems of production and political environments (Laite, 1988). For Marx, on the other hand,

it is the class orientation that arises from the means of production, and from the way (mode) in which these are used. The capitalist economy allows - and indeed thrives on - the class system ¹.

2.3 Environmental Approaches to Development

A relatively recent approach to the development problem is embedded in the so called environmentalist literature. The environmentalists argue that their approach supersedes both the capitalist and the socialist development modes. They identify these two modes as the two elements of a common corporate industrial culture which is based on the values of 'rationality', growth, efficiency, specialisation, and centralisation of decision making (Friberg and Hettne, 1985). There is therefore a continuum between the two opposing poles of the state ('Red') and the market ('Blue'). To these, the environmentalist approach ('Green') offers a total counterpoint. This approach challenges the assumptions of all the other developmental approaches on the ground that they fail to identify that it is the development process itself which is at fault. To the environmentalist, the development process has been directed at growth which ought to be questioned, and should not be seen as progressive. The green approach emphasises sustainability which is of interest to all economic agents, particularly in the long term. This is because a non-sustainable pattern of growth, however rapid and apparently fruitful in the short or even the medium term, is self-defeating as it reduces the prospects of growth over time.

This approach, however, has been criticised as being based on the concerns of (mainly) the white and middle class people of the industrialised countries. These people are more worried about the undesirable effects of industrial development on their own life styles and health, it is claimed by critics. Their concerns regarding population expansion in the developing world, it is contended, are a reflection of their worries regarding global resource depletion which would affect their own comfortable life styles (Weston, 1986 and Steven, 1991). Their approach to the issues of growth underlines the basic differences in their needs and those of the poorer countries. The poorer countries require resources to satisfy some basic and immediate needs of their

peoples; the question of conservation seems secondary to them. The concern for the environment and the ecology is a concern which must be focused on their own social and economic needs, practices and resources, and not on those of others who are much better off than themselves².

2.4 Economic Development and Environment

Despite these conflicting views of policy makers of the developed and the less developed countries, the issue of environmental protection has come to be accepted as an important issue in the context of economic development and growth. It is therefore worth examining the nature of this acceptance by the development specialists.

The term 'environment' refers to the ingredients, facilities and inputs that nature provides to human beings. Thus land, water, forests, air, climate and so forth are all part of the 'natural web' of life. Human beings have learnt to master the use of these ingredients and to generate out of them useful products and services. It is therefore important that this 'natural web' of life be allowed to survive and not deteriorate in quality.

This need to preserve and, if possible, improve the natural environment is often in direct conflict with the immediate development needs of, especially, the poorer countries. For example, the exploitation of forest resources for foreign exchange is an attractive proposition for a foreign exchange scarce developing country with such resources. At the same time, a rapid rate of deforestation can cause the deterioration of the environment in a manner that adversely affects the development process itself. The rich world's need for products such as timber and minerals can put the poorer countries with such resources in a difficult position. The latter are persuaded with advice and/or aid to exploit their resources at an unsustainable pace more for the benefit of their advisors and aid donors than themselves, in the longer term.

Within the developing countries themselves there are also conflicts of interests between the nascent industries, which need natural resources, and the rural providers

of such resources. People in the rural areas, where many of the resources are found, are dependent on them not only for their economic sustenance but also to satisfy some of their social and cultural needs. Too rapid a rate of utilization of these resources would affect the lives and livelihoods of the rural people in an adverse, often irreversible, manner. The needs of the owners and the workers dependent on the industries - normally fewer than those who are dependent directly on natural resources in the rural areas - are often allowed to override the needs of the latter group.

As the pace of industrialisation increases, commercialisation of agriculture and other subsistence activities centred on natural resources becomes inevitable. By itself, such commercialisation might not be an undesirable outcome. However, there are many 'non-economic' contributions which the traditional activities make to the lives of the rural people. These are inevitably threatened by the process of commercialisation which is based on the short term notion of profit maximisation. Yet, there are no theoretical or practical guidelines as to how a proper and sustainable balance might be struck between economic development on the one hand and the maintenance of cultural integrity and environmental quality on the other. This is a problem which has only recently been given serious attention. In a densely populated country, such as Bangladesh, the problem is acute. This study finds ample evidence that the rural poor are very conscious of the dangers that 'development' and 'environmental deterioration' pose to their lives and livelihoods. They are often powerless to prevent the excesses of the 'developmentalists' amongst their policy makers. Homestead forestry - the principal focus of this study, is a significant facet of rural lifestyles in a country like Bangladesh. It is argued here, that the maintenance and support of homestead forestry is not only necessary for the sustenance of rural people, it is essential for the sustainable development of Bangladesh in a manner consistent with the cultural traditions and practices of the people. This study found that the owners and users in rural Bangladesh can and do exercise sensible restraints in the interest of sustainable exploitation of the available resources³.

2.5 Population and Development Approaches

Two further issues in the development context also are of relevance. First, the issue of population and its role in helping or hindering development; and second, the issue of 'empowerment' of particular groups in society.

There is a widespread view that relatively high rates of population growth in the developing countries create poverty, unemployment and resource depletion. This idea is an offshoot of the Malthusian view that high population growth could not be matched by food production, and the consequence would be increasingly poverty, malnutrition and high mortality. Reducing population growth therefore is a necessary pre-condition for these countries to achieve development. The policy prescription deriving from this line of thinking has found expression in the widespread policies of contraception and other methods of birth control in the developing countries, while economic development itself has often taken a less important role. The critics however, view such enthusiasm for population control as counterproductive unless the capitalist production-relations are also challenged. The Marxist critiques particularly emphasise that any 'over population' of the Third World countries has occurred as a result of the adoption of capitalist modes of production which thrives on the availability of a reserve army of cheap labour. Capitalists are of two minds on population control, one for and one against it, it is pointed out. Both positions can be shown to be consistent with capitalist interest. However, policymakers in many developing countries view the population issue as an important one which has great economic, social and even religious significance. For them, population control is needed to make the development process felt more widely in society. Whether there is an 'optimum population' or not, is of little relevance. How to deal with the religious predilections of their people in regard to population control is often a major issue in many developing societies⁴.

2.6 Forestry, Women and Development

The theoretical debate in the area of rural development has addressed the question of class and of geographic location (rural-urban) of the agents involved. However, the discussions are usually gender-neutral. Yet, it is common knowledge that women in developing societies are very productive economic agents, although their role is often informal and, therefore, unrecognised. The women's role in society is generally treated as that of the home maker, the child bearer and the rearer of children. As housewives, their contribution to the home-economy is not considered to be an 'economic' one. Ester Boserup (1970), among others, has conducted some pioneering research in documenting the considerable contribution that women make in the agricultural sectors of developing countries. She has also shown how the introduction of new agricultural methods and technology in recent decades has tended to reduce the opportunities for women to participate in agricultural activities in developing countries. These new developments have resulted in the displacement of many women from their traditional role and areas of work within rural communities.

During the 1980s, the international economic situation worsened in many developed countries while many developing countries, faced heavy debt burdens incurred in the wake of the 1970s oil crises. Many of these countries faced increased poverty and, in many cases, it was the women who suffered disproportionately more from the changes in government policy such as reductions in social services and welfare spending. This phenomenon is sometimes referred to as the 'feminisation' of poverty. These developments have put more pressure on women to carry an even greater responsibility for the provision of essential items and services for their families. While such an increase in the domestic role of the women might have 'empowered' them within their families, the role itself has gone largely unrecognised in conventional economic statistics. This is true of much of the unpaid labour in developed economies too. In the developing countries, however, to ignore the contributions of women in the home environment is to ignore their contributions to basic survival activities. Policymakers have not put much emphasis on assisting women in the household workplace nor have they, or others, properly recognised their

contributions. Following the 1985 conference on Women and Development in Nairobi, many developing countries have set up separate women's departments and ministries to look after the interests of women in their societies.

While such efforts may be welcomed as a step in the right direction, it must be remembered that the women themselves were not asked for an input into the policies that these specialist agencies are using. In some cases, the development of forestry related projects were promoted to involve women in environmental and developmental activities. Very often, however, the objectives of these projects were to preserve and improve the ecology and the environment in ways which would end up offering greater benefits to the richer, industrialised countries. The immediate needs of the women in the developing countries themselves were often only addressed in a marginal and indirect manner. The large-scale forestry programmes are, by their very nature, commercially oriented. They use technologies and other resources which are borrowed from developed countries. Their benefits are confined more to the industries using their products and, therefore, to the workers engaged in them, rather than the rural people, including women, whose role becomes marginalised.

However, women in all developing countries including Bangladesh always have had a great deal of involvement in activities connected with trees, plants, herbs and bushes around the households. This collection of plant life is referred as the homestead forests in this study. It is one of the objectives of this study to bring out the nature and extent of women's involvements in homestead forestry activities. This is done both with existing evidence and village surveys.

Our own survey data (discussed in full in chapter seven) and survey findings of other researchers (such as Buvinic, 1983; Cecelski, 1985; Chen, 1986; Fortman, 1986; Irene and Davidson, 1988; Agarwal, 1989; Shiva, 1991 and Rosi *et al.* 1994) confirm that women make numerous and significant contributions in forestry related activities which are helpful to the livelihoods of a large majority of the rural poor households. The survey data also indicate that the workload in the forestry sector is heavier for

women than it is for men in most sectors of the rural population, and particularly so amongst the rural poor. The rural women therefore are actively involved in gainful forestry activities. The findings also show that women participate in forestry related activities not just as users but also as protectors of forestry resources which they know to be valuable to themselves, their families and their communities. The women of rural Bangladesh are therefore the principal forest conservators and the sustainable development of such forests would do well to recognise and reward their contributions if not extend them.

As already noted, the organised forestry sectors have performed in a way that excludes the involvement of women. Even in the schemes under the social forestry programmes, women are not specifically included. Most forestry and extension workers are men; there are even fewer women in the professional occupations within the forestry sectors. The present study therefore attempts to fill an information gap by paying attention to the role of women in forestry development in Bangladesh.

In bringing out these issues through both a theoretical and an empirical approach, this study contributes to a broader understanding of the role of the homestead forests in the economy of rural Bangladesh.

ENDNOTES

1. For a more detailed discussion on the sociology of development and underdevelopment, see Buchanan, 1965; Myrdal, 1968; Soja and Tobin, 1972; Amin, 1974; Slater, 1973 & 1977; Brookfield, 1975; Palma, 1978; Laclau, 1979; Harris and Barbara, 1979; Roxborough, 1979; Gavin, 1982, Chirot, 1986; Chakravarty, 1987; Lipton, 1987; Chandra, 1980; Todaro, 1981 & 1985; Alavi, 1982, Forbes, 1984; Corbridge, 1986; Riddell, 1987; and Corbridge, 1995.
2. For a more detailed discussion on environment and development, see Brookfield, 1975; Eckholm, 1976; Goldsmith, 1977 and 1978; Sandback, 1980; Harvey, 1982; Cook, 1984; Redclift, 1984; Porritt, 1985; Leonard, 1989; Lowe and Flyum, 1989; Pepeer, 1989; Adams, 1990; Yearly, 1991; Marshall, 1992; Rowe *et al*, 1992; and Tariq and Marglin, 1993.
3. For a detailed discussion on these, see Spencer, 1966; Romm, 1982 and 1986; Murray, 1982; Redclift, 1986; Westoby, 1987; Myers, 1984; Collins *et al*. 1991; Jacobs, 1991; Sally, 1991 and Shiva, 1991, 1992 and 1993.
4. For a more detailed discussion on these, see Erhlich, 1968, 1970 and 1972; Meadows, 1972; Johnston and Kilby, 1975; Cassen, 1978; Harvey, 1978; Chirot, 1986; Corbridge, 1986; Flint, 1991; Leach, Mearns, 1991; Davidson *et al*, 1992; Pretty and Gujit, 1992; and Cathy, 1994.

CHAPTER THREE

Methods of Analysis and Village Profiles

3.1 Introduction

This study relies heavily on the information obtained from the field survey conducted in carefully selected villages of Bangladesh. The present chapter details the methods used in this survey and its major findings. The questions asked and the information sought are naturally based on certain ideas and hypotheses. These are formed in the light of direct experience of village life in Bangladesh and the perceived needs and problems of the villagers. How these needs and problems relate to the existence of forests, particularly homestead forests - and people's access to them - have been at the centre of our investigation. The hypotheses in question and the thinking behind them are also explained in this chapter. Finally, the selected villages themselves need to be introduced so that their economic, social and cultural aspects are appreciated in the context of our investigation. Brief profiles of these villages are therefore included in this chapter.

3.2 The Methods of Data Collection

The survey data for this study was collected from villages in four regions of Bangladesh. Four villages were selected, one from each region, on the basis of certain criteria, the principal ones being their location, and their near-absolute dependence on homestead type forests for forestry related needs.

The villages were located in different agro-ecological zones of Bangladesh. Some topographical features of the selected villages are summarised in the table below.

Table 3.1.1**Important Topographical Features of the Selected Villages.**

Village	Agro-ecological Zone	Key topographical features (category of land as a percentage of total available land)	
Village-1	Low Ganges River Flood Plain	High land	13
		Medium high land	29
		Medium low land	31
		Low land	14
		Very low land	02
		Water	11
Village-2	Middle Meghna River Flood Plain	Medium high land	08
		Medium low land	29
		Low land	25
		Very low land	11
		Water	27
Village-3	Ganges Tidal Flood Plain	High land	02
		Medium high land	13
		Medium low land	41
		Low land	28
		Very low land	11
		Water	04
Village-4	Madhupur Tract	High land	56
		Medium high	18
		Medium low	07
		Water	10

Source: Research planning and Evaluation Training Course, BARC & BARI, cited in Forest Statistics of Bangladesh, 1992.

The selected villages did not have any natural, reserved or coastal forests. They were also free from any government sponsored or non-government community forest plantations, and/or other social forestry schemes. These exclusions were intended to assist in the assessment of the homestead forests independently of other forestry projects. The number of households selected, and some of their characteristics are briefly gone into below.

One hundred and twenty households in all were selected, thirty from each village. Out of these households, 20 belong to what we have called 'rich; 26 'middle' and 74

'poor' households. The distribution of these households is roughly similar from one survey village to another. The criteria used to categorise the households into 'rich', 'middle' and 'poor' are described in this chapter.

It is instructive to start with a brief description of the methods used to collect information from the villages in question. The information was collected mainly through the household survey method. However, a combination of survey and participant observation method was followed whenever it was felt necessary. The study population consisted of the male or female household heads along with other community and household members, in particular the women, because of their involvement in important forestry related activities. The others included forestry related workers such as carpenters, wood traders, fruit traders and bamboo traders. Moreover, village leaders, school teachers, religious leaders, as well as aged and other relevant persons were interviewed to enable the broadest possible coverage in the survey.

The study was conducted in three parts. The first was a one hundred percent census survey of all households in the four villages to gather the basic physical, social, economic, demographic and forestry information. This was primarily needed for the categorization of the village households. The categorization was done according to the Bangladesh Bureau of Statistics' definition of land holding: landless (owning no land at all), small holders (owning up to 1.0 hectares), medium holders (owning 1.0 to 3.0 hectares) and large holders (owning over 3.0 hectares).

After obtaining information through the census survey, the landless and marginal farm categories were grouped together because those owning very small amounts of land were considered to be functionally landless. In the analysis of this survey data, the new category is referred to as 'poor income households'. The other two categories viz medium and large holders are called middle and rich income households respectively. A second survey was conducted following this categorisation of households which was based on the census survey. A proportionate stratified sampling technique was followed.

Due to the limited nature of the representation in our interviews, purposive samples had been drawn for the rich and middle income households where their numbers were found to be small.

Once the sample was selected, a second (pilot) survey was done using several households from the different categories drawn from the four villages. For the pilot survey, a draft survey questionnaire was developed and used. This was followed up with a participant-observation method. On the basis of the pilot survey, some corrections were made in the draft questionnaire. Some additional ideas were also formulated from the findings of the participant-observation method. After careful scrutinization of the findings of all these methods, a better focused set of questions was used to interview the third and final sample households. This too was followed up with participant-observation.

Throughout the study we have used a combination of interviewing and participant-observation for the collection of data. The reason for using these two methods was to balance any deficiency that the method of interviewing alone might suffer from. For example, certain information relating to social, economic and cultural contexts is better obtained by observing the way certain events occur rather than by just asking questions about them. This latter method is referred to as the participant-observation method in which the interviewer observes the way some of the respondent's tasks and and rituals are relevant to the research. Thus, interviewing and observing together provide a better information base for the purposes of the research.

The use of this combination method is found in the literature in many contexts. For example, Jurgen & Harmut (1975) observe that the use of these twin methods is helpful from a basic methodological point of view as well as in terms of broadness of approach within the framework of social inquiry¹.

3.2.1 *The Interviewing Team*

The interviewing team and I visited the selected households several times during the survey period (May to December, 1992) and collected extensive information from both the survey people and other respondents.

In our survey, the investigators were mostly chosen from local villagers who were from the poor and medium income households. There were several advantages in recruiting local investigators. First, they facilitated our entry into the villages as they are known in the locality. Secondly, they had intimate knowledge of the social, economic and political history and background of the villages. It was thus possible to start with an information base which was not otherwise available. Third, being from the same villages, and from the same social and economic background, they had a natural empathy with their friends and neighbours whom we were interviewing. With the exception of some of the richer households, the method helped obtain information on the basis of easy and relaxed relationships with the interviewees. In addition, the local investigators were able to provide detailed information on issues such as arrangements regarding the purchase and sale of lands, and negotiations regarding credit currently under way. This enabled putting questions in a manner that would be less blunt and more delicate. Our experience confirmed that a degree of confidentiality and discretion in conducting the interviews brings out more information than a direct probing method. The contribution of the local investigators helped to fill out the gaps in information that arose out of the need for discretion.

Some valuable information was also collected from official sources such as the *thana* council, the *union* council, the *tohsil* office, the Forest Directorate, the Bangladesh Forest Research Institute, the Bangladesh Agricultural Research Council and the Bangladesh Bureau of Statistics.

3.2.2 *The Questionnaire and the Respondents*

The census questions included some basic information such as the name, sex, age, lineage, occupation, education, marital status, income and expenditure of households, land holding patterns, family type, religion, house structure as well as forestry-related basic information such as how many trees, plants, shrubs and bamboo bush were owned.

The questionnaire of the sample survey was divided into the following sections: the identification of the households with information on basic social, economic and demographic characteristics. These included the number of household members, their ages, sex, marital status, occupations, education and incomes. The nature of the houses they lived in and their boundary patterns were also covered. The household's assets were investigated in detail including their ownership of trees, plants and bamboo bushes. There was some repetition of questions in collecting basic information through census and sample survey questionnaires. This was done deliberately to cross check the information obtained with the help of the different questionnaires.

Planting, management and uses of homestead forests were important topics covered in the sample survey. Detailed questions such as the tree types, the products used and commercially exchanged, the role of women in forestry related activities, the role of forests in contingency and emergency situations and the various uses of the forests were all included in the survey. In addition, some un-structured questions arising from some of the responses also came into the survey at the time of the interview.

As most of the male respondents were usually busy with their daily activities we did not disturb them at these times. The interview took place during their lunch break or at the end of their working day. The female members were approached and talked to in the absence of their male household heads. As my female investigators were local residents, they were able to build a good rapport with the female household members by using intimate terms such as *apa* (sister), *chachi* (aunty), *bhabee* (sister-

in-law) or *dadi* (grand mother), as appropriate. The questions were put to the respondents in the course of normal conversations conducted in the local dialects. At the beginning, we faced difficulties in explaining the purpose of our visit. It was not easy to convince them by saying, "I have been doing research on homestead forests and the economic and social conditions of the rural people and the information to be collected would help me in my research". Such an approach would have been rather intimidatory and using it would have made a relationship of mutual trust difficult to establish. Any statement about my connections with a 'foreign country' would elicit responses like 'You are benefiting by using poor people like us but there is nothing in it which would benefit us'. So, we approached our talk in an informal way by striking a normal conversation with the respondents. In the course of these conversations the survey questions were put to them and their answers noted down.

We found that the reasons for their mistrust of researchers like us was related to their past experience with similar people who might have told them that the research findings would help the government or some other authority in setting up development projects in their localities. As nothing occurred subsequently, they had become cynical about such research.

Once we were accepted by the villagers, we started observing what was happening in the villages from the morning to the end of the day. Not wishing to interrupt the respondents' everyday lives, we talked with them whenever they were free in order to explain the reasons for our study in a very simple way. My female investigators were able to talk with the female members whenever they were at work. The investigators had easy access to the kitchens and work places when the female respondents were cooking, feeding their infants, collecting fuel, making mats or generally engaged in daily activities. Sometimes it was difficult to continue the conversation when they were expecting their husbands back home from work, because most of the women were afraid of their husband's reaction. They thought that they should not provide strangers like us with any information without the husband's knowledge and permission. Also, they became busier, taking care of their husbands, serving them meals and generally looking after their comfort. However,

my investigators were sympathetic to these needs, and never interrupted these activities. They would move on and talk to others who had time and were able to talk. However, the situation varied from household to household. In the rich and the middle farm households, the female members were more reluctant to provide information, and they tried to maintain a distance. This reluctance on the part of the rich and middle farm female would have affected the quality of information given by them. However, some cross checking of the information was possible through questions on a given theme in different parts of the questionnaire. Wherever the answer varied significantly, the information was either discarded as unreliable or used more selectively. On the other hand, most women of the poor farm households were much more cooperative.

Many of the members of poor households would start talking to my investigators and with me without hesitation and would even offer lunch and or dinner despite their own lack of food. We can remember one of the poor households in village four who not only offered lunch but actually served us food. We had to share the lunch with the family, but were informed by a close neighbour later on that the family had no food for dinner that evening. Even this had not kept them away from hospitality.

Thus, the overall level of cooperation from the respondents was very satisfactory. However, despite their wonderful cooperation, we sometimes faced some practical difficulties. For example, when we asked the respondents about their ownership of trees, plants, bamboo bushes and other kinds of assets they suspected us of being government agents and refrained from providing accurate statistics. For the rich and the middle farm households there was a fear that they would become liable for more taxes as a result of the information they gave us. The poor, on the other hand, feared that they would lose any assistance or relief which they were receiving as a result of divulging the information to us. Our assurance that we had nothing to do with any agencies of the government did not always stop them from giving the wrong information. To overcome this situation, we developed a strategy of our own. In some cases, it was possible for us to do random counting of trees, plants and bamboo bushes in and around the homesteads. Taken with the interview responses this

information gave us a fuller picture of the numbers involved. We also experienced problems when we asked about income and employment sources of the households. We sought to overcome this by asking questions about their expenditure so that a cross-check about income was possible.

In spite of these limitations, most households accepted us and, in turn, we observed and respected certain rituals, customs, beliefs and norms which the households held regarding their homestead and the trees and plants in them. Some villages including the religious leaders, both Hindu and Muslim, allowed us to observe and participate in some of these rituals and customs. They would explain to us the importance of these traditions in their own socio-cultural and religious beliefs. Some of these experiences enriched me in terms of my cultural identity as a Bengali. I found this particularly satisfying at a personal level which was a bonus that my professional requirements as a social researcher did not include.

As mentioned earlier, we worked from dawn to dusk in the survey villages, sometimes staying on until late at night to interview some villagers who worked away from the villages. We also made a point of talking to the village leaders, school teachers, old people and other groups who were available and willing to talk on matters of interest to us. We also took the opportunity to talk to many villages at informal gatherings such as in the play ground, mosque or temple compounds, post offices, tea stalls, shops and so on. Where villagers gathered in more formal situations such as a traditional village court for a group conference to sort out disputes, we would often go to watch and talk to some people about various aspects of village life including trees, plants and homestead forests. This way we were able to obtain information from a variety of sources, not all of which were our respondents in the technical sense. This wider involvement gave us better insights into the social, cultural and religious aspects of forest and forest products in the villages. In interpreting the survey results we have made use of all this information and not just the responses to our questions.

3.3 Categorization of Survey Findings

3.3.1 *Categorization of Respondents: The Contribution of Related Research*

The survey uses the labels 'poor', 'middle income' and 'rich' to categorize the residents of the survey villages. The justification for this categorization is discussed briefly below.

The principal criterion for categorizing the village people is the control over productive resources by particular households. Despite the highly unequal distribution of agricultural land, land continues to be the main source of livelihood for most households. Therefore, the socio-economic differences between households are measured mainly on the basis of their control over land holdings.

The relationship between land, households and the methods of classifying them have been studied by a number of researchers (Yang, 1945; Srinivas, 1952; Misra, 1964; Smelser & Lipset, 1966; Chayanov, 1966; Mukherjee, 1971; Shanin, 1972; Bertocci, 1970; 1974; Wood, 1976; Ray & Ray, 1973; Adnan & Rahman, 1978; Cain, 1978, Jahangir, 1979 and Jansen, 1987).

Discussions on land and classifying households on the basis of land ownership and use have tended to follow the Marxian approach until recently. The Marxian approach consists of explaining social relationships in terms of the class structure which in turn is determined by ownership of the *means of production*. The control over the means of production and how the output is divided are inextricably linked. The Marxian term which describes this link and places it in a social context is called the *social relations of production*. The social relations of production therefore refer to the access of different groups of people to productive resources, and hence to control over what they produce, in *society at large*, not in the individual production units. The concept thus embodies the idea that in different societies and in different historical eras, there are different ways in which dominant and subordinate groups within society relate to each other for the purposes of production. For example,

under feudal social relations of production, land as the productive resource was owned or controlled by one social class, the feudal lords, and its access by another social class, the serfs. This was contingent on the control exercise by the feudal lords over the labour of the serfs, and over a share of the output produced by the serfs. This example describes the *class* society, where the dominant relations of production are such as to create a distinction between those who apply their labour to production and those who own the means of production (Ellis, 1988).

The South Asian practices pose problems that are not adequately dealt with by Marxian explanations. Having experienced a very different historical development - with colonial subjugation, struggles for national independence, periodic internal warfares and the absence of a social revolution, as experienced in Russia, - the agricultural economy of Bangladesh differs radically from that in Russia, for example. In short, contemporary South Asian peasants live in a world in many ways very different from that of the Russian peasants at the turn of the century. These differences may be the reason why the position of peasants in South Asia has received a lot of attention in the studies of some scholars. Studies related to South Asian peasantry may therefore provide some insights into the extent to which local situations influence peasant classifications and shed some light on the concept of the mobility of the peasantry itself (Schendel, 1981).

However, the lack of reliable data and meaningful research in Bangladesh and other South Asian countries makes a detailed diachronic study of peasant life difficult. Mukherjee (1971) is perhaps the pioneer researcher on Bangladesh peasantry offering a long term view of social differentiation patterns. However, he did not paint a clear picture of peasant differentiation, rather he classified rural populations into 'poor peasants' and wealthy 'rich peasants'. Interestingly, Bertocci (1974), in his study gives a different picture of peasant stratification and mobility. He found a high degree of mobility of individual families among peasants, and called them economic classes and status groups, and treated these as the major feature of social stratification in rural Bangladesh. He also found a significant mobility of resources among the different classes of farmers such as the rich, the middle and the small farmers. This

process has been called cyclical *kulakism* (cyclical mobility). Wood, (1976) however, rejects this theory, arguing that rural people are more likely to change their economic and social position with increasing productivity from both agricultural and non-agricultural activities.

These three studies may serve as an indication that the issues in the debate over the position of peasants are clearly present in Bangladesh, and that the present study can benefit from these approaches.

3.3.2 *The Household as a Unit of Reference*

Both Mukherjee's and Bertocci's conceptualizations, however, rest on very narrow empirical foundations, and it may be argued that their generalizations are mainly intuitive. Wood (1976) classifies rural people into 'rich', 'middle' and 'poor' farmers, and argues that the rich farmers can accumulate their wealth at the expense of the poor by using land as a productive resource. Furthermore, he argues that the rich, marginal and landless farmers can all benefit from off farm activities in addition to those connected with land resources. Wood's theory is partially applicable in the present study. Although in this study we have categorised the village people as rich, middle and poor households, we have used neither the Marxian term 'class'² nor the other, generally used, term 'peasant'³. The Weberian idea of class which emphasises 'the condition of the commodity or the labour market' is another scheme which does not seem applicable.

Although a large number of people in the survey villages were poor and many of them were dependent on wage labour, the buying and selling of labour as a commodity is not universal. As Rosario (1992) argues, in relation to rural economies of poor countries, 'economic relations have not yet been institutionalised separately from other areas of life (kinship, religion) as in the case of market economies'. We have treated the households rather as an unit of production, which very often have more than one source of income, deriving from the land resources and from off farm economic activities. A household may therefore belong to more than one class due

to the diversity of occupations. We therefore treated the household as the most useful unit for the classification of village people. This is because, in general, the households constitute the basic unit of the rural economy and 'it is a fundamental social unit, a primary arena for the expression of age and gender roles, kinship, socialization and economic cooperation where the stuff of culture is mediated and transformed into action' (Netting *et al.*, 1984).

It is common knowledge that an individual household always comprises various members who constitute an economic, social and cultural unit. Every household therefore has a plurality of activities and resources. For example, households perform agricultural as well as non-agricultural activities. Some members of the households might be engaged in trades or crafts of certain sorts; some may be engaged full-time, others part-time; some might work regular hours and all seasons, others may be seasonal workers or working outside normal hours and so on. Using households as a unit therefore helps to capture all of these aspects in the context of a family based economic, social and cultural entity on which the study wishes to focus.

While some other studies (mentioned earlier) categorised households or families on the basis of landholding or income, this study considers the household as an economic, social and cultural unit as well as one that holds lands or pools the income of its members. This widening of the coverage has proved useful in terms of studying the relationship between the ownership and use of homestead forests in social and cultural contexts.

In survey villages, the household was therefore the basic unit of production, and a household had more than one source of income. This is why it was difficult to classify people into separate categories on the basis of pure land holding only. As we had to follow a particular order, we categorised the survey people following the land holding criterion. It does not mean however that we have not considered other resources, such as cattle, trees, implements, utensils and other items, which can generate incomes in measuring the overall socio-economic condition of individual households. In considering the households as an economic unit we took account of

all the resources that were available within the household entity. A household is defined in the usual way as 'a residential unit composed of one or more individuals living together and eating food from the same kitchen on a daily basis'.

This approach has also been successfully used by a few other researchers such as Chayanov (1966); Evenson (1981); Van Schendal (1981); Ashraf *et al.*, (1982); Streefland *et al.*, (1986) and Low (1986) in their studies. The approach is called the 'new home economics' as it treats the household as a *production unit*, which puts home-produced goods and services as well as domestic resources into a set of final use values yielding utility in consumption. In the present study, the household is therefore considered to be the most meaningful unit for analysing the socio-economic attributes of the rural people.

3.4 Propositions and Hypotheses

3.4.1 *The Purposes*

The broad proposition of this study involves an assessment of the importance of homestead forests in rural Bangladesh. Such an assessment is useful only if it is an all-embracing one. We examined the social, cultural, economic and religious aspects of trees and forests in rural households in Bangladesh. To put our own findings and analysis into perspective, we have brought together the findings of similar studies in the subcontinent of India and elsewhere. Such a comparative perspective is more valuable than a study of a particular area or of a particular researcher in isolation. We observed many similarities between our findings and those of others. There are significant differences too. Our study thus draws on existing knowledge on the subject matter of this study and extends it with new findings.

3.4.2 *The Specific Propositions and Related Hypotheses*

PROPOSITION ONE

Homestead forests provide a range of consumable products for the consumption of the householders by supplying them with fuel, food, fodder, as well as other useful materials which help support their livelihoods.

This proposition is tested with the help of hypotheses 1.1 to 1.6 below. The hypotheses are further discussed in the chapter four where the findings of the test are reported.

The role of the homestead forests as a source of fuel, food, fodder and building material is valuable to the rural people of Bangladesh, and that this role has increased since independence (1971).

Looking at the role of homestead forests in each of their specific uses, the following hypotheses states in brief, the contents of the findings in regard to each use.

Hypothesis 1.1: Fuel

The homestead forests are the single most important source of fuel for rural households in Bangladesh.

Hypothesis 1.2: Fruit and Other Edibles

Rural households consume a larger share of the fruit and other items of consumption harvested from homestead forests.

Hypothesis 1.3: Fodder

Homestead forests act as an important source of fodder for rural households.

Hypothesis 1.4: Construction Material

Rural households rely in a significant manner on homestead forest resources for house construction and for boundary materials.

Hypothesis 1.5: Forest and Forest Products as a Whole

It is not only the relative abundance of forest and forest products but also their scarcity in relation to the needs of rural people that is, paradoxically, a major influence on the lives and livelihoods of householders.

Hypothesis 1.6: Economic Status of Villages and the Use of Forest Products

The poor households rely much more on homestead forests for all the uses detailed above than do the other (not-so-poor) households.

PROPOSITION TWO

Homestead forests provide an especially important source of economic activity for rural households because forestry generates income and employment opportunities for them.

This proposition is tested using hypotheses 2.1 to 2.3 below, and a discussion of them is presented in chapter five.

Hypothesis 2.1: Fruit, Timber and Bamboo

Homestead forest fruit is one of the most important sources of income and employment for the rural households as are timber and bamboo from the homestead forests.

Hypothesis 2.2: Economic Status of Rural Households

The homestead forests are the most important source of employment and income for the poorer households.

Hypothesis 2.3: Processing Activities

Many small scale, forest based processing activities are dependent on homestead forests for raw material. This is an important contribution of homestead forests to the income and employment of the rural poor.

PROPOSITION THREE

Homestead forest resources play an important, often critical, role in situations of emergency and contingency.

Historically, the role of homestead forests has always been important to the rural people of Bangladesh in times of crises. This role however has become even more critical since independence (1971) as the pressure of population has grown and forests have dwindled. This issue has been discussed with reference not just to the forestry sector of Bangladesh, but in an even wider context using the research findings on other countries by researchers from different disciplines. Such a survey of the relevant literature highlights the role of the Bangladesh forestry in a more meaningful way.

Proposition three is tested with the help of hypotheses 3.1 to 3.2 below, and a discussion of them is presented in chapter six.

Hypothesis 3.1: Family Contingency and Emergency

Homestead forest products provide very useful support to rural households in contingencies and in situations of emergency.

Hypothesis 3.2: Economic Status of Households

Poor and middle income households depend in a much greater way on homestead forests in times of contingency and emergency than do the richer households.

PROPOSITION FOUR

Rural women and children play a very important role in the household economy by participating in the various homestead forestry activities.

This proposition is tested with the help of the hypotheses 4.1 to 4.3 below, and a more detailed discussion of the findings are presented in chapter seven.

To put the findings in perspective, a historical survey covering the role of women in forestry related activities has been conducted. All the evidence suggests that this role has always been a very important one, particularly for the very poor in rural societies.

Hypothesis 4.1: Tree Planting

Women spend nearly as much time as men in planting and maintaining trees on homestead plots.

Hypothesis 4.2: Gathering Activities

The role of women (and children) is often greater, both in terms of the time spent and the volume gathered, than that of men in comparable activities.

Hypothesis 4.3(A): Economic Status of Households

Women and children from poor households spend much more time in the collection of fuel, fodder and forest food than do women and children from richer households.

Hypothesis 4.3(B)

Akin to the above, women and children from poor households engage more in income generating and processing activities involving homestead forests than do the richer women and children.

PROPOSITION FIVE

Homestead forests are an important source of herbal medicine for primary health care in rural Bangladesh.

This particular use of forest products has been widespread in human history. Most cultures have learned to use plants and products derived from them as medicines or health products. A historical review of this role of forestry has therefore been attempted in this study in the context of its relevance to the specific Bangladeshi situation.

Proposition five is tested with the help of hypotheses 5.1 to 5.3 below. The details of the findings on these hypotheses are reported in chapter eight.

Hypothesis 5.1: Plant Medicine In Primary Health Care

The use of plant medicines is extensive in primary health care in rural Bangladesh.

Hypothesis 5.2: The Rich and the Poor Users

The poor households are much more dependent on plants as a source of medicine and income than are rich and middle income households.

Hypothesis 5.3: Knowledge and Uses of Plant Medicine

The greater the familiarity with plant based medicine, the greater the use made of them.

PROPOSITION SIX

Homestead forests play an important role in the social, cultural and religious lives of the rural people.

In many cultures, trees, plants and forests have a symbolic, often sacred, significance. This is a subject which has interested sociologists, anthropologists and others. A

survey of the literature dealing with this aspect of the forests highlights the wider context into which the attitudes of the rural Bangladeshis fit.

Proposition six is tested with the help of hypothesis 6.1 below and discussions of them are reported in the first part of chapter nine.

Hypothesis 6.1: The Social and Cultural Roles

Homestead forests perform certain symbolic roles and their products form an important part of the myths, rituals, customs and traditions of the rural folk of Bangladesh including the social and cultural activities in the Bengali calendar.

PROPOSITION SEVEN

Homestead forests play an important role in the preservation and improvement of physical and residential environments of rural Bangladesh.

The relationship between the forest environment and human society has been examined with the help of evidence from the village surveys. The environmental aspect has a physical and residential side to it. Both of these have been examined.

This aspect of the role of the forests has come to be recognised in many societies and cultures. An attempt has been made to provide a survey of the literature to put the Bangladeshi situation in context.

Proposition seven is tested using hypothesis 7.1 and 7.2 below and a discussion of the findings is reported in the second part of chapter nine.

Hypothesis 7.1: Environment

The protection and enhancement of the physical and residential environment depends significantly on homestead forests.

Hypothesis 7.2: Sustainable Forestry and Forestry Conservation

Homestead forestry is the most sustainable form of resource management, and conserves forest resources better than any alternative forestry systems.

The purpose of these hypotheses is to establish, with the help of the findings of the village surveys, the propositions as stated in the hypotheses. The method of establishing these hypotheses is not, however, statistical. Rather, it is qualitative and analytical. The reason for not resorting to a statistical method of testing of hypotheses is that the number of observations from the survey findings is very limited. This would not have made for reliable statistical testing. On the other hand, the observations are relevant enough to enable an analytical treatment to be made. A logical, though discursive, method of presentation is, it is claimed, a useful methodology in the present context.

3.5 The Geo-political, Economic and Social Conditions of Bangladesh

Before going on to a discussion of the survey villages, some general information on Bangladesh as a whole is first presented.

3.5.1 The Geo-Political Location and Area

Bangladesh is situated in the north-eastern part of South Asia. It lies between 20.34' and 26.36' north latitude and 88.41' and 92.41' east longitude. The great Himalayan mountain range stands as the northern ramparts, while the southern frontier is guarded by the Bay of Bengal. On the west lie the expansive Gangetic plains of India and on the eastern frontier lies the state of Meghalaya of India and Myanmar (Burma). The total area of Bangladesh is 148,393 square kilometres or 57,295 square miles (Government of Bangladesh, 1992).

3.5.2 *The Climate and Seasons*

The climate is sub-tropical with temperatures ranging from a daytime low of 18 degrees celsius in the cold season to a maximum of 40 degrees celsius in the summer. Annual rainfall ranges from 160 cm to 200 cm in the West, 200 cm to 400 cm in the South-East and 250 cm to 400 cm in the North-East during the monsoon. The country has mainly four seasons; winter (December-February), summer (March-May), monsoon (June-September) and autumn (October-November) (Bangladesh Parjaton Corporation, 1992).

3.5.3 *A Brief History*

Bangladesh is a country of extremes - extremes of turmoil, peace, prosperity and destitution. It has thrived under the glow of cultural splendour and suffered from the ravages of war and natural disasters throughout its history. The earliest mention of what is now Bangladesh is found in the Hindu epic Mahabharata (circa ninth century B.C.). Evidence suggests that there was a strong Mongoloid presence before the fifth century B.C. Soon after, the Aryans came from Central Asia and the Dravidians from Western India to settle in the geographic area of Bengal. Then came the Guptas, Palas and Senas, who were Buddhists and Hindus (Bangladesh Parjaton Corporation, 1992). During the thirteenth century A.D., the Buddhist and the Hindu rulers were replaced by the Muslim invaders and they ruled the region until the eighteenth century.

From the fifteenth century, the Europeans such as the Portuguese, the Dutch, the French, and the British traders exerted an economic influence over the region. British political rule began in 1757 when the last Muslim ruler of Bengal was defeated by them at the battle of Palassey. In 1947, British India was partitioned into the independent states of India and Pakistan. The present day Bangladesh became, in 1947, the Eastern wing of the then Pakistan, known as East Pakistan. The movement for autonomy for East Pakistan started within a couple of years of 1947 because of linguistic and cultural differences between the two wings of Pakistan, and the

economic disparity between them. After a 'language movement' in 1952, a mass political upsurge in 1969 and the nine-month long War of Liberation which started on 26 March, 1971, the then East Pakistan emerged as the sovereign and independent state of Bangladesh in December 16, 1971 (Ministry of Information, 1992 & Bangladesh Parjaton Corporation, 1992).

3.5.4 *The River Systems*

Some of the biggest rivers in the world flow through the country and form the largest delta in the world. Therefore, Bangladesh is a deltic region. Much of the country's land area has been built up from alluvial deposits brought down by its major, mighty rivers: the Padma (the Ganges), the Brahmaputra, the Jamuna, the Meghna and the Karnafuli. It is therefore quite natural that the monsoon rains, the rise and fall of the river levels, the floods, alluvian and diluvian, and the changes to rivers' courses form the substance of both the cultural and physical geography of Bangladesh (Harun, 1977).

3.5.5 *The Economy*

Bangladesh is an agricultural country. Almost two-thirds of the country is cultivable land, mostly very fertile, and the climate permits up to three crops annually. Therefore, agriculture is a field in which the possibility of far higher yields than at present is large. Yet, the extensive fragmentation of land which has arisen from the contribution of colonial and traditional land holding system means that most holdings have been reduced to very small pieces.

The major agricultural products produced for export and domestic markets include rice, jute (the golden fibre), wheat, potato, pulses, sugar cane, tea, tobacco, fruit, and vegetables. The economy of Bangladesh has not grown rapidly, however, since the country's independence in 1971. GDP rose by about 4.5 percent per year between 1972-73 and 1984-85. The annual growth rate in agriculture is about four percent; while the performance of manufacturing has been better, with a growth rate of six

percent annually on average. The latest data shows that the GDP growth improved from 4.3 percent in 1992-93 to about five percent in 1993-94 (Australian Financial Review, 1995).

Although the GDP growth rate has been relatively slow compared to other developing economies in Asia, the growth rate of population has been quite rapid at about two percent between 1985 to 1991 (Bangladesh Bureau of Statistics BBS, 1993) which has kept the living standards of the majority of the people at low levels too. In addition to this, there is the problem of landlessness for many rural people who are therefore unable to derive an income from this most obvious of rural resources - agricultural land.

Other relevant basic information about Bangladesh is presented in the Appendix 3.

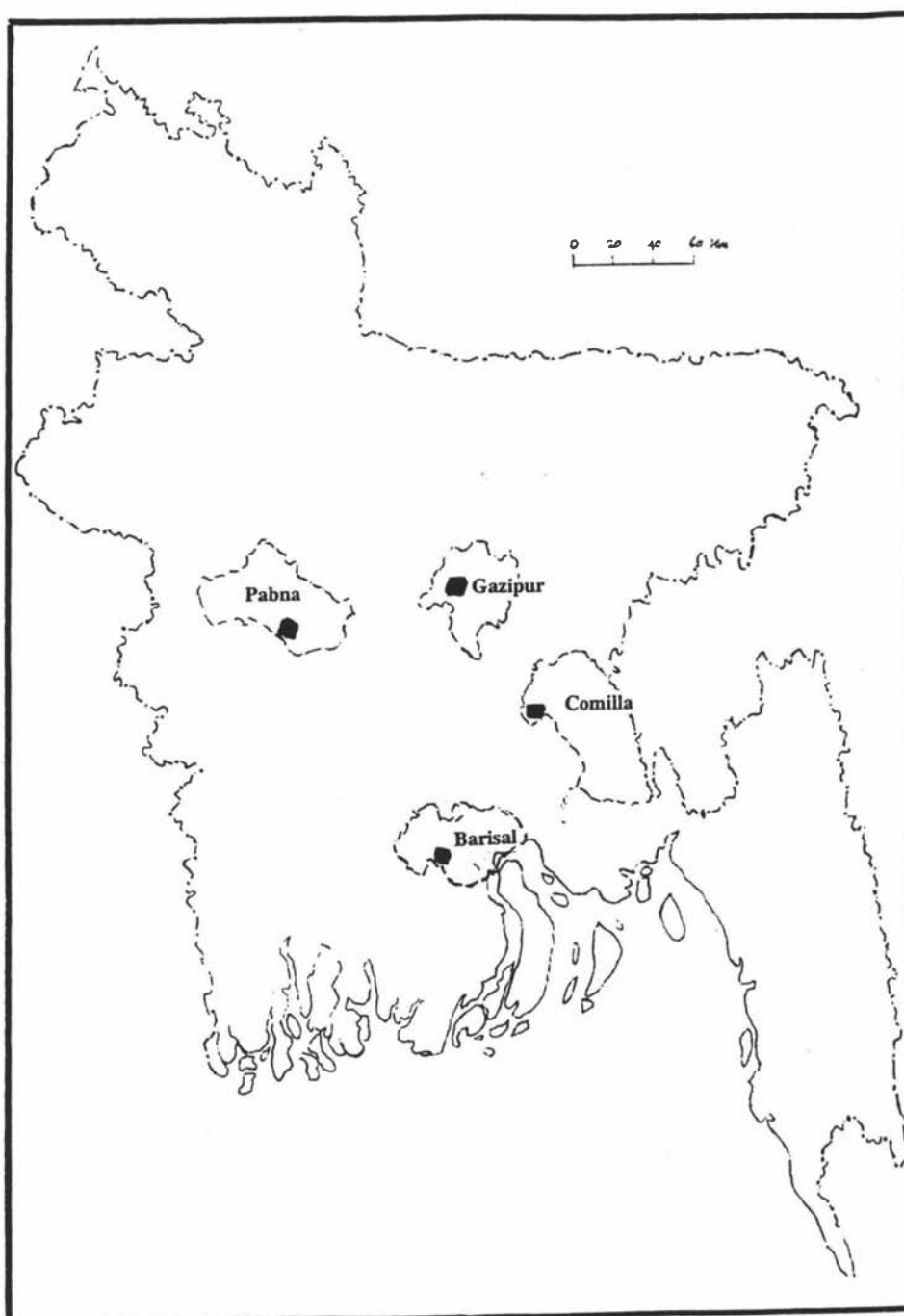
Turning from the brief country profile presented above, we now proceed to focus on our survey villages, and present some useful information collected through census and sample surveys. We provide this information village by village.

The four survey villages which were selected for the study were situated in the northern, eastern, southern and central parts of Bangladesh.

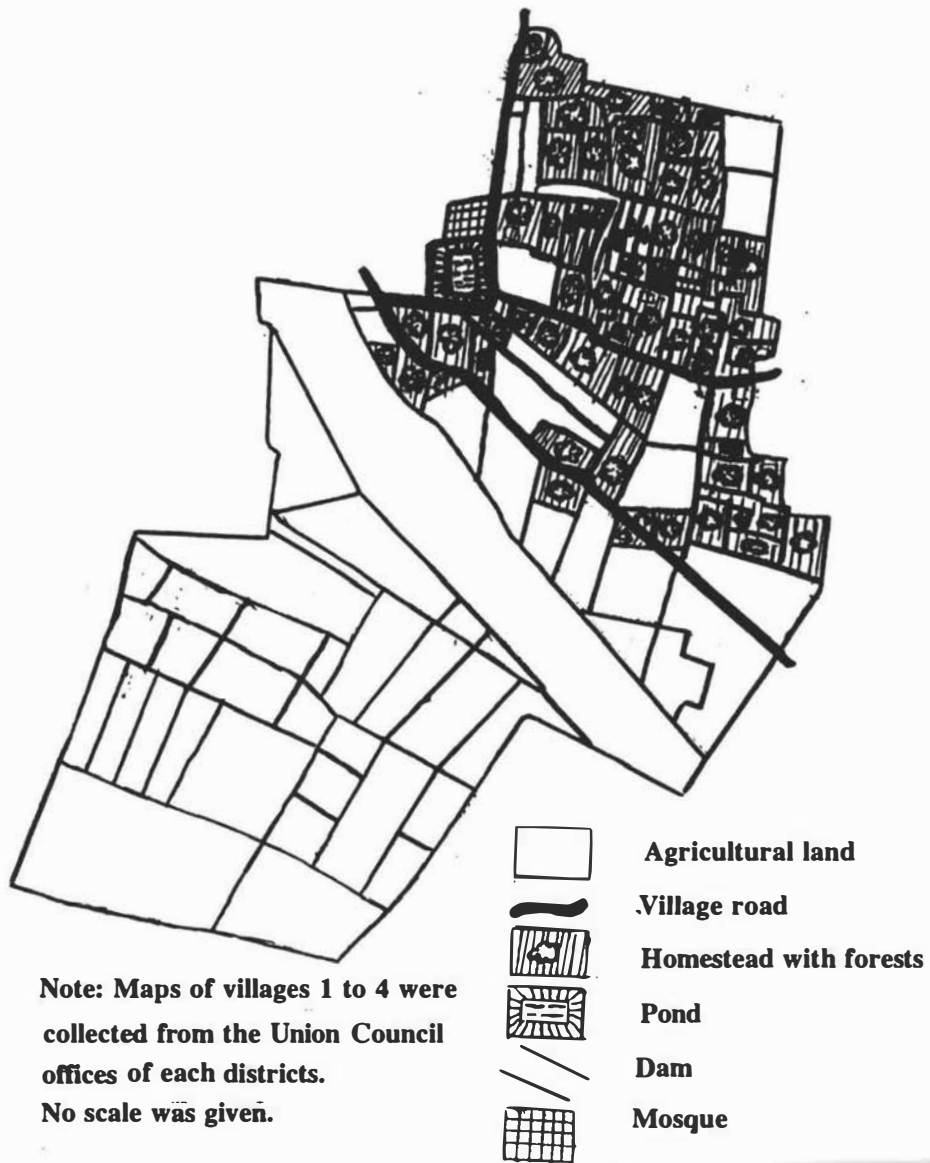
3.6 The Socio-Economic Profiles of Survey Villages

The selected villages are identified in this study by their assigned numbers - 1, 2, 3 and 4. For purposes of research, such anonymity is usually the accepted practice. However, for ready identification, village names are of course useful. We choose however to use only the assigned village numbers in our discussions and not the names of the villages, or some arbitrary pseudo names. This, we believe, will protect the confidentiality of the respondents and their personal circumstances. Only the information they provided has been used in this study to substantiate (or otherwise) the stated hypotheses.

Map 1 The Locations of Study Villages in Bangladesh



Map 2: village 1



3.6.1 Village 1

Village 1 is situated in the northern region of Bangladesh, in the *sadar thana* of Pabna District. The district of Pabna occupies the south-eastern corner of the Rajshahi Division. It is bounded in the north by the district of Bogra, while it is separated from the districts of Faridpur and Kushtia by the river Padma in the south. The river Jamuna runs along its eastern border separating it from the districts of Jamalpur, Tangail and Manikganj, and on the west it has a common boundary with the district of Rajshahi.

Geologically, Pabna is a wide alluvial plain presenting a low and flat topography. The district is divided into four major physical units; namely the Ganges plain, the Karatoya flood plain, the Jamuna flood plain and the Barind tract. Village-1 is situated in the Ganges flood plain.

The majority of the people of Village 1 live in scattered or nucleated houses. The houses of the poor villagers consist of one or two small, usually ill ventilated rooms with an open kitchen space on one side of the courtyard. Rich villagers maintain separate kitchens and outer houses for entertaining their guests.

Most of the houses are usually surrounded by bamboo clumps, acacia, coconut, date palm, mango and jack fruit trees. The houses are made out of local materials. The walls are made with bamboo, wood, coconut leaves, jute sticks, banana leaves, and manufactured building materials such as, corrugated iron sheets and bricks. The main structures of the houses are constructed from bamboo and wood, and the roofs are normally thatched with coconut leaves and/or hay. Only the rich and middle farm households have corrugated sheets or concrete as roofs and walls. However, six houses in this village are made of bricks. These belong to both the rich and the poor. Two poor households who owned brick houses got them from Hindu families who had abandoned them as they migrated to India soon after the partition of 1947.

The furnishings of the poor people are simple, and consist usually of bamboo *mancha* (platforms on stilts), mats (made from date palm leaves), a few boxes, cooking utensils, earthen and bamboo pots and bamboo baskets. A few poor people have tables, chairs and *almirah*. The middle and rich farm households have bed-steads, tables, chairs, *almiras* and *alnas*. They also have better quality baskets, pots, utensils and other household items.

According to our field census of 1992, the total population of the village was 793. About 90 percent of this population were Muslim and the rest were Hindu. The average family size for the rich was 8.8, followed by 7.1 for the middle, and 6.6 for the poor. The sample population was 230, out of which 121 were male and 109 were female. Therefore, the male-female ratio was 53:47. Sixty three percent of the sample households had nuclear families, followed by 30 percent joint and seven percent extended families.

Forty seven percent of the household heads had agriculture as their primary occupation, followed by 26 percent who were in petty business⁴, 16 percent in miscellaneous occupations⁵ and 10 percent service holders.

However, the data varied when the sample households were categorised. It was found that 83 percent of the rich had agriculture as the primary occupation, followed by 50 percent of the middle income households and 29 percent of the poor. Another 40 percent of the respondents of the middle farm households had petty business as their primary occupation followed by 37 percent of the poor and 17 percent of the rich. The remaining 34 percent of the poor and 10 percent of the middle households had occupations like carpentry, fishing and so on.

It was found that 66 percent of the respondents in the rich households had business as their secondary occupation. 42 percent of the poor households had petty business as their secondary occupation and 30 percent of the middle income households had agriculture as their secondary occupation. Around 15 percent of the poor households were agricultural labourers.

Taking the sample population as a whole, it was reported that about 53 percent of the respondents of the sample household had no formal education. About 47 percent were educated and the range of education varied from primary to higher secondary levels.

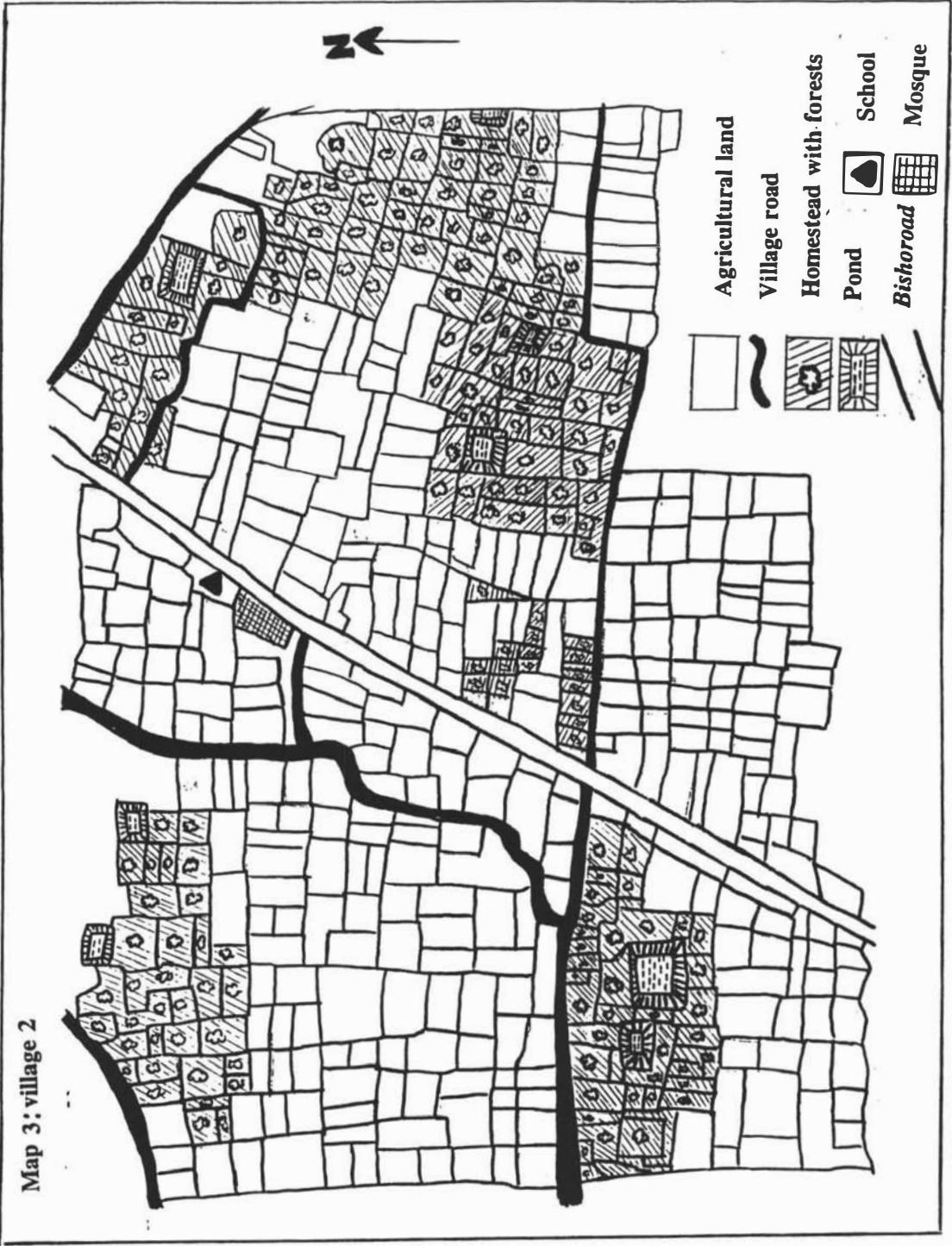
However, there were variations for educational attainments among farm households. It was found that about 75 percent of the rich had formal education, followed by 69 percent of the middle, and 50 percent of the poor households.

The rich households owned, on average, 0.9 hectares of homestead land, followed by 0.4 hectares by the middle, and 0.2 hectares by the poor.

The average cultivable land owned by the rich households was 4.2 hectares followed by 0.8 hectares in the case of the middle, and 0.2 hectares for the poor households. However, there were variations among the poor. It was found that about 50 percent of the poor households had no cultivable land, and about 40 percent had less than 0.1 hectares of homestead land. Only eight percent of the poor households had been cultivating rented land, while 15 percent had rented out their own land.

Some 65 percent of the poor households had no livestock (cows, oxen or buffalos as draught animals and/or milking animals), while the rest of the households owned, on average, two livestock heads. 40 percent of the rich and middle households had an average of eight and four head of livestock respectively.

Map 3: village 2



3.6.2 Village 2

Village 2 is situated in the near-east region of Bangladesh, the Daudkandi *thana* of Comilla District. The district is bounded on the north-west by the districts of Narshindi and Kishoreganj, on the north-east by Habiganj, and on the south by Noakhali.

Geologically, Comilla is a low lying plain, so low in parts that the water lies all the year round in great marshes, while most of the district is inundated during the rains to a depth of a metre or more, and sometimes even to 3-4 metres of water over lands which become dry during winter (November and December).

The district is divided into four major physical units. These are; Meghna-Gumti and its off-shoots, the hill streams and their off-shoots, the down streams and their off-shoots and the off-shoots of the rivers in the south. Village 2 is situated along the off-shoot of the Meghna-Gumti streams.

According to our household survey of 1992, the total census population of Village 2 was 690. Among the population about 80 percent were Muslim and the rest were Hindu. However, there were at least 12 destitute families in the village and their population was about 50 who had been excluded from the census because they owned neither homestead nor any other type of land. There were at least 10 families who rented houses from absentee landlords. We also excluded these households from our survey.

The sample population of the village was 194 out of which 108 were male and 86 were female. Therefore, the male-female ratio was 56:44. About 80 percent of the sample households were Muslim and the rest were Hindu.

It was reported that 40 percent of the households had nuclear families, another 40 percent had joint families, with 20 percent having extended families. The average

family size was 6.4, but with inter-family variations; for the rich it was eight, for the middle it was nine and for the poor it was 5.2.

The occupational status was varied among the rich, middle and the poor alike. It was reported that 50 percent of the respondents in the rich households had private business (stock, transport and construction) as their primary occupation, and the other 50 percent were service holders. However, as they owned significant amounts of agricultural land, their secondary source of income was agriculture, and agriculture was therefore treated as their secondary occupation. Among the middle farm households, 50 percent were service holders, followed by 33 percent with business, and 17 percent with agriculture as their primary occupations. It was reported that 35 percent of the respondents in the poor households had petty business (tailoring, wood trading, grocery and processing enterprises) as their primary occupation, followed by 20 percent in service, 15 percent in agriculture, ten percent agriculture labour, ten percent industrial labour and the remaining ten percent as domestic servants. About 65 percent respondents of the poor households had a secondary occupation, and 30 percent of them were agricultural wage labourers, followed by another 30 percent who were industrial labourers and only five percent were share-croppers.

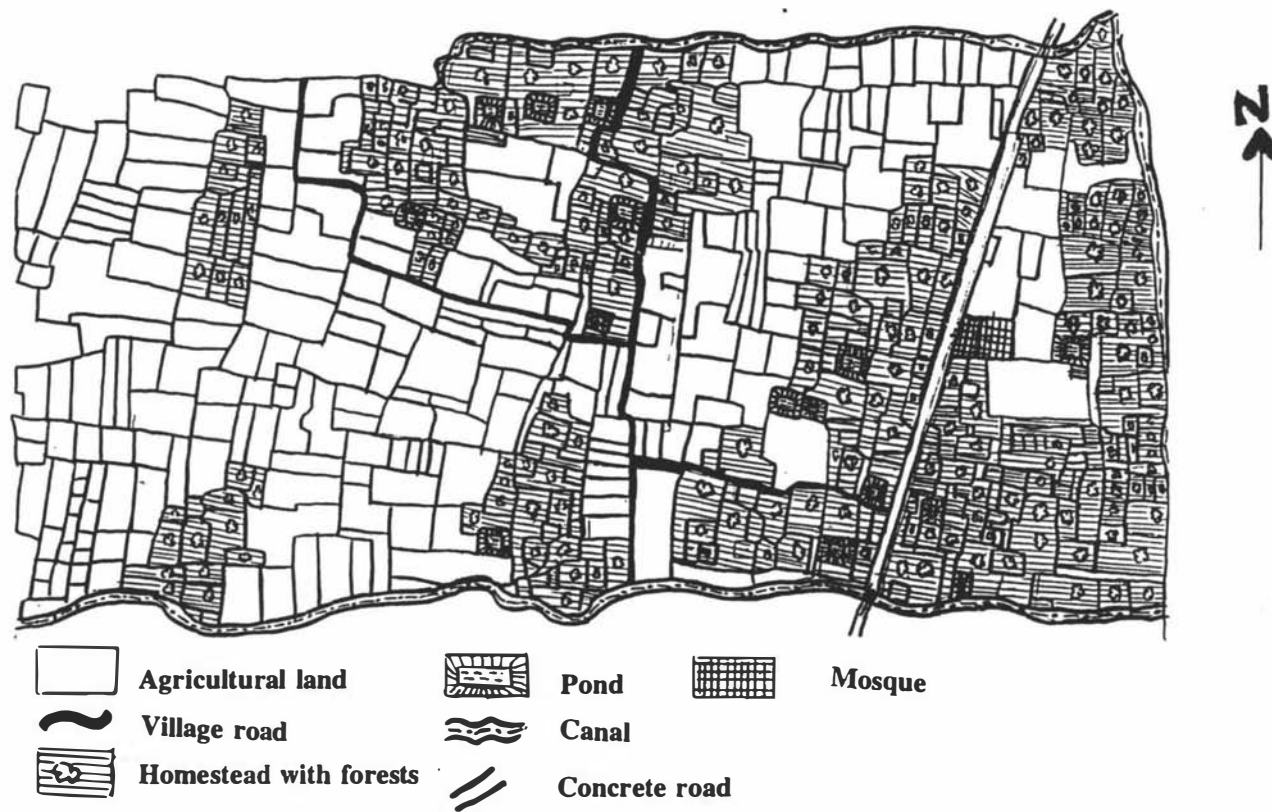
It was reported that about 56 percent of the respondents had formal education while the rest (44 percent) were illiterate. However, this too varied amongst the different income groups for example. It was reported that 75 percent of the respondents of the rich households had formal education up to the secondary level (to age 14-15 approximately). About 82 percent of the respondents of the middle farm households had some formal education which ranged from primary to the tertiary levels. However, about 55 percent of the respondents of poor households had no formal education; the remaining 45 percent were literate, their educational range varying between primary and secondary levels.

Big variations in landholding were observed among different farm households. The average landholding in homesteads of the rich, the middle and the poor were 1.0 hectares, 0.2 hectares and 0.1 hectares respectively. On the other hand, the average

of agricultural land held by the rich, the middle and the poor were 4.2 hectares, 1.5 hectares and 0.1 hectares respectively. However, there were sharp variations within the poor households. It was reported that 70 percent of the poor households had no agricultural land whereas the remaining 30 percent had on average, 0.3 hectares of land. Some 75 percent of the rich households had rented out their agricultural lands under share-cropping arrangements. On the other hand, 65 percent of the middle farm households leased out their cultivable land and another 17 percent of them rented out their land.

It was reported that only 25 percent of the rich households owned livestock and goats, the average number of head being five and six respectively. None of the middle farm households owned cattle, however, 50 percent of them owned approximately two goats. Only 20 percent of the poor households owned, typically, two heads of livestock.

Map 4: village 3



3.6.3 Village 3

Village 3 is situated in the southern part of Bangladesh, in the *sadar thana* of Barisal District. The district is bounded on the south by the districts of Jhalakati, Patuakhali and the Bay of Bengal. On the west, over the Baleswar streams, lies the district of Khulna and on the east is the great Meghna estuary, which divides the districts of Noakhali and Barisal. In the north, the district is bordered by the district of Madaripur which also has a series of rivers and streams in common with the other districts of southern Bangladesh.

Geologically, Barisal is a typical part of an alluvial delta formed by the Ganges, Brahmaputra and Meghna rivers and their feeders. The district is divided into four major physical units; the eastern part, the southern part, the western part and the north-western part. The eastern part forms the highest part of the river basin and is in most parts well above the ordinary flood plain. The western and north-western sides of the district lie at a much lower level, and the southern part occupies the lowest level along the shores of the Bay of Bengal. Village 3 is situated in the eastern part of the district of Barisal.

The total population of Village 3 was 1040 in 1992 (Field Census, 1992). The average family size was 6.08. The total sample population in our Survey was 198, out of which 105 were male and 93 were female. Therefore, the male-female ratio was 53:47. The average family size was found to be 6.3. However, there were some variations in family size amongst farm households of different income levels. For the rich, the average size was found to be 5.8, for the middle 7.2 and for the poor 6.2. One of the factors behind the smallness of the size of the rich households could be their very high literacy rates.

Some 66 percent of the respondents had a formal education, while the remaining 34 percent were illiterate, taking the population as a whole. However, it was reported that the rich and the middle farm households had a 100 percent literacy rate, while the poor only had a literacy rate of 50 percent.

The average homestead land owned by the rich, the middle and the poor were 0.4 hectares, 0.2 hectares and 0.1 hectares respectively. On the other hand, the average agricultural land owned by them were 3.4 hectares, 1.5 hectares and 0.3 hectares respectively.

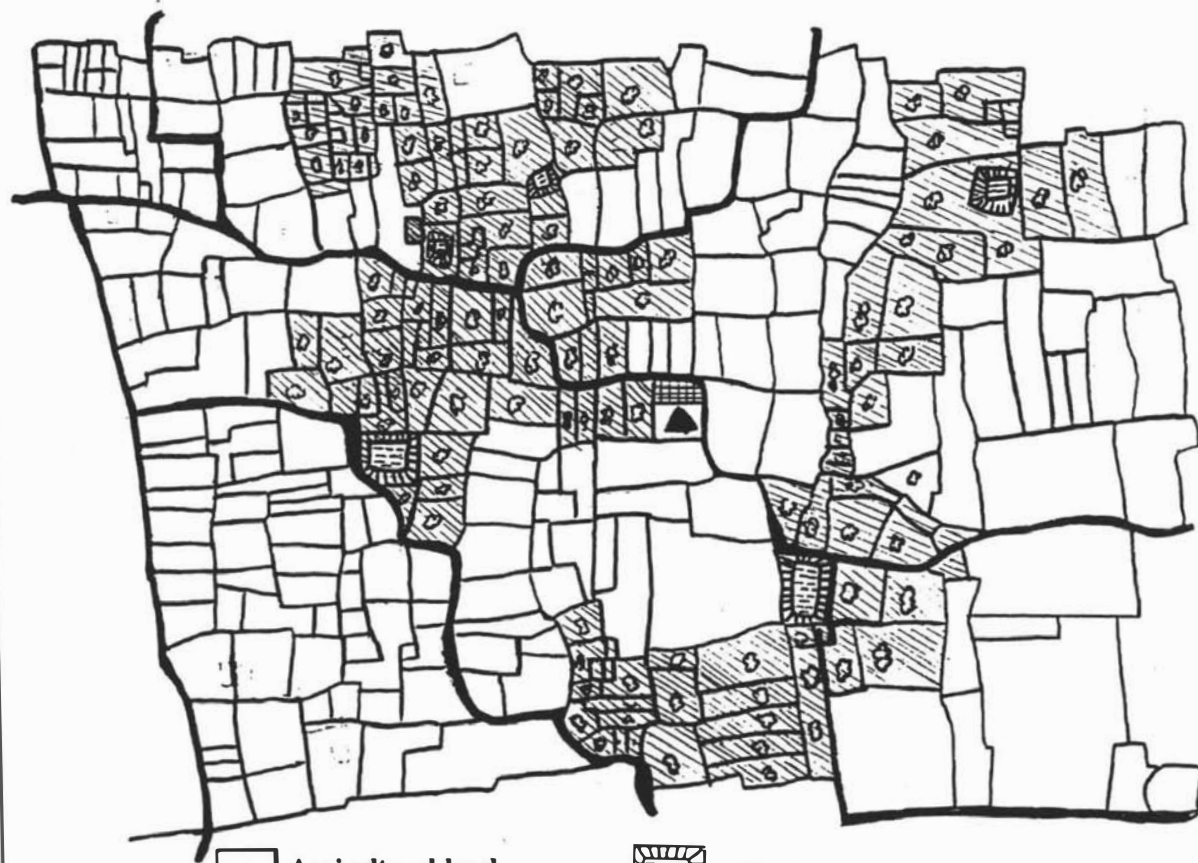
It was reported that 60 percent of the respondents of the middle farm households had agriculture as their primary occupation, followed by 40 percent of the rich, and 20 percent of the poor. The other 60 percent of the rich households had service as their primary occupation; while 40 percent of the middle income and 25 percent of the poor were engaged in the service sector. Out of the rest of the poor households, 30 percent had petty businesses (e.g. grocery shops, tea stalls, processing businesses like oil making, mat and fan making) as their primary occupation, while 15 percent were agricultural wage labourers, the remaining ten percent being rickshaw pullers.

It was further reported that 25 percent of the respondents from the poor households had agriculture as their secondary occupation, 15 percent worked as agricultural labourers and ten percent were industrial wage labourers. The remaining 50 percent were engaged in casual non-agricultural activities like oil processing, fan making, fish-catcher making, carpentry, *bidi* making, rickshaw pulling and so on.

Among the poor, about 40 percent had rented out their cultivable land and most of them had non-agricultural occupations like petty business and services. A few female-headed poor households also rented out their land. Only 10 percent of the poor households rented in agricultural land.

Average numbers of livestock owned by the rich, middle and poor households were about three, two and one respectively. However, there were variations. 80 percent of the rich owned livestock followed by 60 percent of the middle income and 40 percent of the poor households.

Map 5: village 4



- | | |
|--|--|
|  Agricultural land |  Pond |
|  Village road |  School |
|  Homestead with forests |  Mosque |

3.6.4 Village 4

Village 4 is situated in the central part of Bangladesh, in the *sadar thana* of Gazipur District. This district is bounded on the west by the Tangail district, on the north by the Mymensingh district, on the east by the Narsingdi district and on the south by the Dhaka district.

Geologically, the topography of the district is flat, but there are some low rounded hills and ridges separated by a close pattern of *shallow beds*. Most parts of the district are on high land. Two rivers, the Banshi and the Turag, the tributaries of Dhaleswari, flow along the western and the eastern borders of the district. The Banshi, running down the western edge of the Madhupur jungle tract, has been completely overwhelmed by the sediments of the Jamuna river as far south as Dhamrai where it meets another tributary of the Dhaleswari, and continues an active channel to its junction with the Dhaleswari itself near Savar, a suburb of the capital city Dhaka. The Turag remains active, joining the Buriganga near Mirpur, and it is tidal in its lower reaches. Village 4 is situated on the eastern bank of the Banshi river.

The population of the village was 1668 (Field Survey, 1992) and the average family size 5.1. In our survey, a sample of 203 was selected. Out of these, 95 were male and 108 were female. The male-female ratio was thus 47:53. The average family size was found to be 6.8 with variations amongst farm households. For both the rich and the middle income households the average family size was 7.4, while for the poor it was 6.0.

Some 53 percent of the respondents had formal education while the rest were illiterate. However, it again varied amongst the households. It was reported that 80 percent of the respondents for the rich households were educated, their range of education varying from primary to higher secondary level. Sixty percent of the respondents from the middle farm households were educated and their range varied between primary and secondary levels. Around 55 percent of the respondents of the

poor households were illiterate, while the remaining 45 percent were educated, their educational range also varying from primary to secondary levels.

It was reported that 80 percent of the respondents from the rich households had agriculture as their primary occupation followed by 60 percent of the middle and 35 percent of the poor households. Another 40 percent of the middle farm households had service (low paid jobs) as their primary occupation followed by 20 percent of the rich and ten percent of the poor. Among the remainder of the households, 25 percent had petty business (trading of fruit, wood, bamboo etc.), 15 percent were engaged in mat making and street vending as their occupation. These latter respondents were all female. There were also carpenters who made up ten percent of the respondents and agricultural labourers made up five percent of the respondents.

About 60 percent of the respondents for the rich households had a secondary occupation, 40 percent of them in petty businesses and the remaining 20 percent in cultivation. Among the middle income households, 40 percent had agriculture as their secondary occupation, while 20 percent of them had petty business as theirs. Among the poor, 35 percent were cultivators, 20 percent petty businessmen and 10 percent agricultural wage labourers.

The average homestead land owned by the rich, middle and the poor households were 0.9 hectares, 0.3 hectares and 0.2 hectares respectively. The average agricultural land owned by them was 3.5 hectares, 1.5 hectares and 0.3 hectares respectively. Although there were some variations between the rich and the middle income households, variation within poor households, especially in respect of agricultural land was much greater. For example, about 57 percent of the poor had no agricultural lands, and 65 percent rented in cultivable land. The average land holding was 0.2 hectares. Only 20 percent of the rich households rented out their agricultural land which was about 0.7 hectares on average. The average head of cattle owned by the rich was 6.6, followed by 3.5 and 1.5 head owned by the middle and poor households. Again, there were variations within the poor households. It was reported, for example, that 40 percent of the poor had no cattle while the remaining

60 percent had an average of 2.5 cattle. 60 percent of the rich had goats, the average number being two. On the other hand, only 20 percent of the middle farm households had goats and the average number was two. Only 15 percent of the poor had goats, again averaging two per household.

Some of this information is summarised in the Tables below.

Table 3.6.1

Average Cultivable Land (in hectares) Owned by Survey Households: A Summary Table

VILLAGE	RICH	MIDDLE	POOR
VILLAGE 1	4.2	0.8	0.2
VILLAGE 2	4.2	1.5	0.1
VILLAGE 3	3.4	1.5	0.3
VILLAGE 4	3.5	1.5	0.3

Source: Field Survey, 1992. N=120, 30 in each village.

Table 3.6.2

Average Homestead Land (in hectares) Owned by Survey Households: A Summary Table

VILLAGE	RICH	MIDDLE	POOR
VILLAGE 1	0.9	0.4	0.2
VILLAGE 2	1.0	0.2	0.1
VILLAGE 3	0.4	0.2	0.1
VILLAGE 4	0.9	0.3	0.2

Source: Field Survey, 1992. N=120, 30 in each village.

Table 3.6.3

Percentage Distribution of Occupational Status (principal) of Survey Respondents: A Comparison Between Households and Villages

Households	Rich Village 1-4				Middle Village 1-4				Poor Village 1-4			
Occupation	1	2	3	4	1	2	3	4	1	2	3	4
Agriculture	83	-	40	80	50	17	60	60	29	15	20	35
Business	17	50	-	-	40	33	-	-	37	35	30	25
Service	-	50	60	20	-	50	40	40	-	20	25	10
Others*	-	-	-	-	10	-	-	-	34	30	25	30

Source: Field Survey, 1993. N=120, 30 in each village.

- * Include agricultural and industrial wage labourers; fishermen, domestic servants; share-coppers; rickshaw pullers; *bidi* and mat makers; street vendors, and carpenters.

Table 3.6.4

Literacy Rate of Survey Respondents: A Summary Table

HOUSEHOLDS	RICH	MIDDLE	POOR
VILLAGE 1	75.0	69.0	50.0
VILLAGE 2	75.0	82.0	45.0
VILLAGE 3	100.0	100.0	50.0
VILLAGE 4	80.0	60.0	45.0

Source: Field Survey, 1992. N=120, 30 in each village.

Table 3.6.5

Average Number of Cattle Owned by Survey Households: A Summary Table

VILLAGE	RICH	MIDDLE	POOR
VILLAGE 1	8.0	4.0	2.0
VILLAGE 2	5.0	0.0	2.0
VILLAGE 3	3.0	2.0	1.0
VILLAGE 4	6.6	3.5	1.5

Source: Field Survey, 1993. N=120, 30 in each village.

The village profiles detailed above enable us to identify some important features which are likely to have a bearing on the economic conditions and behaviour patterns of the survey population. These factors are land ownership (both homestead and cultivable), tenancy arrangements, occupation (primary and secondary) of heads of households and others in the households, educational attainment, family size and the gender ratio within the households.

Although the ownership of cultivable land was found to be a significant variable influencing the incomes of both the poor and the non-poor households, it was found to make a much smaller contribution to poor households.

3.7 Village Profiles: A Summary

The survey data indicate that a significant percentage of the poor households had neither cultivable land of their own nor land obtained through renting or leasing. So, their livelihood did not depend as much on cultivation. Another significant factor was that poor households could not rely on agricultural wages as very few of them were engaged as agricultural labourers. The incomes of wage labourers were found to fluctuate from one part of the year to another. For example, in the *aus* and jute harvest period, which lasts about a month (only August), it was possible for the poor households to find fulltime employment. Likewise in the *aman* harvest season, which lasts for a month (December-January), the poor household members were able to obtain fulltime employment of a seasonal nature. In other months of the year, it was hardly possible to obtain work for more than five to ten days. Another factor influencing the employment opportunities was the state of their health. Young and healthy labourers were preferred to the others. Most of the poor labourers however were undernourished or malnourished. So, in general, it was very difficult for the poor to obtain labouring jobs. Moreover, natural disasters like floods, tornados, monsoon rainfall, drought and other events create uncertainties in the rural casual employment market.

The poor households who rented in cultivable land also faced practical problems. For example, they did not own enough livestock for ploughing the lands. Even the draught animals they owned were often not strong enough for ploughing the fields and other activities for any length of time. Another problem they faced was the shortage of seeds which are usually expensive. Under the tenancy agreement, 50 percent of the seeds and fertilizer were to be provided by the share-croppers. In some cases, irrigation expenditures were also to be shared among the land owners and the share-croppers. Most of the share-croppers had neither the material resources nor adequate ready cash to meet such expenditures. As a consequence, many of them were unable to maintain tenancies from one year to the next.

The growing trend of agricultural mechanization also causes problems because the costs involved in using the machines are often beyond the reach of the poor households. Over the last 20 years, modern inputs such as irrigation, fertilizer, pesticides and high yield varieties of seeds have been used by most of the rich households. As the rich households increase their use of these modern agricultural inputs, they only need some specialised labour and that too in limited quantities for ploughing, weeding and other agricultural activities. This ultimately helps them to employ less labour in agricultural activities. Therefore, most of the poor households who depended on the agricultural sector for an income were seriously disadvantaged.

The amount of money the households need to spend on daily essentials such as rice, edible oil, vegetables, salt, spices, fish etc. is not negligible. In addition, households have to spend money on clothing and other essentials at regular intervals. Then there are occasions such as weddings, funerals and medical treatment which require large expenditures. An essential but voluntary expense concerns the education of the children, which the very poor family simply cannot afford. Lack of earnings due to the income earner's sickness creates a major problem. The poor households headed by women also had special problems as their ability to participate in income earning activities is even more limited.

Livestock was raised by the villagers primarily to serve as draught animals and, to a lesser extent, for milk and meat for family consumption and social ceremonies. The animal hides and skins are valuable selling items, as are the manure, fuel and fertilizer deriving from the animals. Some poor families would sell milk on a daily basis to buy some of their daily essentials with the money. Over the last 20 to 30 years, the livestock population has declined significantly in general. The ownership among the poor households has fallen even more. As a consequence, most of them are unable to meet their various needs as indicated above. For example, the average cattle population per household was about 3 in 1960 (Agricultural Census, 1960) but this had declined to 2.18 by 1975 (BBS, 1983). There was a further decline in cattle population to stand at 1.1 in 1991 (BBS, 1993). Data on the ownership of cattle among different income groups is scanty, but it is known that since 1985, about 40 percent of the poor households do not own any cattle at all (The Third Five Year Plan, 1985-1990).

Although there were variations in the literacy rate among the survey households, the majority of the respondents amongst the poor were illiterate (more than 60 percent). This would explain why many of them were unable to obtain a job, particularly a non-agricultural one. The average family size for the poor was six, and it was again reported that a significant percentage of the family members, both male and female, were non earners. The male-female ratio was almost equal for all the survey villages and it was reported that most of the female members were treated as non-earners or un-productive workers because of existing social, economic and religious circumstances. Deeper observations revealed that many of them were participating in activities in domestic work and in agricultural and other income earning activities. As most women are excluded from development related activities because of the plan priorities and policies, which are male oriented, a large segment of the rural population i.e. the females, are not recognised as part of the productive work force by planners and policy makers.

The above outline of the survey villages backgrounds the social and economic conditions of the survey households which, in turn, reflects the general social and economic conditions of the rural people. While generalisations based on survey findings may be inaccurate, such findings are nevertheless helpful in providing a broad picture of the state of rural people and their daily lives. Inter-linkages between land holdings, other occupational opportunities and rural poverty for example, are highlighted clearly by our findings. The place of homestead forestry in mitigating aspects of income adequacy also comes out strongly from the survey findings. As a resource, the homestead forests are valuable, but they lack a systematic approach to develop their potential. These and other aspects of our survey findings are dealt with in greater depth in the following chapters.

ENDNOTES

1. For further information on the combination method, see Webb, Compbel, Schwartz & Schrest (1966); and for the participant-observation method, see Malionwski (1961, first published in 1922).
2. Marx used the term 'class' basically to differentiate people who own and control the means of production from those who do not. For example, under capitalistic relations of production, one social class, the workers, do not own productive resources and they must thus work for another social class, capitalists, in order to obtain their livelihood. This example describes *class* society, such as to create a distinction between those who apply their labour to production and those who own the means of production (Ellis, 1988). This is unlike our household unit of production and social relations system because in Bangladesh they are based on land ownership. The landless poor may ultimately emerge as a wage earning proletariat but are currently carrying out non-agricultural activities in relation to a traditional rural production system.
3. The Marxist tradition of class analysis has approached peasantry in terms of farm households, with access to their means of livelihood in land, utilizing mainly family labour in farm production, always located in a larger economic system and therefore that their economic behaviour as agricultural producers depends on how the larger system works for them (Ellis, 1988). The term 'peasant' is therefore applied in the market oriented agricultural economy. This is not appropriate in the Bangladesh context because the majority of rural people are not related with the larger economic market system.
4. Grocery shop owners, fruit traders, bamboo traders, wood traders etc.
5. Other occupations include carpenters, fishermen and cart pullers.

CHAPTER FOUR

Household Consumption and the Homestead Forest

4.1 Introduction

Homestead forests play an important role in the rural economy, particularly for the poor in Bangladesh. Broadly speaking, homestead forest resources are the resources in a village to which individual households have exclusive property rights. The locally available resources, for example, form the principal source of energy for cooking for most inhabitants, especially the poor in rural Bangladesh. According to an estimate, approximately 70 to 90 percent of fuel wood and bamboo respectively, come from homestead forests (FAO, 1982 cited by Giasuddin *et al.* 1990). A major part of the fuel requirements in rural areas are derived from homestead forest products, while only 10 percent come from the natural forest sources. Therefore, the rural people in Bangladesh depend almost exclusively on the resources of the tree grown in the homestead (Giasuddin *et al.* 1990).

With a rapid population growth and growing scarcity of other resources such as cultivable land, common property resources, changes in the fuel consumption pattern i.e. restriction towards increased use of agricultural residues and dung cakes, and changes in social relation due to partial erosion of the patron-client relationship, the rural poor are even more heavily reliant on the homestead forests. This is true not only for fuel but for items like construction materials for house building as well as food, fodder and many other useful materials. As a consequence, there is an increased demand and pressure on these resources. In the light of these factors, the contributions of homestead forest resources are analyzed systematically in this chapter.

The role of forests and the way they have been managed in the Indian sub-continent, including Bangladesh have been discussed in chapter one. In what follows we

examine the contributions of homestead forests in specific areas of use such as fuel, food, fodder and building materials.

4.2 Household Consumption of Fuel

4.2.1 Fuel: The Present Situation

The discussion below is based on information collected in the field survey of selected villages in Bangladesh in 1992.

The survey data indicate continuing increases in the demand for homestead forests as a source of fuel in rural Bangladesh. The main items used as fuel in the survey villages were wood, leaves, branches of trees, twigs, bamboo and bamboo sticks, crop residues, cow dung and straw. Using the information from the four selected villages, Figure 4.2.1 shows the share of each item as a source of cooking fuel in percentage terms. It was found that the use of **dry leaves** was the highest in percentage (29%), followed by the **straw/jute sticks** (18%), **crop residues** (17%), **twigs/branches** of trees (15%), **wood** (8%), **bamboo leaves/bamboo sticks** (8%), and **cow dung** (5%).

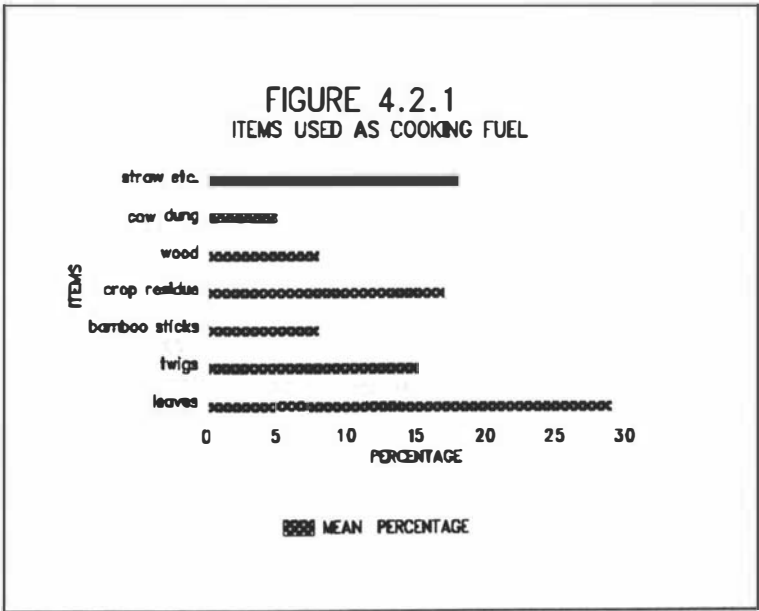
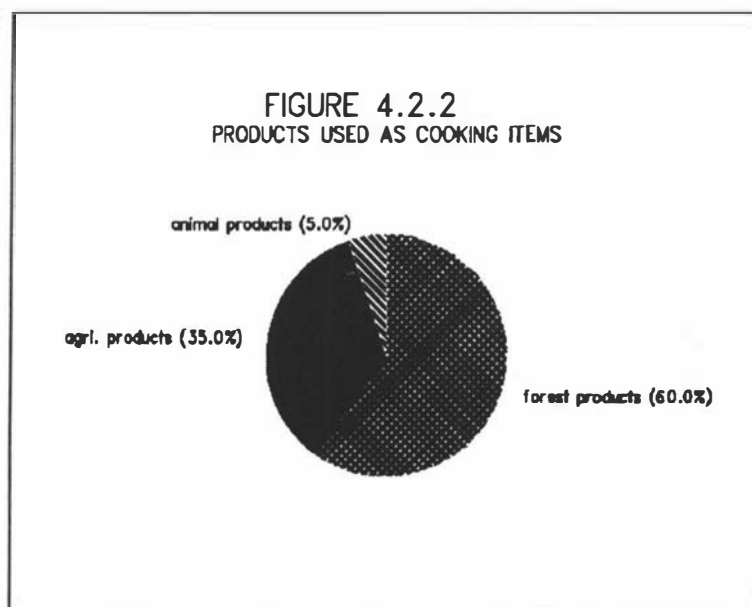


Figure 4.2.2 summarises the usage of different fuel sources. The mean usage of the homestead **forest product** items was 60 percent, followed by the 35 percent in **agricultural crop residues**, and five percent **cow dung**.



It was found that the poor farm households had the highest consumption of dry leaves (32%), followed by the middle income households (25%) and the rich (20%). Table 4.2.1 presents these results. The reason for the larger use of leaves by poor households is obvious in that they had very limited options to use other fuels, while gathering leaves does not involve a financial cost. Those who are not poor have a few more options.

Little difference was found between the use of twigs/small branches of trees and the economic condition of farm households. The rich used 14 percent; the middle 16 percent and the poor 15 percent of this type of fuel (Table 4.2.1).

The use of bamboo leaves/bamboo sticks by different households was also not too different - the rich six percent; the middle income and the poor nine percent (Table 4.2.1).

A difference was found between the use of crop residue by farm households. The rich 26 percent; the middle income 18 percent and the poor 14 percent respectively (Table 4.2.1). The reason for this pattern of usage is almost certainly that the rich households had the benefit of crops growing in their cultivable land, and their residues are a useful by-product.

Table 4.2.1 also shows that the rich households consumed the highest percentage of wood (23%) as fuel, followed by the middle income (10%) and the poor (4%) respectively. The reason here is also related to the ownership of, and therefore, the access to trees by the different households.

The consumption of cow dung was found to be the highest among the middle farm households (6%), followed by the poor (5%) and the rich used the least (2%) (Table 4.2.1). There were two reasons for the poor consumption of cow dung among different households. The first was the general scarcity of the cattle population. The second relates to the other uses of cow dung. Although the rich had the largest number of cattle, they mainly used the dung as manure to fertilise the agricultural land. The poor did not own many cattle. The middle households usually have some cattle but less land than the rich.

The consumption of straw and other agricultural products such as *nara*, *kher*, jute stick, *dhanicha*, water hyacinth shows that the poor households used the highest percentage of these materials (21%) followed by the middle income (16%) and the rich (9%). These items again are available for collection from village commons, ponds or post-harvest agricultural lands. They are therefore the kind of material that the poor and, to a lesser extent the middle income households would gather. The rich would have their own supply, but the materials themselves being poor quality fuel, their use would be limited where better alternatives are available.

Table 4.2.1**Percentage Share of Households Using Fuel Items for Domestic Cooking**

ITEMS	RICH	MIDDLE	POOR
Dry leaves of trees, plants and shrubs	20.0	25.0	32.0
Twigs and small branches of trees, plants and shrubs	14.0	16.0	15.0
Bamboo leaves and sticks	6.0	9.0	9.0
Crop residues	26.0	18.0	14.0
Wood	23.0	10.0	4.0
Cow dung	2.0	6.0	5.0
Straw, jute sticks, <i>dhanicha</i> , water hyacinth etc.	9.0	16.0	21.0
Total (percentage)	100.0	100.0	100.0

Source: Field Survey, 1992. $N=120$

4.2.2 The Regional Pattern

In the preceding section, the patterns of consumption were reported for the four villages together while this information is a useful starting point, variations in the patterns amongst villages also useful. This section presents the information corresponding to the different villages.

Table 4.2.2 show the mean usage of the items as fuel by respondents in different villages. The highest percentage of **dry leaves** was used in village four (38%), followed by village one (36%), village three (25%) and village two (16%).

The data also indicate that village 1 had the highest use of **tree branches/twigs** (18%) followed by village three (16%), village four (15%) and village two (10%).

It was found that the highest percentage of **bamboo leaves and bamboo sticks** was used in village one (13%), followed by village four (11%), village three (7%) and village two (2%). The maximum use of **crop residues** was found in village three (20%), followed by village four (17%), village two (16%) and village one (13%).

The data show that village three had the maximum use of **wood** (12%) followed by the village four (11%), village two (8%) and village one (3%).

The data indicate that the overall use of **cow dung** as fuel was low in all the survey villages. However, it was found that village two had the highest use of cow dung (7%), followed by village four (6%), village three (4%) and village one (3%). The reasons for the overall low use of cow dung are indicated earlier. The use of cow dung was relatively high in village two because of low availability of other fuel resources, especially homestead forests items.

The use of **agricultural products and other materials** was found to be highest in village two (41%), followed by village three (16%), village one (14%) and village four (2%). As has been pointed out earlier, village two, being in a low lying area, had less forest tree resources including those from homestead forests. Its reliance on 'odd items' such as **agricultural products** is therefore much higher.

Table 4.2.2**Percentage Share of Villages used Fuel Items for Domestic Cooking**

ITEMS	VILL-1	VILL-2	VILL-3	VILL-4
Dry leaves of trees, plants and shrubs	36.0	16.0	25.0	38.0
Twigs and small branches of trees, plants	18.0	10.0	16.0	15.0
Bamboo leaves and sticks	13.0	2.0	7.0	11.0
Crop residues	13.0	16.0	20.0	17.0
Wood	3.0	8.0	12.0	11.0
Cow dung	3.0	7.0	4.0	6.0
Straw, jute sticks, <i>dhanicha</i> , water hyacinth	14.0	41.0	16.0	2.0
TOTAL (PERCENTAGE)	100.0	100.0	100.0	100.0

Source: Field Survey, 1992. *N=30 for each village.*

The use of fuels such as kerosine and electricity for cooking and heating has not been reported as part of the survey findings because of their insignificance in all villages. Only 2.5 percent of rich households in village 1 used kerosine, followed by 0.8 percent of middle farm households in village 2. Only 0.8 percent of middle households of village 2 used electricity for cooking.

The reason for this is the scarcity of these items in the village areas and their high price. Both of these factors make them beyond the reach of most villagers who prefer more reliable and affordable items as fuel. Electricity and kerosine therefore are among the fuels Bangladeshi urban dwellers have easier access to.

4.2.3 *Fuel Scarcity, Causes and Consequences: A Brief Overview*

The survey confirmed that there was an overall shortage of fuel in the survey villages. However, it was also clear that the poor households were more affected by the scarcity than the rich and middle ones because the latter categories had alternative arrangements for meeting their needs. The data show that a number of consequences arise out of fuel scarcity among the rural poor. These include the need to purchase fuel at the expense of other household items, reduction of cooking times, using alternative kinds of food and collecting fuel from sources other than homestead forests with additional labour. The collection of fuel from the neighbours' or relatives' home gardens is resorted to whenever that is feasible.

The survey data show that 37.5 percent of the survey households were forced to reduce their normal cooking time due to fuel scarcity. Almost all of them were from poor households. Some 22.5 percent of the households, all of them poor, were forced to collect fuel materials from sources other than homestead forests. This involved extra labour on their part. The data also show that 20.83 percent of the poor households were forced to purchase fuel at the expense of other household items and 16.7 percent of the poor households were forced to take alternative kinds of food due to fuel scarcity. A similar percentage of the poor households had spent extra cash to purchase fuel items. Seven percent of the poor households had used their neighbours' or relatives' home gardens for fuel materials (Table 4.2.3) .

Table 4.2.3**The Consequences of Fuel Scarcity for the Survey Households: A Summary**

CONSEQUENCES	RICH	MIDDLE	POOR
Purchased fuel at the cost of other household items	0.0	0.0	20.8
Reduced normal cooking time	0.0	4.5	37.5
Eat uncooked food	0.0	0.0	16.7
Spent cash for purchase of fuel items	0.0	0.0	16.7
Collected fuel other than homestead forest resources	0.0	0.0	22.5
Collected fuel item from neighbours'/relatives' homestead forests	0.0	0.0	7.0

Source: Field Survey, 1992. *N*=120

When the data from different villages were compared, it was found that in all villages except village 2, only a moderate scarcity of fuel was noticed and especially among the poor households. Most of the poor households of village 2 were affected much more due to the overall shortage of forest resources in their homesteads (Table 4.3.2).

Table 4.2.4**The Scarcity of Fuel and Its Consequences at the Village Level: A Comparative Summary**

CONSEQUENCES	VILL-1	VILL-2	VILL-3	VILL-4
Purchased fuel at the cost of other household items	13.3	30.0	20.0	20.0
Reduced normal cooking time	26.7	53.0	33.3	36.0
Eat uncooked food	13.3	23.3	6.7	23.3
Spent cash for purchase of fuel items	16.7	40.0	10.0	0.0
Collected fuel other than homestead forest source	13.3	46.7	20.0	10.0
Collected fuel items from neighbours'/relatives' homestead forest	6.7	3.3	10.0	10.0

Source: Field Survey, 1992. *N*=30 for each village.

In general, the scarcity of homestead forests meant a scarcity in the variety and amount of fuel items. The lack of adequate resources also posed many problems for the poor households. In order to be able to cook the main meal of the day an alternative fuel had to be found. But fuel items such as crop residues, straw or cow dung took more time to burn and produced less heat. Therefore, these items were needed in larger quantities to be effective, and their use as fuel was not easy for the poor households as they did not normally have easy access to these resources.

The limited availability of these fuel items made cooking more time-consuming, and the women and children of the poor households had to cook fewer meals and/or change their traditional eating habits. Reduced consumption of cooked meals on a regular basis would almost certainly be harmful for their health, denying needed nutrition. As a result, many poor households felt compelled to eat unusual food like rice *kura*, lumps of flour burnt in fire, a small quantity of rice with a lot of water and chili, fried broken bits of grain, *panta bhat* and other similar kinds of low nutrition food as 'fillers'. Sometimes they had to make do with dry food like *chira*, *muri*, *khori*, and *chatu* as their main meal. At other times, they would eat fruit as the main meal. As a result of such an unbalanced diet, they suffered many diseases. They also suffered chronic malnutrition. The health of the poor households was also affected due to the non availability of fuel as they could not boil their drinking water, or heat water, when necessary, for reasons of hygiene. For some poor households, fuel was purchased either by sacrificing other household items or scarce cash resources and that caused further deterioration to their already low living standards.

4.2.4 The Importance of Homestead Forests as a Source of Traditional Fuel: Some Economic and Social Aspects

The significant role the homestead forests play as a source of fuel for the poor families is likely to continue into the future for the following reasons:

First, the traditional ties between the rich and poor as the patron and the client helped relieve the fuel security under a feudal system when the landlords allowed their

employees to share in their own fuel resources. Even when forests became denuded, the traditional ties between the rich and the poor allowed the poor to access such items as agricultural residues, which served as alternative cooking fuel. With the erosion of the patron-client relationship, as observed in chapters one and three, these opportunities have declined sharply over the years.

Second, with the introduction of self cultivation of holdings by rich households, opportunities for the poor to obtain grain and crop residues and other types of traditional fuel from the rich have become a lot more limited. The process of land consolidation also led to a much reduced incidence of share-cropping. Under the share-cropping system, the share cropper could get grains and crop residues with which they could meet their needs to some extent.

Third, the ability of the poor to access fuel resources from common properties has declined over the years owing to the scarcity of such resources or such properties. This has further worsened the fuel situation for the rural poor.

Fourth, there was generally an abundance of cow dung for cooking purposes during the Pakistani period (1947-71). This was because most families had some cattle. But, due to changing socio-economic situation and growing poverty, many poor families have been forced to sell their cattle (see the 'village profile' section of chapter three for details). The rich families owning the cattle use cow dung as manure for their cultivable land. Most of the poor households are denied access to cow dung from rich peoples grazing land. As a consequence, the use of cow dung as fuel has declined significantly over the years.

Fifth, the increase in human population. Human population has increased rapidly over the past years, as observed in chapter three. As a result, there is even more pressure on land. Most of the unused land and village forests have been cleared for cultivation and as new settlements, further reducing fuel sources.

Sixth, the significant increase in the number of landless households. The bulk of the poor households are landless or land poor (for details, see village profile of chapter three). Nearly 53 percent of the 'hard core' poor are concentrated in the households having no cultivable land, and 90 percent of those that own some land, own less than 0.6 hectares in rural Bangladesh (Hossain, 1992). This suggests that the poor people have very little opportunity to generate fuel from cultivable land.

Seventh is the social ties. Although the patron-client relationship has declined substantially in recent years, as mentioned earlier, the relationship of dependence between the rich and the poor continues in forms such as the landlord providing a fixed amount of fuel, food or fodder for meeting the poor cultivator's needs on a regular yearly or half-yearly basis. The poor, in turn, work as labourers, share croppers, or servants to the landlords. In some instances, poor villagers would be allowed some fuelwoods from the rich farmer's home gardens on the understanding that they would repay in terms of labour. In survey villages, it was found that some landlords employed labourers from poor families and maintained a co-operative relationship which enabled the villagers to obtain some fuel, food and fodder items. Unfortunately such arrangements can deteriorate into a system of 'bonded labour'.

Eighth are the family and kin ties. These also play an important role in providing social security and other support with food, fuel, fodder and other household materials. Many people in Bangladesh depend on their social networks for their household needs. The village settlements in Bangladesh are based on kinship relationships which, in turn, are built up by different *goshtis* (see glossary below). In the survey villages, the patrilineal ties were found to be very strong. There are several *goshtis*¹ in the villages. The households of different categories belonged to these *goshtis* and villagers reported that they maintained a strong relationship with the *goshti* members, and tried to keep good kinship relationships with other *goshtis*. The members of the same patrilineal groups offered more support during the fuel crises than other (non-kin) groups in the village.

Ninth is the fictive kinship² ties. These also play an important role all over Bangladesh. The stronger the fictive relationships, the more the chances of obtaining favours. Most of the fictive kinship relationships in the survey villages were amongst neighbours. Some of the poor households reported that they get some support during fuel and other crises. They were allowed access to their neighbours' homestead forests for collecting leaves and branches of trees during fuel crises, for example. As women maintain these relationships with other women, they mainly collect or borrow fuel, food and fodder from their neighbours.

The above factors explain the heavy dependence of rural people, especially the poor, on homestead forests for not just fuel but food, fodder and other materials too. As a result, the homestead forests are under increasing pressure. With the increased demand for fuel, food, fodder and other materials due to the growing pressure of human population, these resources will begin to disappear at an even faster rate. The poor people are already suffering as a result of energy scarcities. This analysis suggests that many more people are going to suffer unless there is realistic planning involving the energy sector of the country as a whole and, in particular for the rural areas.

As most of the rural people are heavily dependent on homestead forests for building materials, food and fodder, their dependence on this resource for the fuel should ideally be reduced. If people continue to extract fuel from the homestead forests, a different management policy would be needed for their enhancement, conservation and utilisation. The replacement of existing trees, plants and shrubs with a number of multipurpose and fast growing species (native) could help improve the fuel situation.

The consumption of fuel in the rural areas is technologically inefficient. Measures therefore need be taken to ensure greater efficiency in fuel use, especially through the promotion of improved fuel-burning stoves. Although one kind of improved stove has already been developed by the government and some private research organizations, its benefits have not reached the rural poor, especially the poor women.

A number of barriers, including economic, social and cultural, exist which stop the poor from making use of the improved stoves. As stoves must be purchased with cash, specific loan schemes would be needed to enable the poor to have access to them. Other innovative ideas should be encouraged so that alternative varieties of energy-efficient and affordable cooking devices are developed. Equally, rural women, who are the main users of the cooking stoves, are not always familiar with new innovations in these areas. They might also have some reservations about switching over to new devices without some measures to familiarise them with the benefits of such devices. Eventually, the rural users must be able to build the stoves themselves locally so that the costs are as low as possible.

Another possibility is to extend the use of natural gas. In the eastern part of Bangladesh, there is a relative abundance of natural gas. Most of the gas is yet to be extracted. Natural gas is a truly superb energy for cooking. It is instant, clean, efficient and less time consuming. The only problem is that the rural people have no access to it. The extracted gas is only supplied in the urban areas of central and eastern Bangladesh. Not all parts of north and south Bangladesh are connected with natural gas pipelines, nor are they likely to be in the foreseeable future. However, the rural people of these areas can enjoy natural gas with liquid petroleum gases (LPG), no matter where they live. In the rural parts of other developing countries such as Thailand, for example, LPG is widely used as a highly desirable domestic energy source for cooking. Necessary measures therefore could be taken for extraction and proper distribution of gas in rural areas, perhaps even at subsidised prices, so that the dependence on homestead forests for cooking fuels can be reduced. This would be beneficial both from economic and environmental points of view.

Another possibility is the use of electric power. Most of the rural areas have access to electricity under the Rural Electrification Scheme. However, being expensive as a source of energy, the poor would have no access to it for cooking. Although the top 20 percent of the rural households are thought to be the potential users of rural electricity, they already control most of the rural resources by virtue of their wealth and power. Therefore, the existing supply system may exacerbate the situation of

rural inequality as the rural poor will continue to be deprived of direct benefits from expensive electricity. Necessary measures, therefore, are needed to ensure that the rural people can have improved access to electricity as a power source. But from the environmental point of view there is some question about the efficiency wisdom of further development of electricity as a power resource in Bangladesh.

In the short to medium term, the above two sources of energy pose some serious problems too. Huge financial resources would be needed for larger extraction and distributional systems for the rural areas. International investors may not show much immediate interest in the exploration and distribution of these resources unless they could expect high financial returns. There might even be some sort of reluctance from a political point of view, given the political uncertainties in Bangladesh. Other alternative sources of fuel such as a combination of wind and solar power could be explored in an effective manner because both of these resources are natural ingredients and abundant in Bangladesh. But these resources also need appropriate technology for generation and transmission of power which seems to be expensive in a cost-benefit analysis. The majority of rural poor may be deprived of any direct benefits from expensive solar and wind power until there was some realistic policy of providing these facilities in a cheaper/subsidised way to the rural poor. Their advantage of course is that these resources are readily renewed whereas electricity and gas are derived from non-renewable resources.

So it would still be a long time before these alternative energy resources can be better harvested. As a result, the dependence on local resources, especially the homestead forest resources, for fuel would continue. Therefore, it appears that measures regarding improvement and development of existing homestead forest resources are needed for alleviating the problem and preserving the forestry resources as a renewable source of energy. Rural people should also be encouraged to plant fast growing native species such as *kadam*, *mander*, *jhiga*, *randi* etc. which would help relieve the scarcity of fuel resources in rural areas.

4.3 Homestead Forests and Food

Homestead forests contribute major items of food for rural households throughout the year. The forests enhance the rural household food security by supplying nutritious as well as supplementary food. The forests also provide food and food products to sell during seasonal shortfalls in food and income. The items of food from the homestead forests are mainly the fruit, nuts, pods, relishes, spices, starch, sugary syrup, beverages, honey, stimulants and other ingestible items.

4.3.1 *The Variation in Forest Provisions between Non-poor and Poor and between Villages*

Table 4.3.1 shows the mean number of homestead trees in the survey villages. The data show different kinds of fruit trees including banana, mango, jackfruit, coconut, date, palm and guava grown in almost every survey village. The banana, mango, jackfruit and coconut trees were found to be the largest in number, whereas the other trees were found to be fewer.

Table 4.3.1**Mean* Number of Trees, Plants and Bamboo Clumps in Survey Villages**

TREES AND PLANTS		MEAN NUMBERS	
MANGO	20	<i>BADAM</i>	1
LITCHI	3	SAL	5
JACKFRUIT TREE	16	MAHOGANY	4
GUAVA	3	<i>KARAI</i>	4
NUT PLANT	32	<i>MANDER</i>	3
DATE TREE	6	TAMARIND	1
PALM TREE	4	<i>BOROI</i>	1
COCONUT	9	<i>SAJINA</i>	1
PAPAYA	4	<i>JHIGA</i>	1
BANANA	65	<i>BEL</i>	1
LEMON	2	ACACIA	1
<i>AMRA</i>	2	<i>KADAM</i>	1
BLACK BERRY	1	BAMBOO CLUMBS	5
OTHERS**	14		

Source: Field Survey, 1992.

* The mean has been worked out by dividing by four the total of trees of each variety owned by the respondent households.

** Includes *neem, semul, khair, pitraj, jarul, raintree, ata, gajari, dalim, kadbel, jamrul, gab, fig, banyan, pitili, nishinda, gamar, debdaru, sisso, krishnachura, peepal, bon kathal, garjan, hijal* and so on. For medicinal plants, herbs and shrubs, see chapter eight of this study.

*** Local names of the trees and plants are highlighted in italics

Tables 4.3.2 and 4.3.3 show the mean number of homestead trees owned by different households in the survey villages. The data indicate that the rich households had the largest numbers of trees followed by the middle and poor, as is to be expected. Village 2 had the lowest number of trees in comparison with other villages because of the quality of the land in it, and its vulnerability to floods as noted earlier.

The scientific name of homestead forest species and their relative importance is provided in Appendix 1.

Table 4.3.2

Mean* Number of Trees, Plants and Bamboo Clumps Owned by Households of Different Incomes.

TREES AND PLANTS	RICH	MIDDLE	POOR
Mango	34	21	16
Jackfruit tree	50	10	9
Coconut	23	10	5
Date palm	13	8	3
Nut plant	70	44	18
Palm trees	7	2	5
Guava	6	3	2
Lemon	5	3	1
Papaya	8	3	3
Banana plants	133	60	49
<i>Badam</i>	2	1	0
Sal	21	8	0
Black berry	1	2	1
<i>Kadam</i>	1	1	1
Mahogany	12	3	3
<i>Karai</i>	4	12	1
Tamarind	2	1	1
<i>Boroi</i>	2	1	1
Acacia	3	3	0
<i>Amra</i>	2	2	3
<i>Mandar</i>	3	5	3
<i>Jhiga</i>	3	1	1
<i>Bel</i>	2	1	0
<i>Sajina</i>	2	1	0
Bamboo clumps	12	4	3
Neem	1	0	0
<i>Simul</i>	1	0	0
Others	23	13	6

Source: Field Survey, 1992. N=120

* The mean for each different category of households has been worked out by dividing the total of trees of each variety owned by the respondent households of that category.

** Local names of the trees and plants are highlighted in italic font.

Table 4.3.3

**Mean* Number of Trees, Plants and Bamboo Clumps Owned by Respondents:
Village Wide Figures.**

Trees, plants and bamboo clumps	VILL-1	VILL-2	VILL-3	VILL-4
Mango	15	10	34	22
Jackfruit tree	6	1	6	52
Coconut	14	6	11	5
Date palm	7	1	4	12
Nut plant	61	4	56	7
Palm trees	1	1	10	6
Guava	3	2	2	3
Lemon	1	0	3	4
Papaya	3	2	8	3
Banana plants	11	13	74	163
<i>Badam</i>	0	0	2	0
Sal	0	0	0	20
Black berry	2	1	1	1
<i>Kadam</i>	0	1	2	1
Mahogany	2	1	14	0
<i>Koroi</i>	11	1	3	1
Tamarind	1	1	1	1
<i>Boroi</i>	1	1	1	0
Acacia	1	0	2	2
<i>Amra</i>	1	0	4	5
<i>Mandar</i>	1	1	11	0
<i>Jhiga</i>	2	3	0	0
<i>Bel</i>	1	0	0	1
<i>Sajina</i>	2	0	0	0
Bamboo clumps	3	1	3	12
Neem	0	0	0	1
Others	9	3	12	18

Source: Field Survey, 1992. N=30 in each villages

* The mean has been worked by dividing by three the total of trees of each variety owned by the respondent households in each village.

4.3.2 The Variation in Forest Food Provisions between Non-poor and Poor and between Villages

Tables 4.3.4 and 4.3.5 are indicative of the variation in forest food provisions between villages and between non-poor and poor households. The data show that most of the respondents derived different kinds of edible items such as fruit, roots, tubers, vegetables, salads, sauces and honey from the homestead forests.

Over 87.5 percent of the respondents from all categories had fruit as an edible item, followed by 80 and 68.3 percent as vegetables, roots/tubers respectively, when the survey households were taken as a whole. 50 percent of the rich households had salad and sauces from the homestead forests which was followed by 38.5 percent of middle income households. 20 percent of the rich households obtained honey from homestead forests, followed by 7.7 and 5.4 percent of middle and poor households respectively. Although the rich households had the highest supply of fruit, followed by the middle and the poor, the poor and the middle income ones relied more on homestead forests for more basic edible items like roots, tubers and vegetables (Table 4.3.4).

Table 4.3.4

Percentage Distribution of Households Using Homestead Forest Foods for Family Consumption

Uses of forest food	Household Types		
	RICH	MIDDLE	POOR
Fruit as edible food	95.0	100.0	81.0
Roots and tuber as food	45.0	57.6	78.3
Forest vegetables as food	75.0	92.3	77.1
Forest ingredients as salad and sauces	50.0	38.5	0.0
Forest honey	20.0	7.7	5.4

Source: Field Survey, 1992. N=120

When the data were compared for different villages in different regions, it was found that village 2 had the lowest supply of forest foods. The reason for this was again that this particular village had the lowest number of homestead trees (Table 4.3.5).

Table 4.3.5

Percentage Distribution of Villages Using Homestead Forest Foods for Family Consumption

Different Uses of Forest Foods	VILL-1	VILL-2	VILL-3	VILL-4
Fruit as edible food	96.7	56.7	100.0	96.7
Roots and tuber as food	100.0	36.7	73.3	63.3
Forest vegetables as food	76.7	63.0	93.0	86.7
Forest ingredients as salad and sauces	13.0	10.0	13.3	30.0
Forest honey	10.0	3.3	13.3	6.7

Source: Field Survey, 1992.

N=30 for each villages

Tables 4.3.6 and 4.3.7 show how the poor people benefited from the homestead forests as the main source of their daily meals as well as a supplementary source providing variety. The data indicate that 36.5 percent of the poor households relied exclusively on homestead fruit and products for their main meal of the day during the lean season. The data also indicate that 85.1 percent of the poor households supplemented their main meal of the day with fruit and other food items from the homestead forests. It was also found that the middle and the poor households relied more on homestead forests for light meals such as an after snack (*tiffin*) or breakfast whereas almost all the respondents of the rich and the middle households relied on fruit as a source of additional nutrition. Only 9.5 percent of the poor households were nutrition conscious regarding the forest foods (Table 4.3.6).

Table 4.3.6

Percentage Distribution of Different Income Households Relying on Homestead Forest Foods as Occasional Snack or Breakfast.

FOREST FOOD	RICH	MIDDLE	POOR
As main meal*	0.0	0.0	36.5
As supplementary meal	0.0	11.5	85.1
As additional nutrition	100.0	88.5	9.5
As occasional lunch/breakfast	35.0	65.3	35.1

Source: Field Survey, 1992 N=120

* Mostly during lean seasons and bad times of the year.

The dependence for the main meal from the forest was found mostly during the lean season, especially in the rainy season, or when crops failed. During such times, the poor people had little or no income from agricultural or other sources. As we have already noted in Table 4.3.1, a variety of fruit trees were available in the Survey villages, the poor households relied more on fruit for their livelihood (4.3.4, 4.3.5 and 4.3.6). They, especially the female members, have to be innovative in their use of forestry products as the source of their main meals. For example, the female members would cook green jackfruit with only water, salt and green chili for a filling main meal. Even *vadal*, *mocha*, or green banana were boiled with only water and salt and were eaten as the main meal. Sometimes a big size ripe jackfruit was the only main meal of the day for some of the poor households. Some poor women would mix mango juice, jackfruit or cooked palm syrup with dry rice products like *muri*, *chira* or *chatu* and eat it as the main meal. Some poor households that had rice or bread for the main meal would still have other light meals like breakfast, lunch or afternoon meal with food like fruit, tuber, roots and vegetable. The flower of the banana is also eaten by some poor families as a vegetable. The *kanch kala* is also eaten as a cooked vegetable by the poor. Banana leaves are also treated as the 'poor-man's platters'; many eat off small squares of leaves. The *amra*, *jalpai*, *boroi*, guava and green mango are pickled or eaten as curries. Papaya is eaten green as a

vegetable by the poor but is eaten as a fruit, when ripe, by the rich and the middle income households. The leaves and the seeds of papayas, as well as the flesh, are used by the rich households to tenderise meat. The leaves are wrapped around the meat while the seeds or the flesh are cooked with it. Dates are usually used as a sweet item, or eaten fresh as a fruit. The juice of the date tree is a delicious drink. The juice is boiled and made into *gur*. Some members of the poor households are involved as professional tappers in collecting juice and making *gur* commercially. *Gur* is prepared out of the juice and sold in the local markets. Sometimes the tappers collect juice from the trees of the rich and middle farm households on a share-holding basis (see chapter seven for more on forest food).

There was a regional variation in consumption of forest food. It was found that the village 2 had the lowest consumption of forest food, whereas the other 3 villages had a more or less similar consumption pattern. The reason for low consumption of forest food in village 2 was, again, the scarcity of fruit trees (Table 4.3.7).

Table 4.3.7

Percentage Distribution of Survey Villages Relying on Homestead Forest Foods as Edible Items.

FOREST FOODS	VILL-1	VILL-2	VILL-3	VILL-4
As main meal	26.7	0.0	43.3	20.0
As supplementary meal	46.7	36.7	73.3	63.3
As nutritious food	56.7	33.3	43.3	33.3
As occasional lunch/breakfast	60.0	13.3	26.7	66.7

Source: Field Survey, 1992 N= 30 for each villages

4.3.3 The Importance of Homestead Forest Food

The homestead forests make a significant contribution to the food security of the rural population especially the poor by providing a number of food items which contribute essential meals, especially at times when other food sources are scarce. In general, the homestead forest foods are not dietary staples but they significantly supply the main diet for the poor people during crises and sometimes in normal periods. Those who are better off, they primarily supplement the overall diversity and nutrition of the year round diet.

In rural Bangladesh there is not enough land to absorb the growing population. Therefore, the pressure on the cultivable land has already intensified. Through inheritance (the division of land among family members) and land sales, the average size of landholding has further decreased. As a result, the number of landless (agricultural land) households has increased substantially over the years. As this resource declines, the homestead forests may be seen a more important resource that can be used more efficiently.

With the increased pressure on land, the traditional land tenure arrangements and customary practices have been greatly weakened. Smallholders have had their access to forest resources in adjacent village forests blocked because of changes to the practice regarding the rights of land use. As a consequence, they are forced to utilize the homestead tree as a source of forest foods, fodder and fuel.

Though the rural poor have always been dependent on homestead forests for different kinds of food items, in recent years, due to scarcity of forests in common lands, larger use of homestead forests for cooking and commercial fuel, house building materials, and fodder have come to mean an increased pressure on this resource.

In the absence of access to a more secure source of subsistence (agricultural), poor households have to look for other food sources. By following a sustainable management system, the productivity of the homestead trees can be enhanced further.

The homestead forests demand relatively low levels of labour as compared to other cash crops, and the poor households can respond to decreasing access to land and reducing agricultural productivity by increasing their homestead forest activities. Therefore, the homestead forest resources are beneficial to limited resource households who cannot subsist on their own agricultural production, and who, therefore, have to achieve greater food security from this resource. The pressure grows too great with continual sub-divisions of both homestead and cultivable lands due to the traditional law of inheritance. Necessary measures therefore are needed to avert such fragmentation of lands so that homestead forest resources can be sustained further and regenerate to a greater extent in rural Bangladesh.

4.4 Homestead Forests and Fodder

Homestead forests provide items of fodder for livestock. Among these are the leaves, fruit, pods, nuts, barks, roots, wood, stems, shrubs, herbs and grasses. In rural Bangladesh, the acacia leaves and pods, bamboo leaves, neem leaves, jackfruit stems and leaves, banana trees and leaves, ripe fruit residues (seeds, barks, shell etc.) of bananas, jackfruit and mangoes, many kinds of shrubs and herbs, *zizira* leaves and several kinds of grasses (generally grown under the shade of big trees) are among the sources of homestead forest fodder.

4.4.1 Survey Findings

The survey data show that more than 90 percent of rural households had grass and herbs as fodder items from homestead forests followed by leaves/twigs (89.2%), whole trees (85.0%) and *zizira* leaves, specially used as a wild source of fodder (10%). Few differences were found in use of these items between the rich and poor.

When the data were compared for different villages, it was found that village 2, again, had the lowest use of all the items (leaves, twigs, trees, grass and herbs) except the *zizira* plants. The reasons for lowest use of the items was due to low availability of homestead forest resources, as observed earlier. Moreover, due to their lack of

animals, they did not require much fodder. The *zizira*, a kind of shrub which grows normally in the low lying areas, and not found in other villages, was plentiful in Village 2.

Tables 4.4.1 and 4.4.2 show the consumption of homestead fodder by different households in the survey villages. It was found that the rich and middle income households had the highest use of fodder, whereas the poor households that lack animals had the lowest. The other uses were the selling of fodder during normal and lean periods for extra income, distribution of it among relatives and other village people, and saving some of it for the lean season. It was found that mainly the poor households had sold the fodder during normal seasons (35.1%), followed by the middle (11.5%) and rich households (5%). On the other hand, the middle (46%) and the rich (40%) households sold fodder during lean periods followed by a few of the poor households (25.7%) (Table 4.4.1.)

Table 4.4.1

Percentage Share of Households Using Homestead Forest Fodder for Many Purposes

Consumption pattern	RICH	MIDDLE	POOR
Used as animal feed	75.0	73.0	41.8
Sold at local market (normal season)	5.0	11.5	35.1
Sold at local market (lean season)	40.0	46.0	25.7
Used as reserved stock during lean season	70.0	53.8	25.7
Supplied to relatives, neighbours and villagers	30.0	34.7	10.8

Source: Field Survey, 1992. N= 120

When the data were compared for the different survey villages, it was found that village 2 had the lowest consumption of fodder in almost all respects and the reason is already explained in relation to the data of Table 4.4.1 (Table 4.4.2). The

exception was that most of the respondents from the rich households in Village 2 had allowed their relatives, neighbours and other villagers to have some fodder for feeding their cattle. This happened because in one particular village, there was a general scarcity of fodder at the time of the survey, particularly for the poor people, while the rich households had other sources of fodder. Just to help the poor relatives, neighbours and villagers, the rich farmers came forward. As some of the poor household members were working as labourers or had some other kind of economic relationships with the rich households, they were sometimes helped by some of the rich households. However, this patronage system has fallen victim to the process of modernisation but nothing replaces it to provide security to the poor.

Table 4.4.2

Percentage Share of Villages using Homestead Forest Fodder for Many Purposes

Consumption pattern	VILL-1	VILL-2	VILL-3	VILL-4
Used as animal* feed	60.0	26.7	56.7	73.3
Sold at local market (normal season)	43.3	10.0	20.0	30.0
Sold at local market (lean season)	56.7	3.3	16.7	53.3
Used as reserved stock during lean season	43.3	3.3	36.7	73.3
Supplied to relatives, neighbours and villagers	26.7	36.7	10.0	3.3

Source: Field Survey, 1992. N= 30 in each village

* Includes cows, oxen, buffalos and goats.

4.4.2 The Importance of Homestead Forest Fodder

In rural Bangladesh, a number of agricultural fodder resources were available till the end of Pakistani period (1971). With the changing economic and social condition of rural people, there is increased pressure on this resource not only for more agricultural products but also for more homestead land. As a consequence, there is a growing scarcity of grazing land and other land for growing fodder resources. This

makes the rural people, especially the poor, increasingly reliant on the homestead forest resources as an alternative source of fodder items. An additional factor in this relationship is the role of the rural women who are often responsible for looking after domestic livestock. As fodder collection is an important part of this responsibility, homestead trees play a critical role because of their proximity to the homes. But the homestead forest resources are already under pressure due to the pressure of demand for other items like fuel, food and building materials. As there is no scope for expanding the collection from homestead forests, the increased demand on them is causing rapid depletion. Necessary measures, therefore, must be taken to protect them, expand them and enhance their productivity.

The traditional plantation and management system should be supported and supplemented by the introduction of some fast growing fodder species (native) so that the increased demand for fodder could be met with less difficulty. Rural people are not well-informed about the plantation and preservation of fodder trees. Training and incentive schemes will be needed to improve their awareness. An increased demand for fodder was observed in the survey villages all the year round and particularly during the lean seasons. The homestead forest can be managed commercially, especially for this purpose. As most of the poor villagers own only a few livestock, they attach higher priorities to items like fuel, food and house building materials. They may have some reluctance to growing trees just for fodder. If they were conscious about the high commercial value of fodder, they might have more interest in cultivating trees for this purpose. In order to encourage such developments among the poor, they would have to have more land available to them otherwise food and fuel would continue to be their survival priorities. Necessary efforts, therefore, are needed to encourage an environment in which fodder is valued as a homestead resource.

4.5 Homestead Forest and the House Building Materials

Homestead forests supply a variety of construction and building materials which are widely needed for building dwelling houses in rural Bangladesh. Most of the rural

houses are made of bamboo, betel nut trees, coconut leaves and other homestead forest items. There are several common materials used for walling and roofing of the houses. Comparatively affluent people use corrugated iron sheets for roofs but the poor use bamboo, straw, betel nut, coconut and date palm leaves. A few two-storied tin sheds with wooden or tin walls are also seen. Only a few of the rural houses are *pukka* (brick) and most of them are the large houses of former *zamindars* and are often in a poor state of repair. Most of the rural houses are either *duchala* or *chouchala* sheds. The walls are mostly made of dried leaves, bamboo, mud, and jute sticks. Rich people however make walls of wood, planks or corrugated tin sheets. Most of the rich households have separate sheds for different purposes. Generally, they have three or four separate houses in their homestead for use as the sleeping area, guest house, cow shed and kitchen. On the other hand, most of the poor households have only one or two sheds mainly used as the sleeping areas. Separate kitchen sheds are not very common in the poor households. Usually, they have a twin mud oven near the main shed surrounded by partitions, with a roof which is generally made of *chon* or coconut leaves mainly to protect the ovens from the rain.

Almost all the respondents said that one of the most important reasons for planting homestead trees and bamboo was to produce materials for house building. The respondents put house building materials first, without any hesitation, while they mentioned a number of other important reasons such as fuel, food and fodder which were more difficult to rank. However, most of the respondents, whether rich, middle income or poor, stressed that they needed building materials for their own use.

Over 57 percent of the respondents from all categories had corrugated iron roof in their houses, whereas 26.7 percent had leaves/hay roof when the survey population was taken as a whole. However, there was a little variation among different income households as to who had corrugated iron roof in their main houses. It was reported that 60 percent of the rich households had corrugated iron roof and both middle and poor income households had approximately the same amount. But the poor were more likely to use leaves/hay as well, for roofing their main houses. It was reported that 28.4 percent of the poor households had leaves/hay roofs followed by 30.7

percent of middle and 15 percent of rich households. Only a few households used other materials like bricks and thatch as roof structure (Table 4.5.1). Although a significant number of roofs were made of corrugated iron, the inner structure of these roofs was mainly supported either by wood or bamboo from homestead forests.

Table 4.5.1

Percentage Share of Survey Households Using Different Items as Structure of House* Roof

Items	RICH	MIDDLE	POOR
Corrugated iron with wood/bamboo as inner structure	60.0	57.7	56.7
Leaves/hay	15.0	30.7	28.4
Hay/thatched	0.0	0.0	8.1
Pucca/tin	10.0	7.7	1.4
Pucca	15.0	3.9	2.7
Others**	0.0	0.0	2.7
Total Percentage	100.0	100.0	100.0

Source: Field Survey, 1992. N= 120

* In our survey, the roof of the house indicates the roof of the main house of each households. In addition to the main house, most of the rich and middle income households had other houses. For example, they had guest houses, kitchens and livestock sheds. These houses/shades had either corrugated or hay/thatch/leave structure. However, few poor households had more than one main house and in general, the structure (wall and roof) of these houses was made of hay/leaves/thatch.

** Includes bamboo, *nala* etc.

When the data were compared for different villages in different regions (Table 4.5.2), it was found that the villages two and three had the highest percentage of corrugated iron roofs in about 76 and 90 percent of the houses. On the other hand, village 3 had about 53 percent houses of corrugated iron roofs and village 1 had more houses (70%) that used leaves or hay because that resource was abundant in their region.

Table 4.5.2**Percentage Share of Villages Using Different Items as Structure of House Roof**

Items	VILL-1	VILL-2	VILL-3	VILL-4
Corrugated iron with wood/bamboo as inner structure	10.0	76.7	90.0	53.3
Leaves and hay	70.0	0.0	3.3	33.3
Hay and thatched	0.0	10.0	3.3	6.8
<i>Pucca/tin</i>	6.7	6.7	0.0	3.3
<i>Pucca</i>	13.3	3.3	0.0	3.3
Others*	0.0	3.3	3.4	0.0
Total Percentage	100.0	100.0	100.0	100.0

Source: Field Survey, 1992. N= 30 in each village.

* Includes bamboo, *nala* etc.

Tables 4.5.3 and 4.5.4 show the different kinds of materials used as walls of the houses in different households of different regions. It was found, on average, that 41 percent of the households of all category used bamboo and bamboo products as wall materials, followed by clay (21.7%), when the survey population was taken as a whole. But there was a variation among different income households. It was reported that 47.3 percent of the poor used bamboo and bamboo products as wall materials followed by 46.1 percent middle and 15 percent rich households. For clay as wall materials, it was reported that 25 percent of the poor households used the material, followed by about 15 percent of both the middle and rich households. Among other materials, wood, coconut leaves and shells, hay, banana leaves, jute stick, tin and bricks were used as the source of wall materials (Table 4.5.3).

Table 4.5.3**Percentage Share of Households using Different Items as Wall of Their Main House**

Items	RICH	MIDDLE	POOR
Bamboo	15.0	46.2	47.3
Clay	15.0	15.4	25.6
Bamboo and wood	10.0	15.4	2.8
Brick	25.0	7.7	2.8
Coconut shells	15.0	0.0	5.4
Hay and coconut leaves	10.0	3.8	1.3
Tin and wood	5.0	3.8	1.3
Jute stick	0.0	0.0	4.1
Others*	5.0	7.7	8.1
No wall	0.0	0.0	1.3
Total Percentage	100.0	100.0	100.0

Source: Field Survey, 1992. N= 120

* Includes banana leaves, *chon*, *nol* etc.

Villages 3 and 4 had the highest use of bamboo materials followed by village 1. Although village 2 had very few bamboo resources, it still used bamboo in a significant way. The reason was that most of the households could purchase the materials from the nearby bazaar. Only the households of village 4 had used clay as the wall material, the reason being that the soil of the locality was of a good enough quality for walling (Table 4.5.4).

Table 4.5.4**Percentage Share of Villages Using Different Items as Wall of Their Main House**

Items	VILL-1	VILL-2	VILL-3	VILL-4
Bamboo	33.4	60.0	66.7	6.7
Clay	0.0	0.0	0.0	86.7
Bamboo and wood	13.3	10.0	3.3	0.0
Brick	20.0	10.0	0.0	0.0
Coconut shells	3.3	0.0	16.7	3.3
Hay and coconut leaves	3.3	0.0	10.0	0.0
Tin and wood	0.0	6.7	0.0	3.3
Jute stick	0.0	6.7	3.3	0.0
Others*	26.7	3.3	0.0	0.0
No wall	0.0	3.3	0.0	0.0
Total Percentage	100.0	100.0	100.0	100.0

Source: Field Survey, 1992. N= 120

* Includes banana leaves, *chon*, *nol* etc.

4.6 Homestead Forest and Boundary Materials

In rural Bangladesh, most of the dwelling houses are surrounded either by homestead trees and shrubs or by different kinds of boundaries. Sometimes the trees are so dense around some houses that, at a distance, the area looks like a forest without any houses.

4.6.1 Survey Findings

The survey data show that about 60 percent of the respondents had boundaries around their homesteads. Different kinds of materials were used for this purpose. Among these, the banana leaves, jute sticks, bamboo leaves, bamboo sticks and *hogla* were the most common items. The data indicate that about 90 percent of the rich

households had homestead boundaries, followed by 60 percent of the middle income and 50 percent of the poor households. The rich households mainly used jute sticks, bamboo, bricks and corrugated iron, while the poor used banana leaves, *hogla*, coconut leaves, date and palm leaves as the main materials for boundaries (Table 4.6.1).

Table 4.6.1

Percentage Share of Households Using Different Items as Boundary Wall Around Their Homesteads

Items	RICH	MIDDLE	POOR
Bamboo	30.0	0.0	4.0
Jute stick	30.0	19.2	6.8
Bamboo and iron	15.0	3.8	1.4
Brick	15.0	7.7	1.4
Leaves (banana)	0.0	3.9	17.5
<i>Hogla</i>	0.0	3.9	8.1
Iron	5.0	0.0	0.0
Others*	0.0	23.0	10.8
No wall	5.0	38.5	50.0
Total Percentage	100.0	100.0	100.0

Source: Field Survey, 1992. N= 120

* Includes coconut and nut shell, coconut and nut leaves, straw, hay etc.

When the data were compared for different regions, it was found that village 2 had the highest use of jute sticks. On the other hand, village 1 and 3 had the highest use of banana leaves. Only village 3 had significant use of *hogla* (Table 4.6.2). These variations are due to locally available materials.

Table 4.6.2

Percentage Share of Villages using Different Items as Boundary Wall Around Their Homesteads

Items	VILL-1	VILL-2	VILL-3	VILL-4
Bamboo	3.3	6.7	13.3	6.7
Jute stick	13.3	23.3	3.3	13.3
Bamboo and iron	10.0	3.3	3.3	0.0
Brick	13.3	6.7	0.0	0.0
Leaves (banana)	20.0	0.0	20.0	6.7
<i>Hogla</i>	0.0	0.0	23.3	0.0
<i>Tin</i>	3.3	0.0	0.0	0.0
Others*	20.0	3.3	0.0	23.3
No wall	16.8	56.7	36.8	50.0
Total	100.0	100.0	100.0	100.0

Source: Field Survey, 1992.

N= 30 in each villages

* Includes coconut and nut shell, coconut and nut leaves, straw, hay etc.

4.6.2 The Significance of Homestead Boundaries

In rural Bangladesh, many people are concerned about homestead boundaries because they still want to maintain some kind of a *purdah* system. Some of the respondents said that 20 to 30 years ago, almost all the houses were surrounded either by dense trees, herbs and shrubs, or had some kind of boundary cover and people in those days were better able to maintain privacy. The situation has since changed. Almost 50 percent of the poor households have no boundary or dense tree cover. The female members of these households feel very uncomfortable because of the lack of proper privacy. Sometimes they hesitate to do their domestic work in the absence of a proper *purdah* system. Sometimes, they even feel very insecure, especially when

male members are not at home. This indicates that the *purdah* is still a part of the rural peoples' norms and values.

Once again, the fast disappearing homestead forests have affected the traditional lifestyle in a serious manner. If there was plantation of trees around the homesteads they could provide more boundary materials for the households or, alternatively, the trees around the homesteads could act as natural boundaries which could help restore the rural poor's privacy to some extent.

ENDNOTES

1. There are a number of *goshtis* in village one such as *soyod, khondker, mian, khan, pramaneek, sheikh, uddin, fakir, haldar, sarker* and *ali*. Among these *soyod, khondker, mian* and *pramaneek* are prominent and most of the rich and middle households belonged to these *goshtis*. However, there are also poor households in these *goshtis* and they are dependent on the non-poor for credit, agricultural works and homestead forest products such as cooking fuel and house building materials in the same *goshtis*.

Likewise, there are *khaja, bhuyian, mullah, baparee, mian, uddin, bala, sarkar, majumdar* and *kazi goshtis* in village two. Among these *khaja, bhuyian, mullah, kazi, mian* and *baparee* are the most wealthy and influential *goshtis*. Many of these *goshtis* provide many help and cooperation to the poor households of their same *goshtis* in many respects, including homestead forest products.

Similarly, there are many *goshtis* in village three, such as *hawladar, chowdhury, kazi, mullah, shikdar, uddin, mian, sardar* and *akand*. Among these *hawladar, chowdhury, kazi* and *mullah* are the most wealthy, prominent and aristocrat *goshtis* and support their fellow, but poor *goshti* members both socially and economically.

There are a number of *goshtis* in village four such as *munshi, mian, uddin and ali* and all of them belonged to non-poor *goshtis*. However, they have fellow *goshti* members who belonged to the poor households and relied on them for many economic and social needs including cooking fuel and house building materials.

Therefore, *goshti* relations are important for the poor households in rural Bangladesh as they depend on their fellow *goshti* members for many of their economic and social needs.

2. The fictive kin terms are different from rural to urban areas, in general. Whereas in rural Bangladesh the fictive kin terms are patriarchal, in urban areas they are also used for maternal relationships. For example, the village children use the terms *kaka-kaki* or *chacha-chachi* (father's brother and his wife) for the neighbouring couple with whom they did not have any relationship. But in the urban areas the address is *khalamma-khalu* or *khalujan* (mother's sister and her husband). This address varies according to age and relationship. No elderly person should be called by name by any young people.

CHAPTER FIVE

Homestead Forests, Income and Employment

5.1 Introduction

The previous chapter explored one of the **direct** contributions homestead forests make to the security of household fuel, food, fodder and building materials in rural Bangladesh. The chapter looked at the availability of homestead forest resources and their contribution to the rural households in terms of household consumption i.e. the use of fuel, food, fodder and building materials rather than pointing to any other contribution of homestead forests to the household economy. This chapter, therefore explores another direct contribution that homestead forests make to the rural economy through the generation of income and employment from the selling and trading of fruit, fuel, fodder, timber and other products of small-scale forest-based enterprises.

This chapter examines how homestead forests provide support to villagers who are involved in fruit and fruit juice selling, trading and processing; how homestead forests provide raw materials for many kinds of household and agricultural items which ultimately help some of the villagers by providing income and employment; how homestead forests support those who supply tree branches and leaves used in fisheries projects, and how villages earn an income by making fruit products like jelly, jam, *achar*, chatny, *gur* and other items.

This chapter also examines how homestead forests provide the main energy source for some small scale processing enterprises such as brick-burning, confectionary-baking, pottery-burning and other similar activities; how it provides income and employment for wood cutters, carpenters, wood and bamboo traders, and how village women benefit from making articles of handicraft or being involved in other small scale processing activities. This chapter also covers the areas where the forests

support some other informal sectors by providing raw materials such as bamboo for fish catchers, wood for boats and so on.

On the whole, this chapter examines how homestead forests support village people in terms of income and employment generation.

5.2 Income from Fruit

5.2.1 *Household Income¹ from Fruit*

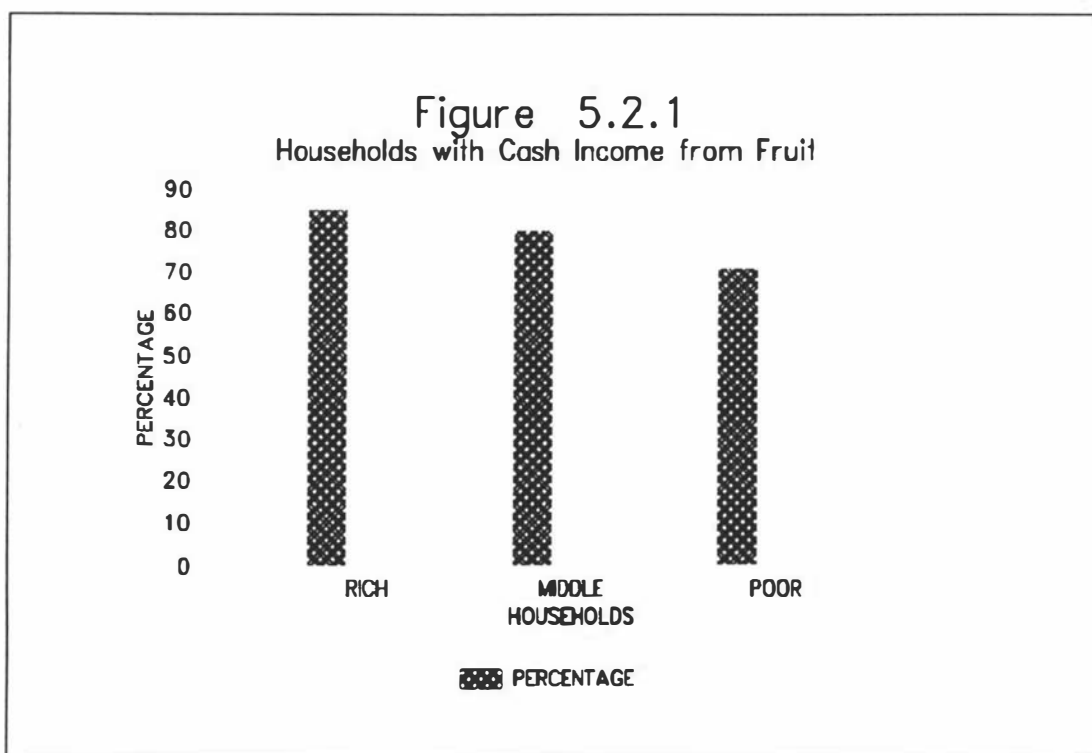
Most people in rural Bangladesh are reliant on homestead fruit not only for food but for income as well. Different varieties of fruit and nuts are sold by the growers at local *hatts*, bazaars and city centres. In exchange, growers buy their daily essentials including staple foods out of the sale proceeds. Sometimes the growers sell their fruit to the local fruit traders. Most of the villagers sell the fruit which are surplus to the requirements of their families. However, sometimes poor households are forced to sell the fruit by denying their own families so as to meet other dire necessities.

The fruit varieties grown and sold include mangoes, jackfruit, *litchies*, coconuts, guavas, papaws, palms, nuts, bananas and *amras*. Among these, mangoes, jackfruit, bananas, coconuts, nuts and guavas are among the most common. Most households have at least a few fruit trees around their homesteads. Although the poor households usually have the smallest number of fruit trees in comparison with the rich and the middle income ones, the majority of them sell their fruit in different seasons. Fruit help the poor households in many ways. Most of the poor households sell fruit for their daily livelihoods. Sometimes a few dozen mangoes or only two or three jackfruit help the poor villagers to buy staple foods like rice and flour. Even one bunch of bananas would help to buy oil, salt or other cooking items. A few dozen guavas or *amras* are enough to help a poor family to buy some daily essentials. Some fruit like coconuts and other nuts are not only sold during normal times but are also stored just to meet an emergency. For example, if any poor

villager does not have the means to buy the day's main meal only the stored dry coconuts or nuts help to buy some food.

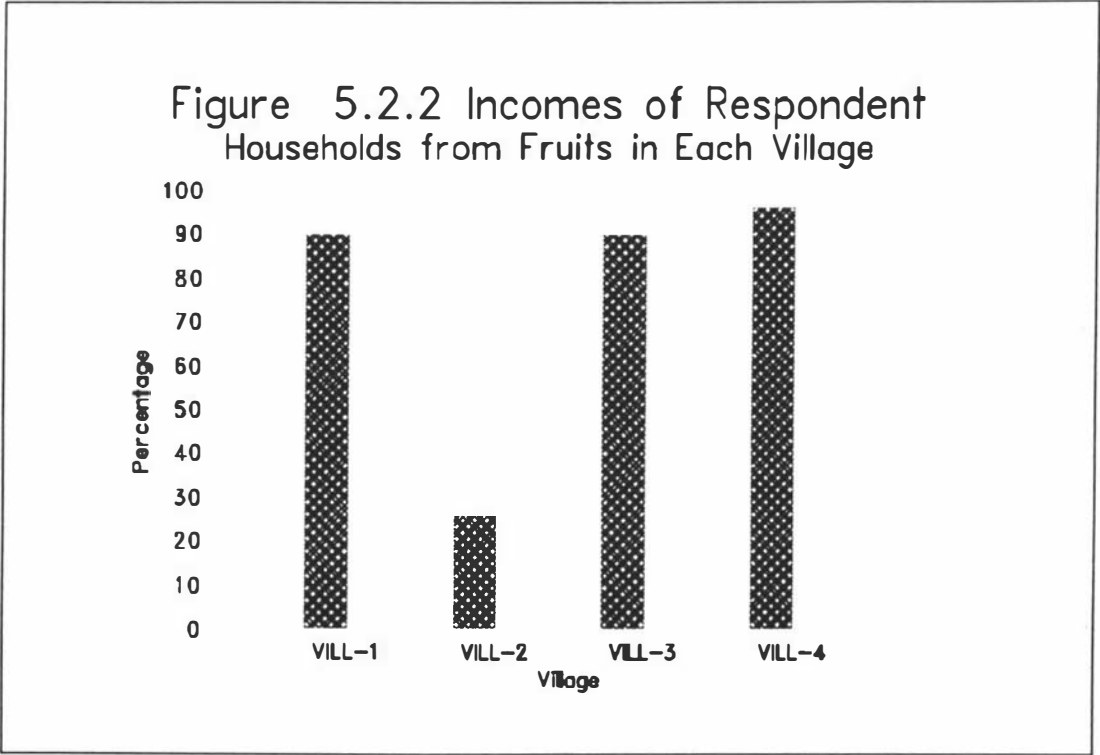
The survey data show two main kinds of income from fruit resources. One is the sale proceeds of fruit enjoyed mainly by the growers, and the other is from the trading of fruit. This involves members of the poor households in the survey villages as well as people from the neighbouring villages (for details on this latter kind of income, see section 5.3.1 of this chapter).

The data indicate that, overall, about 75 percent of the respondents had cash income from fruit, when the survey population were taken as a whole. However when the respondents were divided into different farm categories, it was found that 85 percent of the rich households had income from fruit, followed by eighty percent of middle and 71 percent of poor households (Figure 5.2.1).



The data show that at least 96 percent of the respondents of village four, and ninety percent of villages one and three sold their fruit, whereas only 26 percent of the

respondents of village two sold theirs fruit (Figure 5.2.2). The total income of all the four villages from fruit was divided amongst the four as follows: village-1 29.8 %; village-2 8.6%; village-3 29.8% and village-4 31.8% As explained in Chapter Four the low production of fruit in village two is due to their lack of trees of all kinds.



In village one, one hundred percent of the rich and middle households were fruit sellers, while only 78 percent of the poor households were. In village two only 30 percent of the sellers were from poor households, followed by 25 percent from the rich and sixteen percent from the middle. In villages three and four, again all the rich and middle households sold the fruit. About 95 percent of the poor households of village four and 85 percent of the village three sold the fruit respectively (Table 5.2.1).

Table: 5.2.1

Percentage Distribution of Households with Incomes from Fruit

VILLAGES	RICH	MIDDLE	POOR
VILLAGE-1	100.0	100.0	78.0
VILLAGE-2	25.0	16.0	30.0
VILLAGE-3	100.0	100.0	85.0
VILLAGE-4	100.0	100.0	95.0

Source: Field Survey, 1992. N= 120

It was difficult to assess the actual sale proceeds of fruit in survey villages because every individual farm household had different kinds of trees and in varying in numbers. Regional variation was also considered as one of the factors causing different earnings. Another difficulty was that most of the respondents did not provide a true account of their sale proceeds because they were afraid of attracting extra taxes on their incomes. However, our estimates were based on the volume and the value of the fruit of the trees owned by different households. Seasonality was also taken into account. The final estimates were prepared after verification of the trees owned by the households and also by considering other relevant factors as indicated above.

As noted earlier, many kinds of fruit are available everywhere in rural Bangladesh with some regional variation. The survey data lend support to this factual observation.

Despite household differences, it was found that most of the respondents of village four sold the highest number of jackfruit. However respondents of village one and three also sold jackfruit but far less than in village one. For mangoes, it was found that the respondents of village three sold the largest amount, followed by villages four and one. The respondents of villages three and one sold the maximum number of coconuts followed by the village four. Respondents of village four sold bananas the most, followed by villages three, one and two.

For *amras*, palms, litchi, guavas, lemons and papaws, it was found that the respondents of village three and four sold the most, followed by village one. The respondents of village one and three sold the highest amount of nuts followed by village four. Only the respondents of village four sold the *jolpai* fruit.

Regarding berry, tamarind, *boroi* and other fruit it was found that the average number of these fruit trees was relatively low in all survey villages. A few poor households sold the fruit and there was very little regional variation in this regard.

The data show that fruit provides income for most of the rural households. Although there are some common fruit everywhere in Bangladesh, there are some regional differences. Moreover, different farm households have different kinds and numbers of fruit trees. So the data were analyzed to highlight these variations.

The data for village one show that the average annual income of the rich was 5,600 *taka*, which was followed by 2,310 *taka* and 1,837 *taka* for the middle and poor income households.

In village two, it was found that on average only 26 percent of the households had income from fruit resources. The annual income of the rich household was 5,000 *taka* whereas for the middle it was only 500 *taka*.² The average income of the poor households was 1,050 *taka*.

The data for village three show that the rich households had the highest average annual income of 7,700 *taka*, followed by 2,080 *taka* and 1,423 *taka* for the middle and the poor respectively.

In village four it was found that the rich had an average highest annual income of 19,140 *taka*, followed by 16,760 *taka* and 3,985 *taka* for middle and rich households respectively.

Table: 5.2.2**Average Annual Income (In *Taka*) from Fruit for Households.**

VILLAGES	RICH	MIDDLE	POOR
VILLAGE-1	5,600	2,310	1,837
VILLAGE-2	5,000	500	1,050
VILLAGE-3	7,700	2,080	1,423
VILLAGE-4	19,140	16,760	3,985

Source: Field Survey, 1992. *N*=120

From the data of Table 5.2.2, it is clear that, despite household differences (rich, middle and poor categories), village four had the highest average income from fruit resources. There were several reasons behind this. First, this village sold the most jackfruit. The value of jackfruit is usually quite high. For example, one big size jackfruit was sold for about one hundred *taka* and the value of one middle size jackfruit was about fifty *taka*. On an average, at least forty to fifty jackfruit were grown per tree. As the respondents had the highest average number (fifty) of jackfruit trees, it was quite understandable that their income from fruit was reasonably high. Another fruit, banana, was also grown in large quantities in the village and the price of bananas was also quite high, contributing to the income. Other highly valued fruit like mangoes, *litchi* and *jolpais* were also grown in this village. Second, the most common fruit trees like mango, jackfruit and litchi were grown in significantly large quantities in this village because of the generally big size of homestead plots (average .83 acres). Third, the soil of the locality is very fertile. Fourth, geographically the area was quite high up from sea level. The information collected from the older villagers and the local union council indicates that there had been no devastating floods for the last fifty years in the locality. As a consequence, the trees especially the jackfruit and banana trees have not been harmed by natural calamities. The above factors resulted in a high growth of trees, which ultimately contributed to the high incomes of the villagers.

The survey data show that villages one and three, which had almost similar incomes, were far behind village four in respect of all farm categories. Some of the important reasons were: small homestead plots, relatively low lying lands, fewer trees of high fruit value and low soil fertility. During the severe flooding of 1971, 1974, 1988, and 1989 both the villages were inundated. As a consequence, a number of highly valued trees including jackfruit and banana trees were destroyed or damaged. However, there were still a reasonable number of trees and the villagers enjoyed many economic and social benefits from the resources.

The respondents of village two had the lowest income from fruit resources. Two of the main reasons were: fewer trees due to smaller size of homestead lands and frequent flooding. The average size of homestead lands of the poor households³ in this village was .16 acres, which had prevented most of the villagers from planting more trees on their homestead land. This village is situated in a low lying area and is very close to two big rivers. Because of this geographical location, this village experienced flooding almost every year.⁴ These two reasons contributed to low plantation and growth of trees.

5.3 Income and Employment for Fruit Traders⁵

How fruit provides income for the rural people, particularly the large growers, has been discussed in the previous section. This section explores how fruit provides employment for the rural poor. As income and employment generation are always parts of the same economic process, references to income will sometimes be made in this section too.

Some professional fruit traders buy fruit from villagers and sell them in the nearest *hatts*, bazaars or city centres. Sometimes some young unemployed and small boys also engage in fruit trading. Sometimes, too, young villagers get involved in fruit trading in 'special' ways. For example, some collectors would collect fruit from the rich farm households with the agreement that they would receive a share of the collected fruit as wages for their labour. If any one collected fifty mangoes, for

example, he would have at least ten or 15 mangoes in return. The collectors would then sell this fruit at local markets. For high-priced fruit, there are different modes of payment. For example, if a large size jackfruit is collected by some one, the collector will be paid in cash because of its high value. There are different traders for different kind of fruit. Some traders may only buy and sell bananas; they are the *kala babshaee*; some others buy and sell only jackfruit - they are called *kathal babshaee*. In this way, we can see a number of fruit traders such as *amm*, *litchi*, *supari*, *badam*, *pyara*, *jalpai*, *tal*, *narkel*, *amra*, papaw and other *babshaees* in different villages in different seasons. Sometimes the same traders are involved in many kinds of fruit depending on their seasonal as well as regional availabilities.

Some villagers are involved in other kinds of processing activities. For example, some people collect the juice of date and palm trees by tapping⁶, and then sell the juice to the local villages and bazaars. As most of the juice tappers do not have their own trees, they collect the juices from others on the understanding that both the owner and tapper will share the juice. Most tappers sell most of the juice whereas the owners, especially the rich ones, consume some of it in their families. The households with large numbers of trees sell the juice through the tappers, and then share the profit arising from the products of the juice. The making of *gur/patari*, for example, is a time consuming task and is generally performed by women. After making *gur*, *patari* and other sweet items the tappers sell them to the local markets. The village people like these home made products, and their prices are generally higher than the commercially prepared varieties.

Other villagers are involved in *pitha* trading. *Pithas* are sweets made from fruit with ingredients such as flour, and they are in many shapes and forms such as *kalapitha*, *talpitha* and *narkelpitha* depending on the main fruit used in them. Sometimes women and children are also involved in *pitha* trading. Although only a few villagers are involved in these kinds of activities, it is very important to the poor people who have no land or other assets.

It was reported by the survey villagers that a number of poor people were involved in fruit trading. Some of them were professionals and were trading in all seasons all the year round. Others were involved in different income earning activities in particular seasons.

5.3.1 *Village One*

In village one, nine persons were involved in fruit trading and all of them were from poor households. Among them, seven were professional traders. They bought fruit from local villagers and sold them in the nearest *hatts*, bazaars and city centres. They were also the regular suppliers of seasonal fruit like bananas, to the local and urban markets. It was reported by some of the traders that they bought almost all kinds of fruit in different seasons. These included mangoes, litchi, jackfruit, bananas, palm, lemons, guavas, blackberries, *atas*, *amras*, *borois*, *bels*, papaws, tamarinds, nuts and coconuts among other kinds of fruit. Generally the traders sold from house to house and asked to buy different kinds of fruit, if available. Some traders bought fruit at low prices when the fruit were not mature. Most of the poor agreed to sell their premature fruit in order to meet their immediate family needs. The arrangement was that the traders would collect the fruit when they attained maturity, but were paid by the growers in advance. Mangoes, bananas, litchi, nuts, coconuts and jackfruit were mainly sold in advance. As the growers had sold their fruit in advance, they rarely looked after the fruit. Rather the traders employed local unemployed people and boys to protect them from being stolen or otherwise damaged⁷.

Sometimes the traders themselves collected fruit from the growers' trees. With the help of this free labour (collection of fruit is otherwise a costly job), some traders maintained good relationship with the growers. This network helped to increase their chance of buying fruit in future from the same growers on a regular basis. However, their nearest kin and the traders in the neighbourhood usually had first preference from the growers.

Traders were asked about the profit they made out of fruit trading. Most of them did not respond directly. However, they reported that such trading was the major source of income for their households. This partially helped to assess their income and it was estimated that at least an average of 2,000 *taka* a month was earned from fruit trading during harvesting seasons.

Among the nine traders, two had sold fruit from their own shops along with other items. Unlike the other seven traders, these two were shop owners, and they bought and sold seasonal fruit like bananas, guavas, green coconuts and papaws all the year round.

5.3.2 *Village Two*

As has already been pointed out, the respondents of village two had the lowest average income from homestead forest fruit due to the smaller number of fruit trees in that village. This also affected the extent of fruit trading by them. The data indicate that only four persons were involved in fruit trading in this survey village. As there were so few fruit trees in this village, traders bought fruit from other neighbouring or distant flood-free villages. They bought fruit from other villages at relatively low prices and sold them in their own locality at higher prices. Although the scarcity of fruit deprived the villagers it helped the local traders make more profit, though in a limited way.

5.3.3 *Village Three*

The data from village three show that a number of people were involved in fruit trading. But it is interesting to note that none of the respondents were involved as professional fruit traders. The reasons for this were many fold: First, because of the close proximity of this village to an urban centre, some villagers had working opportunities there. Second, there is a harbour near the village which also provided some jobs to the villagers. Third, a number of people from neighbouring villages were involved in professional fruit trading and they bought fruit from the growers in

the village. Four, because of the short distance, some growers sold their fruit in the city.

Some young unemployed people and some students were involved in the seasonal trading activities in other ways. Sometimes the growers employed young boys for collecting fruit like nuts, coconuts, *amras*, guavas and palm. In return, they were paid either in kind (fruit) or cash on the spot. For some varieties of fruit, up to forty percent of the potential harvest was shared by the growers, with the collectors. For example, a large proportion of the litchi were shared because it was very difficult to protect them against the birds, both at night and in day time. It was also reported that some young men of the locality were also involved in different kinds of fruit trading. During the fruit seasons they would buy fruit like palm, coconut, green coconut, nut, *amra*, guava, mangoes and litchi and sell ripe fruit at the nearest *hatts* and bazaars at high prices. Sometimes some young boys of poor families were also involved in income earning in different ways. For example, they would buy fruit like *amra* and guava from the villagers, peel them nicely, put on some salt and chili powder, put them on a bamboo sticks and sell them in different vantage points around the city centre, such as in front of academic institutions (from primary schools to university colleges), bus stations, business centres, cinema halls, playgrounds and port areas. Some boys were also involved exclusively in banana trading. They bought green bananas from the growers and ripened them in some special ways⁸ before selling them in the nearby city. In some instances, they were the regular suppliers of bananas to many tea stalls in the city. Some boys were involved in selling tamarind. The tamarind would also be processed in some special ways⁹ for easier selling. Although some young people of the survey villages and nearby localities were involved in this kind of trading, none of them could be called professional traders. They were just casual retail traders.

In addition to the residents of the survey villages themselves, there were at least 32 others from the neighbouring villages who were involved in different kinds of activities connected with the homestead forests, according to information given by

villagers. And most of these other people were 'professionals' in their respective activities.

Out of them, seven people were involved in fruit trading, and they bought fruit from the growers in different seasons. Sometimes the growers had to collect the fruit themselves, or with the help of young villagers before selling them to the traders. Sometimes, the traders collected the fruit themselves or used the help of villagers they employed. These were small traders, who are locally called *farias*. These *farias* had links with other middlemen who were again linked with *arotdar* who had links with big traders in capital cities. It was these *arotdars* who actually controlled the fruit business through this chain¹⁰. By means of this chain, the rural people are ultimately incorporated in the national economy. But, in general, it was found that most of the growers received a small portion of the market price because of the operation of the numerous middlemen and wholesalers in the chain. The urban consumers were also usually paying much more than a fair price because of the operation of the same chain. However, on the whole, it was admitted by the growers that without the existence of these kinds of links, it would be difficult to foster the necessary entrepreneurship or produce an outlet for their products.

It was reported by some of the fruit traders especially by the local traders that a considerable amount of money was earned from fruit trading. Although the exact amount was not disclosed it was estimated that an average of 2,000 *taka* was earned monthly by the middle men. However, there were seasonal variations. During the season of mangoes, nuts, litchi, *amras*, guavas and palms, the incomes increased significantly compared to off-season incomes. Some traders had at least five to six thousand *taka* per month during the picking seasons.

5.3.4 Village Four

There were at least twelve professional fruit traders in village four. It is already mentioned in section two that this village had the highest number of jackfruit, banana, date, lemon and *jolpai* trees followed by the second highest number of mango, litchi

and palm trees. There was an abundance of fruit not only in this village, but in other surrounding villages. This encouraged many people of the locality to get involved in different kinds of fruit trading. The nature of trading was similar to that in village three, the difference being in the types of fruit. The traders of this locality had the highest income in comparison with that of the other survey villages, and most of the traders informed us that fruit trading was the main source of income for their households. The exact amount of profit earned was not disclosed by the traders. It can be realistically assumed, however, that on average at least 3,000 *taka* were earned monthly by the traders. There were seasonal variations here as well. At least six to eight thousand *taka* could be earned during the picking season.

During the course of discussion, it was reported by some of the respondents of village three how a number of middle men were involved in fruit trading and how the fruit growers were linked with the larger market economy. This was also reported in village four. Moreover, this village had closer links with the wholesale market because of short distances and better communication facilities.

The wholesale market was only fifty kilometres from the village and there were road, rail and river communications with the market. Another factor was the abundance of fruit. A competitive market was also created because of the presence of many traders. This situation not only supported the traders but the growers also benefited by getting relatively higher prices.

In addition to the professional traders, a number of villagers including unemployed young and small boys of the locality were involved in different kinds of fruit trading either as occasional workers or in other non-professional capacities. The nature of their involvement was much the same as in village three. However, the trading of jackfruit, bananas and *jolpais* was the most important and also popular in this region. There was an abundance of fruit and a number of professional and non-professional traders were involved. All of the fruit was of high value and the traders had more profit than from other fruit.

It was reported by the villagers and residents that at least six juice tappers were involved in tapping and trading of juice and juice products in the locality. It was also reported by the respondents that the traders did not always pay the actual price of fruit, but a somewhat lower price to the growers. Sometimes they may not pay cash at the time of the purchase and growers accept arrangements to pay later. The growers agree to these kinds of arrangements due to a number of factors. First, they prefer to sell their fruit to the local traders, for otherwise they will have to carry it to a distant *hatt* or bazaar involving transportation or carrying costs which can be expensive. Second, it saves time which they can invest in other productive work. Third, there is the security that the traders will buy their fruit on a regular basis. Fourth, a close and convenient relationship develops between the traders and the growers which helps them in other ways as well.

Sections two and three discussed income and employment arising from fruit selling and trading. The following sections show how homestead forests provide income and employment for rural households from timber, tree branches and bamboo.

5.4 Income From Homestead Forests as Timber

5.4.1 *Household Income From Homestead Forests as Timber*

In the preceding section, it was mentioned that most rural households had at least a few trees including fruit and timber on their homestead compounds. Most of the respondents informed us that they did not sell timber or wood, rather they sold whole trees which supplied good quality timber. However, a few respondents were professional wood cutters, traders and carpenters who would cut their trees and separate the timber section from the other parts of the trees before selling them. This kind of ready-to-use timber had more value than the whole trees.

5.4.2 *Village One*

The data for village one indicate that at least 46 percent of the respondents had income from homestead trees as timber when the survey respondents were taken as a whole. However, eighty percent of the rich households followed by thirty percent of the middle and 28 percent of the poor derived income from timber.

All the respondents reported that they had sold both fruit and timber trees. They further reported that among the fruit trees mango, tamarind, jackfruit, black berry and *bel* yielded good quality timber and had high value. Among their timber trees they mainly sold acacia, *mahogany* and *koroi*.

The timber trees were sold mainly to local wood traders but sometimes they sold their own timber at the nearest *hatts*, bazaars or city centres.

The respondents of village one were asked about their incomes from the sale of timber and other trees. Most of them were reluctant to divulge their true incomes. However, the incomes were assessed on the basis of several factors like total number of trees owned, other income earning sources, family expenditures, family size and the priority attached to their expenditures on prime, hitherto un-met needs.

But, again, the incomes varied even within the same economic group. For example, within the poor households, some respondents had an average income of 2,000 *taka* whereas others had 4,000 *taka* per annum. For the middle, the average income varied between 5,000 to 10,000 *taka*, and for the rich, the average income varied much more, being between 7,000 to 25,000 *taka*¹¹.

5.4.3 *Village Two*

In village two it was found that only six percent of the households had any income from timber, and they were from the poor households. However, most of the

respondents told us that at one time, they used to have good incomes from timber, but due to a number of factors, this had decreased¹².

5.4.4 Village Three

The data for village three show that about 27 percent of the survey households had incomes from timber, when the survey households were taken as a whole. However, among the different farm households, forty percent each were from the rich and the middle incomes, followed by twenty percent from the poor.

Among fruit trees, it was mostly mango, jackfruit, tamarind and palm trees which were sold as timber, whereas acacia, *mahogany*, *koro*i and *kadom* were sold as timber trees.

The income from timber in village three varied not only for different economic groups but within the same groups as well. The variation was very similar to that in village one, but the total incomes were higher because of the larger average number of trees.

5.4.5 Village Four

At least seventy percent of the respondents of village four had incomes from timber, when the survey households were taken as a whole. However, among the sellers, one hundred percent was from the rich, followed by 80 percent middle and 43 percent of poor households.

Table 5.4.1 shows the percentage distribution of households who earned income from timber.

Table: 5.4.1**Percentage Distribution of Households with Income from Timber**

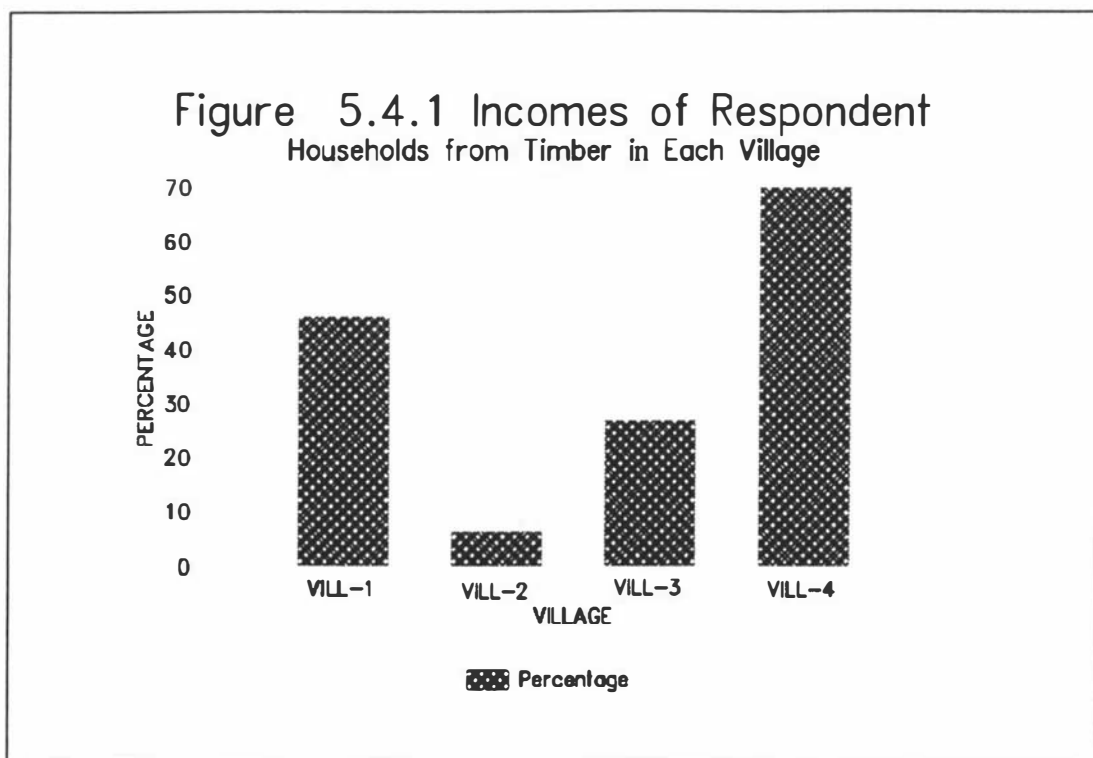
VILLAGES	RICH	MIDDLE	POOR
VILLAGE-1	80.0	30.0	28.0
VILLAGE-2	0	0	6.7
VILLAGE-3	40.0	40.0	20.0
VILLAGE-4	100.0	80.0	43.0

Source: Field Survey, 1992. N=120, 30 from each Village.

Among fruit trees, mainly jackfruit trees were sold as timber followed by mango. On the other hand, mainly *sal* was sold as timber, followed by acacia.

Village four had the highest average income from timber for all classes of households. For the poor households, the income was 4,000-6,000 *taka* per annum. For the middle income ones, the range was 8,000-12,000 *taka* and for the rich it was 20,000-50,000 *taka*¹³.

A break-down of village wide income data (as a percent of total respondent incomes) is presented in Figure 5.4.1. The data show that 70 percent of the respondents of village four, 46 percent of village one and 27 percent of village three had income from timber, whereas only 6.7 percent of the respondent of village two had their income from timber. The total income of all the four villages from timber was divided amongst the four as follows: village-1 30.7%; village-2 4.5%; village-3 18% and village-4 46.8%.



5.5 Income and Employment for Tree Traders

5.5.1 Village One

It was reported by the respondents of village one that at least fifteen persons were involved in tree trading in the locality and all of them were from poor households. They were involved in different kinds of trading in different seasons. Sometimes the traders were involved in wood trading exclusively during the autumn season. They mainly supplied wood to the different processing enterprises including the brick fields¹⁴.

Among others, the traders also supplied trees to the saw mills¹⁵ which were situated in the nearby cities. They would buy trees like mango, jackfruit, *mahogany*, acacia and tamarind from local villagers and sell them to the saw mills. Generally, good quality timber was supplied by the traders. There were also other kinds of trading. Sometimes the traders supplied trees to the local furniture makers¹⁶.

The traders supplied timber and wood to the above enterprises, and raw materials for other cottage industries such as bakers¹⁷, parboilers¹⁸, potters¹⁹ and blacksmiths²⁰.

5.5.2 Village Two

The survey village two had only one wood trader and he was from a middle income household. As already noted, this village along with its neighbouring villages had the lowest number of trees. As a consequence, people of the locality had relatively less involvement in wood trading activities. However, the person who was involved in wood trading reported that, although he was the only one from the survey village, some other people from nearby villages were also involved in different forestry activities including wood trading. He also reported that, as there was a scarcity of homestead forest resources in the locality, he and the other traders collected trees and wood from distant villages and sold them locally at a high price.

The nature of trading was different in this locality. Because of the scarcity of trees, there was a continuous demand for fuel wood in the locality. Most of the wood traders bought trees yielding low quality wood from other localities, cut them into big pieces and carried them either by river or by road to the local bazaars. There they employed some local villagers to cut them into smaller pieces and dump them in an open place for selling. Most of the local villagers had to buy wood and tree branches as fuel for domestic cooking.

There were other commercial demands for wood fuel in the locality. There is a big river which has divided the nearby highway into two parts. As a result, there is a connecting ferry service which forces the passengers and vehicles to halt for the time being. Sometimes heavy vehicles like trucks had to wait for hours on both sides of the river because of the limited capacity of the ferry service. This situation created opportunities for restaurants and hotels on both sides of the river. They cook a variety of food including rice, curry and bread for breakfast, lunch and dinner. These hotels and restaurants create a high demand for wood fuel, so the local wood traders supply fuel wood to them on a regular basis. The wood traders also employ some

local villagers as wood cutters and processors. It was reported that at least seven poor villagers of the locality were employed by the traders for wood fuel processing activities.

5.5.3 *Village Three*

None of the respondents in our household survey in village three were involved in wood trading. But it was reported by the respondents that at least 32 people of different villages of the locality were involved in different kind of activities including wood, bamboo and fruit trading and many other kinds of processing activities.

It was found from the survey data that a number of timber trees like *mahogany*, *koroi*, *kadam*, acacia and tamarind were grown in village three and villages nearby. Moreover, some fruit trees like mango and jackfruit were also grown and treated as valued timber. Since many kinds of timber trees were grown in the locality, there was good scope for wood trading. As a result, a number of other local people were involved in trading activities. The respondents reported that the traders went from door to door asking to buy trees. Generally, the rich households sold mature trees, while many middle and poor households often sold pre-mature trees out of need. Most traders employed wood cutters to log the trees into sizable pieces and then carried them by cart to their local *arot* (depot). In most cases, they sold the logs to the big *arotder* of the cities nearby.

Sometimes they also sold wood directly to trade agents who came from the capital city²¹. Some inferior quality wood and branches of trees were also supplied to the local bakeries, hotels, restaurants and tea stalls by the traders on a regular basis.

Another very profitable business for the traders of the locality was their supply of logs to the boat and ship-makers. As most of the southern part of Bangladesh is covered by rivers, boat and ship making is a traditional industry in the locality. These industries provided a stable market for most of the wood traders. The traders supplied good quality logs to them on a regular basis.

5.5.4 Village Four

It was reported by the respondents of village four that at least two people from the village were exclusively involved in wood trading, and they were from poor households. A number of other villagers from poor households were also involved in wood trading, along with other businesses like fruit trading. It was further reported by the villagers that a number of people from their neighbouring villages were involved in wood trading. Some traders were also from other localities and they were called the big traders²².

Due to the close proximity of this village to the urban centre and to the capital city, there was heavy demand for trees, woodfuel and tree products. The traders not only traded good quality timber, they were also involved in woodfuel. They mainly supplied timber and wood fuel to the different business enterprises such as the soap industry²³, or for urban cooking or some other commercial use²⁴. They also supplied wood as raw material to the nearby urban centre²⁵.

The average incomes of the tree and wood traders differed from village to village, from season to season, and from trader to trader. However, it was estimated that the big traders had an average income of between 50,000 and 70,000 *taka* annually, while the small traders had an average of 20,000 to 30,000 *taka*.

5.6 Income from Bamboo

Homestead forest bamboo plays a variety of important roles in the rural economy of Bangladesh. Different kinds of bamboo species are grown within the homestead boundaries of rural areas. According to an inventory survey²⁶, the homestead woodlot of Bangladesh in the early 1980s contained 189.9 million mature bamboo weighing approximately 1.784 million tons. Furthermore, bamboo clumps in the villages numbered some 558 million which were yet to mature.

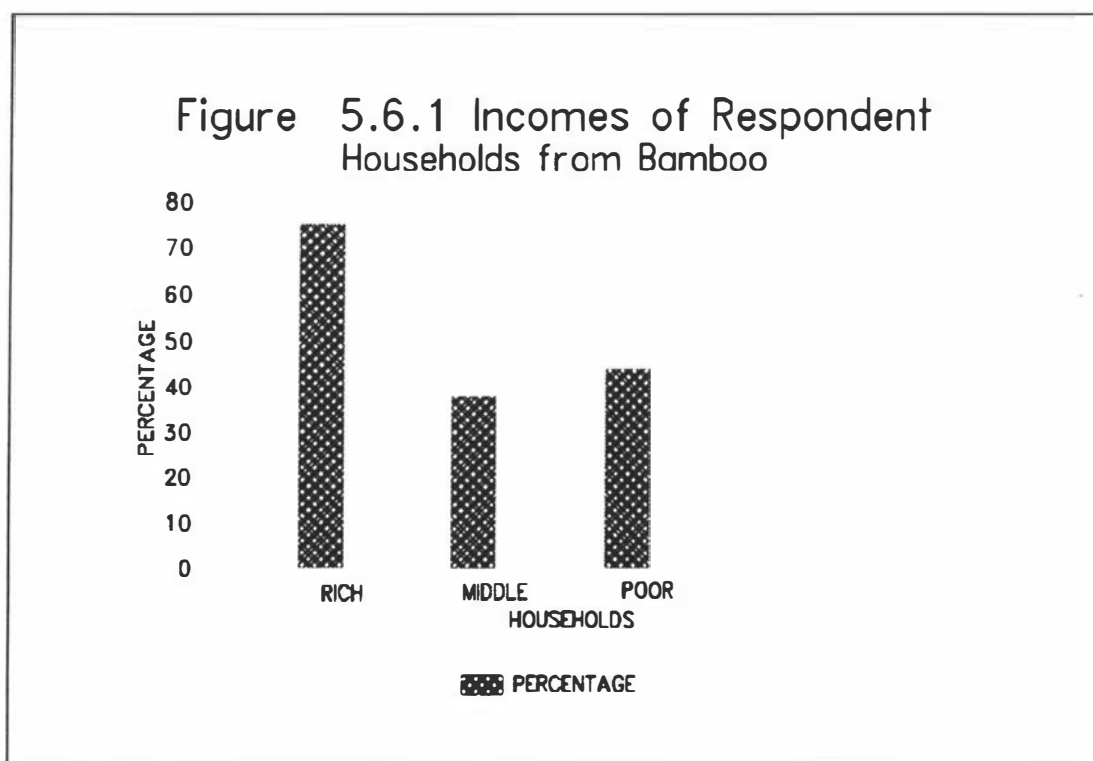
Besides serving as the most important house construction material in the form of house posts, walling, ceiling and roofing, bamboo is also an important raw material for many cottage industries and handicrafts. Different types of bamboo are used for making fish catchers, baskets, beds, fans, brushes, furniture, mats, tables, cooking utensils, ladders and many other items used in rural and urban Bangladesh.

According to the Bangladesh Bureau of Statistics, there were 8.76 million houses in Bangladesh (1981) with roofs of bamboo and straw. Also, there were 9.37 million houses which had walls made out of bamboo and straw.

As bamboo is a very important material for rural housing, many kinds of construction works, cottage industries and handicrafts, almost all households in the rural areas cultivate at least one clump of bamboo in their homestead surroundings. Different species of bamboo are grown in homestead areas²⁷.

Our survey data indicate that on an average, at least five clumps of bamboo were grown in the survey villages. However, there were variations among households and regions. The rich households had the highest number (average 12) of bamboo clumps, followed by middle (average 4) and poor (average 3). Village four had the highest average number of clumps (13) followed by villages one and three (average three for both the villages), and village two (average one).

The income data also supported the above statement. It was found that despite the household's own consumption of bamboo, at least 48 percent of survey households derived income from selling bamboo, when the survey respondents were taken as a whole. However, there was a variation among different income households. Among the respondents, 75 percent were from rich households followed by 44 percent poor and 38 percent middle (as a percent of total respondent incomes of different income household as indicated in Figure 5.6.1).



5.6.1 Income from Bamboo in Different Survey villages

Individual village data show that one hundred percent of the rich households of village one had income from bamboo, followed by forty percent of the middle income and 28 percent of the poor. In village two it was found that twenty percent of the rich households had income from bamboo resources followed by 15 percent of the poor. The data indicate that 60 percent of the rich households of village three had income from bamboo followed by 50 percent of the poor and 20 percent of the middle.

The data also indicate that among all the survey villages, village four had the highest number of respondents with income from bamboo. It was further reported that one hundred percent of both the rich and the middle households had income from bamboo, followed by eighty percent of the poor households. Table 5.6.1 summarises these findings.

Table 5.6.1**Percentage Distribution of Households with Incomes from Bamboo**

VILLAGES	RICH	MIDDLE	POOR
VILLAGE-1	100.0	40.0	28.0
VILLAGE-2	20.0	0	15.0
VILLAGE-3	60.0	20.0	50.0
VILLAGE-4	100.0	100.0	80.0

Source: Field Survey, 1992. N=120, 30 from each Village.

5.7 Income and Employment for Bamboo Traders

Some villagers derived income from bamboo through the trading and selling of bamboo and bamboo products. It was reported by the respondents of village one that at least two people were involved in bamboo trading along with tree trading. They bought mature bamboo from villagers and sold them in the local *hatts* and bazaars. Sometimes they carried bamboo to the distant *hatts* and bazaars for higher profit. In this case, they hired bullock carts for transporting the bamboo. The bamboo resources not only support the traders and cart drivers, they also provide employment opportunities for some poor villagers. It should be noted that bamboo cutting and harvesting is a very difficult job. So in most cases some technical labourers are needed, and generally they have to be paid higher wages because of their skills.

Only a few respondents of village two had bamboo, and only 13 percent of the respondents sold their bamboo either to the villagers or at local bazaars. There was therefore little scope for trading, however, it was reported that at least three villagers were involved in bamboo trading in the locality. As there was a shortage of bamboo in the locality, these traders bought bamboo from other distant villages and carried them (mostly by boat) to the locality for higher profit. The villagers, the craftsmen and other household goods makers were the main buyers of bamboo.

No resident of village three was involved in bamboo trading. However it was reported by the villagers that at least five other people from nearby villages were involved in bamboo trading. The traders bought bamboo from the survey villages and other nearby villages and sold them in the nearest city centre. There were many uses of bamboo including house poles, walls, raw materials for household and other agricultural products. As the demand was high the traders made continuous efforts to buy bamboo from the local area and sell them in the city centre.

Four respondents from the poor households were involved in bamboo trading in village four. It was reported by one trader that he had been trading bamboo for the last twenty years, and that his two sons were also helping him in the business. All the traders claimed that they not only bought bamboo from their own village but also from other nearby villages. They sold the bamboo in the nearest bazaars and in city centres. It was reported that this village had the highest average number of bamboo clumps and that there were good opportunities for the traders because of the high urban demand.

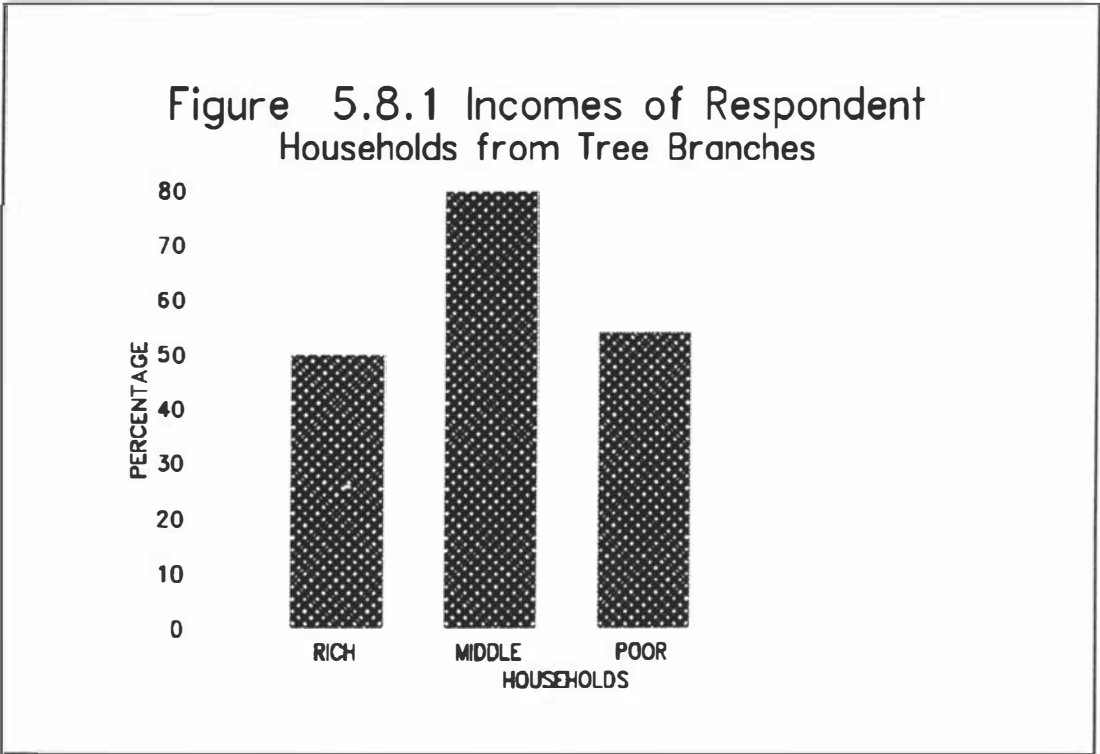
It was very difficult to assess the incomes resulting from bamboo trading. However, some estimates were done on the basis of information provided by some traders and villagers. There were variations, but approximately 18,000 to 27,000 *taka* appeared to have been earned annually by the traders.

5.8 Income and Employment from Tree Branches, Twigs and Leaves

Rural people not only sell the whole trees as timber or fuel wood but they also sell tree branches which have many uses. Small branches of trees not only meet the domestic fuel needs of the respondents but also meet the domestic and commercial fuel²⁸ demand of other villagers and urban dwellers. Small branches of trees have other uses too such as, for fisheries projects²⁹. Sometimes the leaves and twigs are used as fodder for cattle³⁰. Small branches are also used as fence materials for protection of grain fields and other cash crops³¹.

The survey data show that 59 percent of the respondents of all survey villages sold tree branches, twigs and leaves, when the population was taken as a whole. However, for different farm households, 80 percent were from the middle income households, followed by 54 percent from the poor and 50 percent (as a percent of total respondent incomes of different income households) from the rich (Figure 5.8.1).

The data for village one show that 46 percent of the respondents had sold tree branches, when the population was taken as a whole. However, for different farm households, it was found that 66 percent of the rich derived incomes, followed by 60 percent of the middle and 28 percent of the poor households. Most of the respondents reported that tree branches and twigs were used mainly for domestic and commercial fuel and as food for fisheries projects.



It was reported that, despite the low number of trees in village two, at least 85 percent of the survey households had sold tree branches and twigs. When asked why they sold such a scarce resource, they responded that in most cases it was because of the high price. There was a high demand for tree branches and twigs in the

locality because of the fisheries projects in the area. As the region was low lying and flood prone, there was scope for holding fish in ponds, rivers, canals and other water reservoirs. After a flood, as the water receded, most reservoirs were treated as fish reservoirs by villagers and commercial fishermen who dropped tree branches and twigs as food in those reservoirs. Since many local villagers and commercial fish catchers were involved in this kind of business, they bought tree branches for their projects which created a high demand for tree branches.

The villagers informed us that because of the high price, selling tree branches was a regular practice for most of the villagers. The tree branches were locally cut during the winter, to allow their regeneration. The selling of tree branches provided a source of stable income for many of the respondents.

The data for village three show that 40 percent of the households sold tree branches and twigs, when the survey respondents were taken as a whole. Among the respondents, 50 percent was from the poor households, followed by 40 percent from the middle income households. They reported that the demand for tree branches was for domestic and commercial fuel, fences for homestead and crop fields, fodder and fisheries projects.

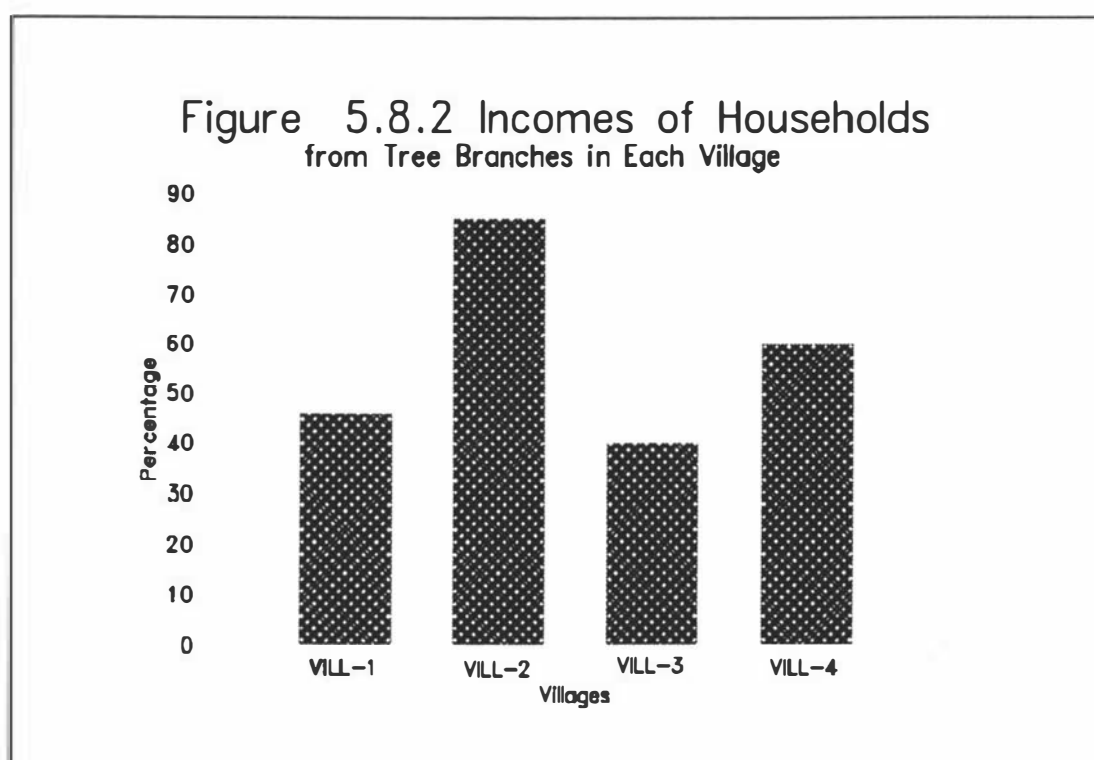
It was reported that at least 60 percent of the households of village four sold tree branches and twigs. Among the respondents, every middle income households sold them, followed by 80 percent of the rich and 50 percent of the poor households. The respondents reported that the demand for tree branches in the locality was mainly for domestic and commercial fuel in both rural and urban areas and also as fodder and fencing for homestead and crop lands.

Figure 5.8.2 shows the income (as a percent of total respondent incomes) from tree branches for different villages, whereas Table 5.8.1 shows the income for different farm households.

Table 5.8.1**Percentage Distribution of Households with Incomes from Tree-branches**

VILLAGES	RICH	MIDDLE	POOR
VILLAGE-1	66.0	60.0	28.0
VILLAGE-2	50.0	100.0	90.0
VILLAGE-3	0.0	40.0	50.0
VILLAGE-4	80.0	100.0	50.0

Source: Field Survey, 1992. N=120, 30 from each Village.



It is evident from the data that tree branches and twigs provided income for most of the households in the survey villages.

The survey findings were also supported by some other studies. For example, it was reported by the Bangladesh Energy Planning Project (1987) that in the year 1980-81,

the homestead forests provided 1,855 thousand tonnes of twigs and leaves which had many uses including fuel, fodder and food for fisheries projects.

5.9 Income and Employment from Carpentry

As both rural and urban populations still rely on homestead forests for a wide range of products, a number of village people are involved in carpentry. Carpenters use homestead trees and bamboo for making different kinds of items such as chairs, tables, *almiras*, clothing racks (*alna*), book shelves, beds, cots, wooden and bamboo poles for house building, wood and bamboo walling, wood and bamboo ceiling and roofing, wooden doors and windows, handicrafts, harvesting and thrashing equipment for crops, crop storage containers, crop marketing equipment, hoe handles, ladders, boat making raw materials, musical instruments, baskets, bow and arrows, tobacco and *hookah* pipes, tool handles, mats, anchors, toys, wheels and frames for bull carts, wooden frames for rickshaws and *vans*, coffins, cooking and kitchen utensils and so on.

It was reported by the respondents that at least nine persons were involved in carpentry activities in village one and seven of them were from poor households. None of the respondents of village two and village three were carpenters but it was reported that at least five people from neighbouring villages of village two, and seven people from neighbouring villages of village three were involved in carpentry activities. It was reported that there were seven carpenters in village four and all of them were from poor households. It was also reported that most of these carpenters were involved in making different kinds of products as mentioned in the previous paragraph.

Most of the carpenters had some work and income because of the availability of homestead trees and bamboo resources. Generally they were employed by individual households for making furniture and other household items in exchange for fixed daily wages. The raw materials were supplied by their household customers. In addition to being employed by village people, most of the carpenters were in private

business producing furniture and other household items. The materials used were about eighty percent from homestead gardens and the rest was purchased either from local markets or city centres. Some village people bought these furniture products and sometimes the carpenters got contracts from furniture wholesalers for supplying furniture. They were occasionally employed by wholesale furniture enterprises on a long term basis.

The annual incomes for individual carpenters were varied for different reasons. However, it was estimated that at least an average of 25,000 to 30,000 *taka* was earned annually by each carpenter. The income data was different from that cited in another study (FAO, 1987B) in which the annual average income of the labour force of forest based small scale industries was quoted as 12,000 *taka*. However, the study further reported that the actual incomes of the members varied, and some members had much higher incomes than the average shown here.

These incomes however were not highly valued for their labour. A carpenter not only invested his labour, but his technical knowledge and skill which was not paid for in reasonable ways. Rather the skills were exploited by both wholesalers and villagers. The wholesalers were usually making big profits by selling the furniture at high prices. When the individual villagers employed the carpenters, they also under-paid them. Another problem was the lack of work security. Most carpenters relied on those who employed them. They could however be fired at any time for any reason by their employers. Therefore the carpenters often faced unstable employment prospects. These problems can be tackled by promoting measures which would increase their control over their own labour and skill.

Homestead forests and bamboo support not only the carpenters for their income and employment, they also support other villagers who worked as helpers or assistants to the carpenters³².

The incomes of the helpers were relatively lower than those of the carpenters. It was estimated that, on average they earned, 15,000 to 18,000 *taka* annually.

It is evident from the above discussion that a number of rural people were getting support from homestead resources for their income and employment.

5.10 Income and Employment from Small-scale Forest-based Processing Enterprises

One of the dominant and common activities for all the regions was carpentry which has been discussed in the previous section. Some of the other activities are discussed below.

It was reported by the respondents of village one that at least five people were involved in homestead forest-based processing activities on a full time basis. Among them two, were primarily involved in the making of fish catchers. They bought bamboo from the home gardens of local villagers and made many kind of fish trappers like *rabani*, *polo*, *khadum*, *bana* and *charu*. Sometimes they also supplied bamboo for fishermen who themselves made many kinds of fish catchers. They not only sold the fish catchers in local *hatts* and *bazaars*, but also used them for their own fishing activities in the nearby rivers, *beels*, and *jolas*. Two of the respondents were blacksmiths who made many kinds of agricultural and household equipment. Although their main material was raw iron, they also used homestead wood and tree branches for making handles of different agricultural and household equipment as well as wooden wheels for bullock and horse carts. The charcoal³³ needed for burning and melting iron was supplied from homestead forest sources, and this helped some villagers to earn income.

Two people were involved in the making of *tukri*, *dala*, *katha*, *jhaka*, *motka*, *dhama*, *dol*³⁴, mats, brooms, brushes, *uron*, *hata*, fans, and other household and kitchen utensils. Some male members of the poor households were also involved in making and selling these items on a part-time basis. Some female members of the poor households were also involved in processing activities, which helped them earn incomes to support their households.

The respondents of village two reported that at least eight people were involved in the processing activities. All of them were from poor households and they all were full time workers. Among them, four were female. Six people, including four females were involved in the making and selling of *kula*, *chalun*, *jhaka*, *dala*, *tukri*, baskets, fish catchers, and other household and kitchen items. Two people were involved in making and selling of bamboo walls. As there was a scarcity of homestead resources in this village, the raw materials such as bamboo and trees were bought from neighbouring villages and local markets. The products were mostly sold at local bazaars. There was high demand for many products, especially for the *tukris*, the fish catchers and bamboo walls. *Tukris* enjoyed a high demand because there was a bridge construction project only four kilometres away from the village. A major earth moving work was being carried out at the project site and hundreds of labourers were employed there. As hundreds of *tukris* were needed for the purpose, they were being supplied by the local makers and the raw material used were supplied from homestead bamboo. There was also a high demand for fish catchers in the locality which were being supplied by local makers and again the raw material were from homestead bamboo. There was demand for bamboo-walls as most of the villagers needed them for building new houses or for repairing old ones. Two people of the neighbouring villages were involved in boat making activities. They had a big boat making place at the local bazaar. Most of the timber for boats was supplied from nearby villages. However, some mature trees were also sold by the villagers. In addition to skilled labourers, at least seven to eight unskilled labourers were involved as helpers in the boat making activities. Some boatmen, too, were involved in tree and timber carrying activities. Besides the full time workers, a few poor villagers were involved on a part-time basis as well.

Two respondents of village three were involved as full-time workers in forest-based processing activities and both were from poor households. In addition, at least five people of other neighbouring villages were involved in such activities. Most of them were involved in making of different households, kitchen and fishing items. Among the survey respondents, one was a fisherman who was involved in making different kinds of fish catchers not only for his own fishing but also for selling them at local

markets. At least two people were involved in mat and fan³⁵ making activities from *hogla*³⁶ and palm tree leaves. Another two people were involved in walling and roofing village houses with coconut leaves and *golpata*³⁷. A few villagers were also involved in these kinds of activities as part-time or casual workers.

It was further reported by the villagers that a large number of women of the surrounding villages were involved in coconut oil processing. For most women, oil processing provided higher returns than other processing activities like mat and fan making.

As coconut oil and milk are widely used as hair oil and food in Bangladesh and as there is an abundance of coconut trees in southern Bangladesh because of its saline soil and its production provide important cash incomes to a larger number of rural households including those in the survey villages. Moreover, many small scale oil processing enterprises produce and market oil nationally and provide employment for many rural poor.

It was reported that the members of a number of households of village four were involved in the processing activities, and that most of them were from poor households. They were involved in the making of different kinds of household and agricultural items like fans, *dala*, *tukri*, *jhaka*, mats, body of *vans* and pull carts.

There was commercial demand for mats in the locality as well. As there was an abundance of date trees in the locality, and also cheap labour for mat making, a number of local people were involved in mat making out of date leaves. The villagers informed us that there were at least seven wholesale traders who bought mats from the villagers. A number of middlemen were also involved in various related activities. For example, some people were involved in buying date leaves from the local villagers. They sold them to other middlemen who resold them to the villagers. Generally, the male members of the poor households bought date leaves from those middlemen, who were involved in leaf selling activities. It was reported that almost all the female members, including children of the poor households, were

involved in mat making activities. However most of them were not full-time workers, they spent only a few hours in a day in the activities as they were busy with other household activities. But two women were involved as full-time mat makers³⁸.

There was a big wholesale market in the capital city for the selling of mats. The mats were used for many purposes including the construction of buildings, bed and sitting carpets and cushions, praying wraps for mosques and temples and for many other social functions.

Although a number of village people were involved in mat making and marketing activities, they were not usually paid well. Their labour was under valued by paying low wages. For example, one mat would sell for only ten *taka*. The mat would have leaves worth three *taka*, and it would take three hours to make the mat. But the same mat would be sold for at least twenty *taka* by traders or wholesalers, giving them a one hundred percent margin. The middlemen also benefited in the same way because they were paying less to the growers when buying the date leaves and selling at higher price to the mat makers. However, it was informed by the villagers that women of the poor households had at least some cash income which not only supplemented their other incomes but helped to raise their social status³⁹ somewhat. Two people had bullock carts and *van* making enterprises at the local bazaar and the raw materials were supplied from the local forests. As the business involved a number of people to supply the trees and process the timber, it was reported that at least twelve local villagers were involved in the processing and supplying activities. There was demand for *vans* and bullock carts in the locality because the fruit especially the jackfruit, bamboo and timber had to be carried from remote villages to the local bazaars and city centres by *vans* and carts. *Vans* and carts were also bought by wholesale traders who had their business in the capital city.

5.11 Summary

From the above discussion it is evident that homestead forests provide income and employment to the rural people in very many ways. The data show that homestead

forests also provide off-farm rural employment and income for many people. The greater part of the homestead based employment is in small enterprises, which probably are a major part of the rural small-scale processing units.

Although agriculture is the major source of livelihood in rural Bangladesh, the capacity of agriculture to generate additional employment has significantly declined because of the growing scarcity of cultivable land due to the existing development policy, complex laws of inheritance and high population growth (refer to chapter one and seven for details). As a consequence, more rural people have been turning to employment in small-scale enterprises because, next to agriculture, small-scale enterprises are a major source of rural livelihood.

It was reported in a macro survey of one nation wide study that there were 57,184 small-scale enterprises in Bangladesh, and 13 percent of these enterprises were village forest-based and they accounted for at least 13 percent of the total small scale enterprise employment (FAO, 1987B).

In addition to employment, homestead forest based small-scale enterprises (HFB-SSEs) are important in providing incomes to many entrepreneurs and their families, and wage incomes to employees; in transferring skills through informal training and generally contributing to the local and national economy, and sometimes, to export⁴⁰.

Although HFB-SSEs are a major source of rural livelihood, this sector is very much neglected by the government planners and policy makers. In general, HFB-SSEs are divided on the basis of technology into two categories: traditional and modern. The traditional category includes village enterprises which are operated manually, and supported by local resources while the modern category includes the enterprises which use modern technology. Examples are the manufacturing industries such as the paper and the rayon mills which are supported mainly by commercially grown raw materials. The modern enterprises receive a lot of government support and subsidies to enable them to achieve higher production and larger marketable

surpluses, while the traditional enterprises receive very little support of a comparable nature.

One of the major problems faced by most traditional enterprises is the shortage of raw materials. Although there is an abundance of raw materials, which are mainly supplied from homestead forests, there still is some scarcity which results from the massive use of these resources by domestic and urban consumers as fuel and building materials. Location and marketing are the other two major problems for both the growers and manufacturers. Locational mismatch between needs and availabilities of the raw materials affects most traditional enterprises and growers adversely because of the weak linkages, lack of capital for extraction and collection of the materials and poor transportation facilities.

The price of raw materials is another problem for both the growers and manufacturers. Although the prices of raw materials particularly for wood and bamboo have recorded significant increases over the years, the growers hardly get a fair price because of the operation of the middlemen. By contrast, the manufacturing enterprises pay a higher price because of the middlemen. Another problem concerns the fluctuations of the prices of products, which affects the profitability and even the viability of the enterprises concerned. Where most of the consumers are poor, and where modern forest products and non-forest products are in competition with products of the large scale enterprises, the move becomes even more acute.

The timely availability of good quality raw material is an important precondition for the success of manufacturing enterprises. Wood and bamboo are particularly susceptible to many constraints, as both are scarce raw materials, with many demands and long supply chains, which sometimes result in residual and low quality materials being supplied by them. Bamboo, for example, dries out if not used shortly after they are harvested, and it becomes difficult to use the material for basket making or for other purposes by artisans. As a consequence, many forest based products suffer low prices because of their low quality which, in turn, is due to inferior raw materials.

Another problem is the limited marketing facilities. For most products, there is no regular demand or market. In such cases, the products are sold to rural consumers who are not regular buyers. Sometimes wholesale buyers and even retail sellers buy the products but on an irregular basis. No governmental measures have been taken so far for buying and marketing the products such as jute and other agricultural produce so that the growers and manufacturers can have the assurance of a stable market.

The above discussion indicates that both the homestead forests and HFB-SSEs have been suffering from a number of constraints because of the absence of a comprehensive strategy. However, the data show that despite these constraints, the livelihoods of a significant number of people depend on this sector. The following aspects of the income and employment generation are worth noting.

The HFB-SSEs are generally family-owned and they rely on locally available homestead forest resources for operation. The skills they require are also acquired usually outside the conventional school system. The enterprises are usually small-scale and labour intensive and they adapt available technologies to suit their needs. In general, the enterprises operate in irregular and competitive markets. By contrast, the modern sector is said to rely on both national and international resources (raw material comes from domestic resource whereas machineries often come from overseas).

Another advantage of the traditional sector is that the employees in this sector work without written contracts. They may work for as long as they wish (sometimes twelve hours a day) on a daily- wage basis, on commissions, or other terms especially designed (e.g. a lump-sum determined by agreement with employer).

A significant number of workers of HFB-SSEs are women. As most of the processing activities do not need complicated technology, operations are labour intensive. Workers do not really have to be skilful, and the work becomes a routine. Women from rural areas can easily participate in such activities.

Another attraction for the women workers is the flexibility of working hours. Most of the working women also stated that they were doing the only job available to them in their areas because of locally-available forest resources as raw materials. A majority of these women conducted their work in their own houses, rather than in factory settings. As the homestead forests and the HFB-SSEs are inter-dependent, much more effort is needed to co-ordinate their operations so that the supply of quality raw materials on a regular basis is ensured. The system should also ensure that support the HFB-SSEs in terms of investment and marketing efforts so that the livelihoods dependent on the homestead forests are not threatened. Necessary measures are needed to ensure that the rural people are also major producers and investors rather than just consumers as they are at present. Steps are needed to go beyond the traditional concept of rural HFB-SSEs, such as the making of basket and fish tappers, or agricultural and household items, for example. More diversified demand, catering to the urban and industrial sectors would strengthen these operations further. Measures are required to improve the ability of the rural poor to overcome the many constraints they currently face which make them unable to exploit the full potential of homestead forests. For example, encouragement of investments, in the rural industries by minimising their risks through government participation, making available project appraisal facilities so that the potentials of intended projects are properly assessed, and developing a network of linked industries or activities to improve the viability of all of them would be among the measures that would strengthen the rural economy, and help the rural poor.

ENDNOTES

1. This is the income of growers who derived income by selling their fruit.
2. In this section we discussed the income of growers who sold fruit directly from their homestead garden.
3. The average size of the homestead land for the households in this village reflects the land holdings of the poor category because most of the respondents were from this category. However, more detailed data shows that the rich had an average of 1.0 hectares, followed by 0.2 hectares owned by the middle farm households.
4. In Bangladesh, there are two types of flooding. One is the normal monsoon flood or *borsha* and another is the severe flood or *bonna*. Whereas *borsha* occurs every year and is an accepted phenomenon for agricultural production, *bonna* is destructive in nature and crosses the normal level of monsoon floods and damages crops and other infra-structures. However, unlike other villages, village 2 is flooded more by both *borsha* and *bonna*. The water level during *borsha* causes the destruction of young homestead plants. Villagers reported that during *borsha*, the flood water reached into their courtyard, something not reported by the other villages.
5. By the term 'trader' we understand the person who is involved in buying and selling homestead forest fruit.
6. The method of tapping involves climbing the tree, cutting inflorescence and collecting the juice in an earthen container which is emptied once/twice daily.
7. Stealing fruit is a common practice in rural Bangladesh. When the fruit matures, the stealing is at its peak. Sometimes stealing occurs when the fruit are set to mature. Generally, the more valuable the fruit, the more they are liable to be stolen. Most of the stealing happens during the night. However, sometime some desperate thieves steal during the day time. Two types of thieves are usually involved in fruit stealing: the professional and the casual. The first group steals around the year. They steal fruit not only for family consumption but also to support their livelihoods. They sell the stolen fruit in the local markets. Sometimes they sell the fruit in a distant *hatt* or bazaar so that the growers cannot identify them. The other group is not professional and they steal just to consume the fruit in a casual way. They steal some fruit from a particular household's tree and take them to a secret place like a school or club ground and consume them there. Sometimes, they target rich households that have an abundance of fruit but are not generous to the poor young villagers. Fruit is also damaged in other ways. Some fruit is eaten by birds. Fruit like litchi are the prime target of birds like bats and crows. Other fruit such as bananas, guavas, and mangoes are also damaged by birds. Special measures are needed to protect these kinds of fruit and some people are employed to protect them. They are called fruit watchers. They are employed not only to protect fruit from birds but also to guard against stealing.

8. Green bananas are bought from the growers and taken home to make them ripen. Some straws are put on the floor under the bed of living room and the bananas are put on them. The bananas are again covered with more straw from the top. As the rooms provide shelter from winds and the bananas are covered in straws enough heating is generated to help the ripen the bananas sooner. Sometimes, green bananas are put inside a big earthen pot covered with a lead. As the pot is air-tight, it also helps in to ripen the bananas quicker. Sometimes bananas are put in a big jute bag which is closed tightly to keep out the air to help the ripening process. Yet another way is to put some calcium bicarbonate on each green bananas which helps to ripen them quickly.
9. Tamarinds are kept in a dry and air protected place to make them ripe. Then the seeds are taken out to make tamarind paste. Some chili powder, salt and coriander leaves are mixed with the paste and small balls are made from the paste which are then sold. Sometimes some *gur* is also mixed with the paste. The paste is a very tasty concoction and is a favourite snacks of young girls and boys. There are also other uses of this paste. The paste is used with *chotpoti*, *fusca*, *ghugny* and other snacks which are very popular items at local *hatts*, bazaars and city centres.
10. *Faria* means middle man. In rural Bangladesh there are a number of middle men engaged in buying and selling different kinds of products including agricultural and forestry products. Sometimes, some local buyers buy fruit from villagers and sell them in the local *hatt* or bazaar, and they are called middle men. The big traders who buy fruit from local traders are also called middle men. These middlemen again sell the fruit to the nearest urban traders called local *arotdar* or wholesalers. The local *arotdar* who buys fruit from different middlemen again sells fruit to the agents of big buyers who are called big *arotdar* or wholesalers. The wholesalers normally do their business in the capital city and bring fruit from other city centres through middlemen either by river, train or road. They store the fruit in wholesale markets and again some middle men buy these fruit and sell them in different parts of the city. Some middle men also carry those fruit to other deficit areas. In this way, a chain is created for trading not only fruit but for other homestead forest based processing activities as well.
11. Some rich households had hundreds of trees. They used to sell their trees annually or at a particular time of the year. Sometimes they sold trees at two or three year intervals. As they sold mature trees, the value of each tree was very high. For example, one mature jackfruit tree was sold for 10,000 *taka*. Generally, they sold ten to twenty trees at a time. So on average, they earned large amounts of money each year.
12. Village two had the lowest average number of trees among the survey villages due to its small homestead plots and flood prone locality. But most of the respondents informed us that a number of trees, including timber trees were sold during the British and Pakistani period. A number of trees were sold during the early period of Bangladesh. At those periods, the homestead plots were relatively big in size and there was scope to plant more trees. Due to the

complex law of land inheritance and the rapid increase of rural population, most of the homestead plots were divided among close kin. As a result, trees were also divided like homestead land. Unlike other survey villages, this village was further affected by frequent floods. As a consequence, most of the rural poor was forced to sell not only their valuable assets like land, jewellery and other moveable property but also their homestead trees. Due to these and other reasons, the average number of trees has declined substantially. Even so, some trees were sold by individual households during recent periods but this was not readily admitted by most of the respondents. It was found that, unlike other regions, it had inferior quality timber, the price of which was accordingly lower, a fact not conceded by most of the households.

13. It was mentioned in an earlier discussion that jackfruit trees are highly valued as timber. In village four, the rich households had the highest number of jackfruit trees. Moreover, they had the highest number (average) of *sal* trees and they were of superior quality. Although they had the highest income from timber, there was some variation. For example, some households had an average of 80-100 trees, whereas others had only 30-50 trees. So, the incomes varied significantly. Some households had an average income of 20,000-30,000 *taka* per year, whereas others had as much as 50,000 *taka* per annum.
14. There were several commercial brick fields in the locality. The main purpose of these brick fields was to supply bricks to the nearest cities for infra-structures and other development activities. Although there is an embargo on burning of woodfuel for brick fields, it was violated by the local villagers as well as by most of the brick traders for many reasons. Most of the poor and middle villagers were forced to sell some of their trees to the local traders. However, for the rich, the main attraction was the high prices offered. Most of the trees sold by poor households were premature, low quality and had relatively low value. Sometimes some poor households were forced to sell some highly valued trees at low prices to meet their emergency needs. During the autumn season in every year, some wood traders of the locality would go from door to door asking to buy trees for brick fields. Sometimes they made temporary *kather arot* (timber depots) in the villages. The villagers cut their trees and sold to the traders. The traders then hired either bullock carts or trucks to carry them to the brick fields.

At least 1089 brick burning units are making bricks in Bangladesh. Among them 933 units are operated by woodfuel and approximately seventy percent of this woodfuel is supplied from homestead forests and the rest comes from commercial woodlots. Only 156 units are operated by natural gas. It was also noted that 785 kilo tons of woodfuel were used for brick burning in 1981 (Bangladesh Energy Planning Report (BEPR), 1987).

15. There are at least five saw mills in the city periphery. As there are no commercial tree plantation schemes in the locality, most of the wood and timber comes from homestead forests and most of these trees are supplied by local wood traders. The trees are then processed by mill workers as per orders, or

sold commercially. Sometimes the wood and timber are bought by retailers and sometimes they are sold to big construction firms. In this way, the homestead trees provide incomes and employment not only to local wood traders but many others whose livelihoods also depend on these resources.

16. There are a number of furniture houses in nearby city centres. Many kinds of furniture are made for household and office uses. A number of carpenters and wood cutters are involved in wood and timber processing. Generally, local wood traders supply timber trees to the furniture shops. The carpenters and wood cutters work on a contractual basis. They make many kinds of furniture like chairs, tables, *almiras*, *alnas*, *khat*, *choki*, sofa sets, secretarial tables, benches and so on. Most of the wood for furniture comes from homestead trees and these were supplied by traders.
17. There are some bakeries in the bazaars nearby and in city centres. They make many confectionary and bread items on a regular basis. They have no electrical or gas ovens, only traditional ovens which use wood fuel and charcoal and most of the wood fuel is supplied by the local wood traders. Sometimes, the owners of the bakeries buy wood from local markets which are also supplied from the homestead trees. However, to ensure regularity, they maintain close links with the local wood suppliers. Most of the bakeries have larger markets. A number of tea-stall owners are the regular wholesale customers of biscuits and breads. Moreover, some of small businesses are also regular wholesale customers in addition to the usual retail ones. So we can see that the livelihood of a number of people depended on these enterprises, and again it is the homestead forests that play a vital role in supplying woodfuel for these enterprises.

It was reported by a macro survey that eighty kilo tons of woodfuel was consumed by the baking industries all over Bangladesh in 1981, and that most of it was supplied from homestead forests (Bangladesh Energy Planning Report, 1987).

18. There are a number of paddy parboilers in village one along with other villages. A number of village people are involved in paddy parboiling and trading activities. They buy paddy from the local markets and make rice for selling commercially. Most of the rice traders trade all the year round by stocking upon huge quantities of paddy during the harvesting season. A big parboiler needs a huge quantity of fuel for paddy boiling, which is supplied from the local home gardens. Generally, the wood traders supply wood and branches of trees on a regular basis to the boilers. However, some small parboilers buy wood and branches of trees from local markets, which is also supplied from the homestead forest sources.
19. In the rural areas there are a number of pottery units. It has been estimated that there are over 18,000 pottery, tile and small brick making units in the rural areas (BSCIC, 1982 and 1983). The approximate (biomass) fuel consumption for pottery burning in 1981 was 47 kilo tons. Out of this, 35 kilo tons was fuelwood supplied mostly from homestead forests. Another 12 kilo tons were

plant residues supplied mostly from rural areas (BEPR, 1987). It was reported that in village one there were some potters and most of the woodfuel for these pottery units was supplied by local wood traders. However, some potters collected woodfuel from the local villages by themselves.

20. A number of blacksmiths are found in village one. They are involved in small scale processing activities. They make many kinds of agricultural and household equipment. The equipment is mainly made of iron. They melt the raw iron by using woodfuel and charcoal. Most of the woodfuel is supplied from homestead forests. Charcoal is obtained from household cooking stoves and the source is, again, the homestead forests. Most of the woodfuel and charcoal is supplied by local wood traders. Sometimes some blacksmiths also buy woodfuel and charcoal from local households.
21. There are a number of log traders in the capital city. They buy logs either through their employed workers or from local *arotders*. Sometimes they employ people to buy and collect logs directly from different parts of the country especially where the trees are available, cheap, and the transportation costs low. Because logs in the southern part are cheaper and entail lower transportation costs, traders send their workers to buy trees directly from the growers there.
22. The locality is famous not only for trees but also for good quality timber. Most of the villagers had a few *sal* and jackfruit trees. Both the trees provide very good quality timber. Moreover, trees like mango, palm, and acacia are also treated as quality timber. Some households, especially the rich, had hundreds of *sal* and jackfruit trees. The nearby villages also had huge timber trees. This attracted not only the local traders but others who came from the distant areas. Most of them were not individual entrepreneurs but were parties to joint venture. They invested large amounts of capital and employed local villagers for wood trading activities. The local people called them parties (big traders).
23. In the capital city and its periphery a number of soap factories make soap for commercial purpose. Most of these factories consume woodfuel not natural gas because of the high registration and connecting fees. Most of the woodfuel is supplied by the wood traders. Sometimes the factory owners buy woodfuel from the central wholesale wood market and most of the woodfuel is supplied from the homestead forests.

It is reported by the Bangladesh Energy Planning Report (1987) that at least ten kilo tons of woodfuel was consumed by soap factories in the year 1981 and it is further estimated that at least 15 kilo tons of woodfuel is consumed annually by these factories.

24. It may be noted that the rural and urban areas are inter- dependent for the supply and demand of energy materials. However, the data indicate that the transfer of energy from the rural to the urban areas is significantly higher than that from the urban to the rural. The main source of the rural energy is the homestead forest, plants and other agricultural residues. These energy sources are mainly used by

urban households and commercial units. On the other hand, the main sources of energy which are supplied from the urban to the rural are kerosene, diesel and electricity, and they are mainly used for irrigation or as fertilizer or for lighting.

The estimated supply of biomass fuel for urban uses shows that at least 3.39 tonnes are supplied from rural areas. The estimated amount of biomass fuel for urban commercial units is 0.23 tonnes. The other uses of biomass in urban areas are approximately 0.79 tonnes. About sixty percent of biomass fuel comes from homestead forest woodlots and the rest comes from plant and other agricultural residues (BEPR, 1987).

It was reported that most of the traders supplied wood and fuelwood to the different enterprises. There are hundreds of woodfuel selling centres in urban areas and those are supplied by wood traders. They also supplied woodfuel to other commercial units like bakeries, hospitals and other institutions. They supplied timber to the construction farms, the pole traders and other commercial users.

25. There is a city centre very close to the village. The approximate distance is ten kilometres. Most of the local traders supplied timber and logs to the big *arotdars*, saw mills, furniture houses and construction farms. Inferior quality woods were mainly supplied to the wholesale traders of woodfuel enterprises. They also supplied wood and woodfuel to the other commercial units like bakeries, hospitals and the dormitories of academic institutions.
26. The Inventory Survey of the Village Forest was carried out by the government of Bangladesh in 1979 and 1980 and the report was compiled in 1982 with the assistance of FAO.
27. There are many kinds of bamboo in rural Bangladesh. Among these *bambusa vulgaris* (locally known as *baria*, *barak*, *bahini*, *ora*, *jai*) is widely cultivated in all the rural areas of Bangladesh, and it represents 70% of the clump of homestead bamboo. Among others, *bambusa nutans* (locally known as *peechele*, *kayilta*), *bambusa longispiculata* (locally known as *mahal*, *talla*, *bon*, *sakua*), *bambusa burmanica* (locally known as *jai bansh*), *dendrocalamus calostachys* (locally known as *barua bansh*) and *dendrocalamus longispathus* (locally known as *ora*, *orali*) are cultivated on a small scale in homestead compounds (FAO Field Document No.9, 1984).
28. Tree branches, twigs and leaves have many commercial uses in both rural and urban areas. A number of rural cottage industries and urban enterprises use these resources as fuel. Other cottage industries and urban enterprises have already been mentioned in the wood fuel consumption section.
29. In rural Bangladesh there are many rivers, *beels*, *haors* and ponds. Most of these reservoirs are used for fish cultivation. Food is required for the cultivation of fish. As organic foods are very expensive and non familiar, most of the projects rely on local foods. Branches of trees, especially the barks, leaves and

twigs of homestead trees are popular diets for the fish. There are some traders who buy tree branches from villagers and sell them to the pisciculture farms. Sometimes, the private owners of ponds, *beels* and rivers also buy tree branches for fishing projects. Branches of trees are used not only as food stuffs but for fish holding in ponds and other reservoirs as well.

30. Twigs, leaves and the seeds of some trees are popular fodder for domestic animals. The leaves, twigs and seeds of acacia trees are good quality fodder. The leaves and twigs of jackfruit trees are also good quality fodder. The leaves of neem and bamboo are also treated as fodder. The whole banana tree is also a kind of fodder for livestock.
31. In rural areas, a number of cash crops like *poto*, chili, sweet potato, potatoes, and many other kinds of vegetables need some kind of protection from livestock. Sometimes grain fields also need protection from goats, cows and buffaloes. Generally small stems and tree branches are used as materials for fencing these grounds.
32. It is necessary to have at least a few helpers for making furniture or household items from timber and bamboo. At first, the helpers or wood cutters cut trees as required, then make lumber by using big *korat* (hack saws). After that, the helpers assist in polishing the woods and in making the parts of different items. For bamboo, helpers are needed to cut and clean them which is a laborious job. A number of helpers are also needed for the walling, roofing and ceiling of new houses and for the repair and maintenance of old houses.
33. Charcoal is extracted from the cooking stoves of rural households. No additional wood or tree branches are required for the purpose. Immediately after cooking of household foods, the burning wood is collected from stoves and cooled by putting some water which ultimately convert into charcoal. Five kilogram of charcoal is sold for ten *taka* (approx). Generally, boys of poor households are involved in charcoal collection. They buy it from households and sell to the blacksmiths of village and nearby bazaars.
34. *Dala, katha, dhama, dol, motka, jhaka* are all containers of different sizes and mainly made of homestead bamboo and cane. These containers are used for many purposes. For example, *motka* is the biggest size of container which is used for preserving food grains like paddy, wheat, rice, lentil and other agricultural crops. It is like a small house built near the dwelling house. The main raw materials used for walls and floors are bamboo and corrugated iron for roofing. *Dala, katha, dhama*, and *jhaka* are used for carrying crops and other food items.
35. The hand fans are made of palm leaves. The fans have high demand in both urban and rural areas because of the hot and humid climate. Although this is a seasonal business, some villagers are involved in fan making activities the whole year. They buy green palm leaves from the tree owners and make hundreds of hand fans after drying the leaves in the sun. In most cases, women participate

in fan making activities. There is an urban wholesale market for selling the fans. The fan makers generally sell those fans in the wholesale markets. There are also many retail sellers who buy from the wholesale markets and sell them in urban or rural areas or railway stations, bus and ferry terminals during the hot seasons. Thus, a number of poor peoples' incomes and employment come from making and selling fans.

36. *Hogla* is a kind of shrub grown in the homestead compound. Generally it is grown in the low lying areas. *Hogla* leaves are good raw materials for mat making. In general, it is grown in a scattered way around the homesteads but some villagers cultivate it commercially. It has also high commercial demand. Most of the rural poor cannot afford cotton mattresses, they use *hogla* mats as bed for at least half the year, especially during the hot seasons. The *hogla* mats are also used for other purposes. For example, it is used in mosques for praying, in many academic institutions for bedding, for sitting cushions and also in many social functions. Generally, women of the poor households are involved in mat making activities, while the male members sell it at the local *hatts* and bazaars. However, to satisfy the demand in the urban markets, sometimes the wholesalers buy the mats directly from the makers.
37. *Golpata* is a kind of leaf grown in Sunderbans (big reserved forest of southern Bangladesh). These leaves are mixed with coconut leaves and used for roofing and walling of houses. As the leaves are relatively cheap and traded by some local traders, the villagers, especially the poor, use *golpata* and coconut leaves for walling and roofing of their houses.
38. These two women were widowed and were also heads of their households. They had no agricultural land and were mostly dependent on homestead forest resources for their livelihoods. In addition, they were earning some money from mat making activities which was almost a full time activity for them and also for their children.
39. In Bangladesh, the social hierarchy is patriarchal. In most cases, this system enforces dependence of the women on men in all respects, including social and economic security. Thus, women in general have no separate identity. Although the basic roles of the women in the family have remained the same for decades, with the change of time and the involvement of women in income generating activities, small changes have taken place. Although in most cases, women still cannot take up any work/job outside the home, they can be involved in some kind of income generating activities within the homestead compound. This not only helps the families but also the status of the women in the eyes of husbands and parents-in-law.
40. There are a number of self-help and income generating programmes in rural Bangladesh and most of their projects are sponsored by non-governmental organizations like Bangladesh Rural Advancement Committee (BRAC), Concerned Women, Ford Foundation, Asia Foundation, Oxfam (British), CARE (America), World Vision and *Proshikha*. They identify the poor and destitute

women and provide informal training for them in handicrafts. They also mobilise local resources like wood and bamboo of homestead forests for making of different products. These products have a market not only locally, but also overseas.

CHAPTER SIX

Homestead Forests, Emergency and Contingency Situations

6.1 Introduction

The previous chapter examined how homestead forests provide useful support for income and employment to the people in rural Bangladesh. This chapter explores the contribution of homestead forests to the rural people during contingency and emergency situations. Most rural people with limited productive assets face many disadvantages during periods when contingency and emergency needs arise.

Before proceeding further, the terms contingency and emergency, as they are used here, are explained first.

The term 'contingency' refers to recurring conditions or events that can be anticipated, if not always predicted, in a given society. In our study this phenomenon covers the incidental needs of rural households that influence the lives of their individual members. For example, the costs which arise to meet the expenses of a sickness, dowry, wedding or other personal and social functions are referred to here as contingency expenditures.

On the other hand, the term 'emergency' refers to unforeseen sudden and dangerous occurrences which because of the danger, demand immediate action. In our study, we have defined this phenomenon to include the condition of natural and human-induced disasters and their impact on the lives of rural people. For example, we have examined the impact of floods, droughts, cyclones, tidal waves, famines, epidemics and war on human lives and explained how people responded on the occasion of such emergencies.

In general, most people in the rural areas are poor. They have a few assets like a small piece of homestead land, a small hut, some furniture, cooking utensils, and a few agricultural and non-farm tools for use in earning a living.

Although agriculture is the largest sector of the Bangladeshi economy, and land its main productive asset, representing both economic and social security for rural people, land distribution is highly unequal. According to the Agricultural Census 1983-84 (Government of Bangladesh, 1984), about 56.5 percent of the rural households were in effect landless (i.e. they had no cultivable land). Landlessness is also increasing rapidly as a result of the rapid population growth, and other social and economic factors. The problems arising out of the unequal distribution of land have important implications for the societal distribution of power, and for institutional developments in the country.

Large farmers dominate local politics, and are able to use their ownership and control over land to exert power over the rural poor via share cropping, employment and other arrangements. They can influence local governments, the cooperatives, and other rural institutions. The formation of co-operatives and other organizations of a formal and informal nature under governmental supervision and assistance is meant to improve poor people's access to productive resources. Their impact on the existing power hierarchy has however been quite limited. As a result, the landless poor who 'own' one of the country's greatest resources - their labour continue to be exploited and dominated by large farmers, who have far more economic power, and who often control the co-operatives.

This vulnerability of the poor, however, is rarely a direct target of policy. If the government's anti-poverty programmes are ever to be successful, they must aim to reduce the poor people's sense of vulnerability by ensuring flows of food and incomes to meet consumption needs at bad times of the year. While many programmes encourage and promote rural saving and investment, few programmes try to reduce vulnerability directly by enabling poor people to gain disposable assets which they can realise at will to meet their contingent and emergency expenditures. For

example, some schemes of the United Nations Development Programme (UNDP), CARE International, Bangladesh Rural Advancement Committee (BRAC) and Bangladesh Rural Development Board (BRDB) allow poor people to earn food or money when they need it, which help them to minimise their seasonal subsistence deprivation. While these schemes are helpful their impact is limited. This is because they do not provide the poor people with assets with which they could generate additional incomes over a period of time. It must be conceded that the most valuable asset in rural Bangladesh, land, is scarce, and cannot therefore be made available to the bulk of the poor people. The observed heavy reliance of the poor people on the homestead forestry resources is directly related to this scarcity of land. Other productive assets such as perhaps a sewing machine or a hand or a power loom or other simple machines to process crops might be useful to the rural poor. But providing them in adequate quantities would be expensive and quite possibly beyond the means of the government or other supplying agencies. Hence, the reliance on homestead forestry for support in all kinds of regular and non-regular needs is going to continue.

This failure of the rural development programmes has compelled rural people to rely on their own resources such as a few trees, plants and herbs in their homestead land for example. But most households lack such resources, and depend on their usually meagre subsistence incomes derived from share-cropping or from the cultivation of rented land. Very few of these households have valuable assets such as livestock. They might have a small collection of ducks, hens, goats or rarely a few livestock. So, they are often vulnerable, and have few buffers against emergency situations. They are also vulnerable when it comes to normal contingency expenditures. Even 20 or 30 years ago, such needs used to be met out of cash savings or from borrowing from relatives, neighbours, friends, or money lenders. Nowadays, however, such support has largely dried up, and some contingencies have become prohibitively expensive. Mutual help through patron-client relationships has gradually eroded or has disappeared as the rural poor's ownership of land, cattle and jewellery has dwindled. Poor people are, therefore, quite defenceless against **emergency** situations like floods, droughts, cyclones, wars, crop failures, home fires and famines which

make most of them vulnerable. Similarly **contingency** supports arising from the costs of accidents, sicknesses, dowry, wedding and other social functions, as well as expenses for the odd court case also make the poor people more vulnerable.

The vulnerability of the rural poor is the result of the lack of land and other resources which contribute directly to their livelihood at the subsistence level and prevents them from building up assets to fall back on in times of emergency and contingency. The plans and programmes aimed at alleviating rural poverty have not addressed this problem and there is no alternative to the patron-client arrangements which once helped the poor over any emergencies and contingencies.

One possibility, seldom considered by the planners, policy makers or researchers, might be to look upon homestead trees as a kind of a 'savings bank' for the rural people. This is because trees are often used as an alternative to land, jewellery, standing crops or human labour as a source of income and/or emergency funds. Most rural people have at least a small homestead plot with a few trees which provide fuel, food, fodder and house building materials in normal times as well as emergency help in times of crises. Over recent years, such reliance on 'homestead forest resources' on the part of the rural poor has grown steadily. As homestead trees have become more valuable in recent years, poor people are able to sell at least a few during their emergency needs, and still have some left for regular use in normal time.

Some specific types of emergency and contingency needs which are met with homestead trees are discussed below.

6.2 Wedding Expenditure and Homestead Forests: A Brief Overview

There is a body of rather scattered research analysing how homestead forests and forest products are used in coping with important contingencies. For example, Parkin (1972) noted how the poor people in Kenya disposed of not only land, but palm trees in meeting the demands for dowries for weddings. Hartmann and Boyce (1980) have

also noted how a landless family in rural Bangladesh was forced to sell their homestead trees to meet some contingency expenditures.

How homestead trees and bamboo clumps play a major part in meeting important contingency expenditures such as dowry and other wedding demands in rural Bangladesh is detailed in the next two sections to underline the social importance of these demands in the rural context. In rural Bangladesh, the dowry tradition is an established practice among both Hindus and Muslims. Although the dowry has had a long tradition in Hindu marriages, Muslim marriages too have gradually institutionalised it over the last few generations.

The practice of dowry (a payment by the bride's family to the groom's) did not exist even two generations ago; indeed a payment by the groom's family to the bride's - for the 'bride wealth' - was the custom among both Hindus and particularly Muslims. Tambiah (1973) notes that a series of changes have taken place over the years, and that both a payment for the 'bride wealth' and the dowry have coexisted for many years among the Hindus and the Muslims.

Gradually, both the dowry and bride price have become more and more demanding amongst many segments of the population, although initially both were traditions involving gifts of jewellery, clothing and other items to the bride herself for personal use. Also, over time, the system has degenerated into one in which the groom's family demands costly items and cash not only for the groom but his family as a whole. Although the demand for dowry varies from one socio-economic group to another, it is the poor who become the worst victims of these demands. As most marriages are 'arranged' by the guardians, it encourages the groom's side to demand a high price for the groom, as an unmarried daughter is more of a burden in the eyes of society than an unmarried son. In most cases, the demands have to be met before the marriage is registered. In any case, if the demand for dowry is not met immediately after a marriage, unwelcome consequences befall the bride and her family. In many cases, the daughters-in-law are mistreated and abused, even tortured by their in-laws and husbands. The demands continue long after the marriage and,

if unmet, result in further physical and psychological abuse and the threat of returning the daughters-in law to their parents' homes for good.

The reasons for the demand for a dowry or a bride price are many, and they are not always straightforward. The economic explanation offered by researchers such as Boserup (1970), Epstein (1973), Goody (1976) and Comaroff (1980), is that a 'bride price' is paid because the bride is considered to be economically 'productive'. The payments are seen as a compensation made to the bride's family for their loss of a productive asset. A dowry on the other hand is paid to the groom and his kin as compensation for the extra expenses of maintaining the bride who is considered 'less productive' (Rozario, 1992)

While this latter explanation may particularly apply in the rural society of Bangladesh, there are other factors involved. With the decrease in the size of land holdings of many rural people and an increase in landlessness, the economic condition of many in rural Bangladesh has deteriorated. This has encouraged some of them to seek alternative means to enhance their landholding by getting the bride's family to pay them such means with land. Another factor is that the groom's family tries to recover some expenses (investments) they may have made in their son. Sometimes the bride's family may pay a dowry because they want their daughter to be married to a man from a wealthy family. This would not just improve the life of the daughter, but raise her family's social status as well. The age of the bride matters too. Economic hardship amongst the rural folk and other social factors have meant that the age of marriage has been increasing steadily for both men and women. In many cases, the well-off families send their children, especially the male ones, to the urban centres for higher education. When they are more educated, they wish to marry educated girls. So sometimes it is hard to find a husband for the less educated girls. As a consequence, some guardians are compelled to pay a dowry to persuade the parents of an educated man. Sometimes the parents pay a dowry because of the bride's complexion and or health. A desirable bride is one who is young and fair-complexioned, otherwise the 'price' becomes higher.

In addition to the dowry, there are other expenses involved in the 'traditional' Muslim and Hindu marriages. Among these are the costs of the wedding, and other costs such as those of clothes, jewellery, and other essentials for the bride and the groom. These are shared by both the families but the larger share is almost always borne by the family of the bride, following long-established customs of rural society.

Then there are the wedding feasts. A feast is held at the bride's home at the time of the marriage, another is held at the groom's home after the bride is brought over to the groom's house. There are also feasts connected with certain pre-wedding rituals like *gayeholud* of both the bride and the groom. This ceremony involves large expenses because some gifts (clothes, jewellery) are exchanged between the families of the bride and the groom, followed by a feast for the families.

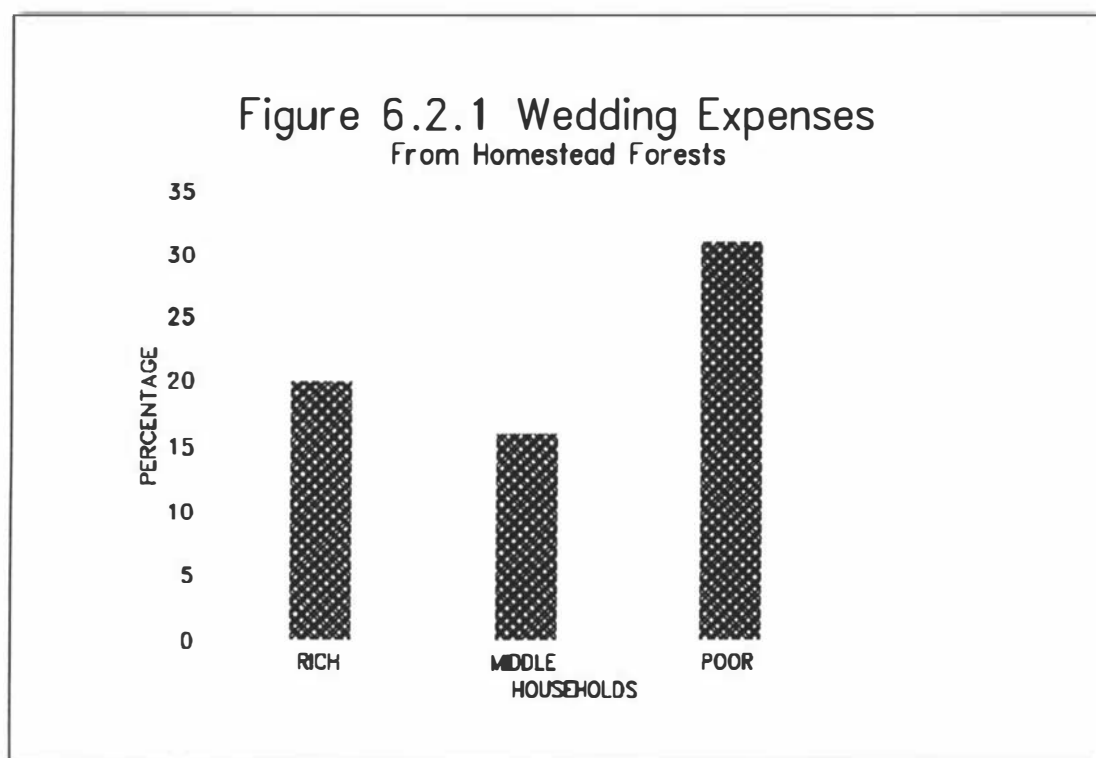
A significant item of expenditure for the groom's family is the payment of the *mohar*¹. The *mohar* may be paid either in cash or in kind (land, jewellery). It is normally paid during the marriage registration but if the groom is unable to pay at that time, he must pay it sometime during their marriage life. The payment of the *mohar* is binding but the groom who is unable to pay it may seek ritual 'apology' from his wife. Although such an 'apology' may be granted, seeking it is socially demeaning for the groom and his family.

Marriage is a social bond and the expenditure incurred on the various social functions at the time of marriage is also obligatory for the rural folk. Although the size of the expenditure varies according to the socio-economic and educational backgrounds of the parties, what is important is that, traditionally, most of these expenditures are incurred by most of the rural people. The rural rich can better afford such expenditures; it is hard however for the poor and the middle income people because they do not have enough assets or savings to draw on. Even if they have some assets like a house, some furniture or cattle, they would always have other priorities to cover. The one area the rural poor may use for contingency expenditure such as those detailed above is their homestead garden or forest. The survey findings outlined below confirm this.

6.2.1 *Wedding Expenditure: The Survey Findings*

The survey findings show how homestead trees and bamboo provide support for the rural people in meeting the expenses connected with weddings.

The data show that at least 25 percent of respondents found homestead trees and bamboo a useful source to meet dowry and other expenses of marriage, when the survey population was taken as a whole. However, for the poor, the figure was 31 percent, followed by 20 percent for the rich, and 16 percent middle income households (Figure 6.2.1). The lower figure for the 'non-poor' probably reflects their access to other assets relative to the situation of the poor.



Although most households faced a similar pattern of expenditure at weddings, there were differences in the way money was spent on the different areas of expenditure.

6.2.2 Village One

In village one, it was found that two rich farm households had used homestead trees for support in meeting wedding expenditures. One household arranged the marriage of two daughters and one son over the previous twenty years. This household is a *khandani* (aristocratic) family and had rented out all of their farming land. They had a stationary shop the income from which helped meet regular household expenditures. They had no savings which could be used to meet the wedding expenditures. For each wedding, the family had to sell some mango trees and fruit. They also sold fish from their pond, used some capital from the shop and borrowed money from their relatives. All these sources helped the family meet most of the wedding expenses. The family gave a new motor cycle (100 c.c.) to the elder son-in-law as dowry which cost about twenty two thousand *taka*. Apart from this valuable gift, they spent about ten thousand *taka* for the wedding feast by entertaining about one hundred guests. At least 25 percent of these expenses was met by selling one mature mango tree and some fruit. The household head further claimed that, while he had spent a lot of money for the elder daughter's wedding, he was forced to reduce his spending on the second daughter's and the elder son's weddings because of diminished financial ability. The second rich farm household in the village had even more farm land, 9.3 hectares, and carried on a business in seasonal crops. Although he was a solvent farmer and an established business man, he had to sell two mature mango trees (for about twelve thousand *taka*) during his second daughter's wedding just to meet the expenses. As his daughter was illiterate and the family wanted to have a literate and employed son-in-law to help raise their social status, they paid a large amount of cash as dowry. The family also arranged a grand wedding feast in keeping with their perceived social status. This cost a lot of money which was raised by selling paddy and other crops, trees and fruit, in addition to using some cash.

Two medium income farm households of village one also used homestead trees and fruit in partially meeting the wedding expenses of family members. One family spent money on a son's wedding, while the other family spent it on three of their daughters' weddings. The expenditures incurred by the first family was mainly on social

functions such as the wedding feast, and on purchasing clothing which had cost about seven thousand *taka*. At least one third of these expenses came from the sale of trees and fruit.

The second family spent a large amount on the dowries paid for three bridegrooms, and on social functions and the purchase of clothes and jewellery for the grooms and the brides. The family had 0.6 hectares of farm land which was the only economic asset for the family. They had no savings to use in the weddings. However, they had a relatively large homestead compound (1.2 hectares) and there were some trees in the homestead. The household head informed us that, to raise money for wedding expenses for his three daughters, he had sold trees and fruit valued at about 50-60 thousand *taka* over the last twelve years (1972-1983).

Five poor farm households of village one had also partially supported the wedding expenses of their family members by selling fruit and homestead trees. Among the five households, three were Muslim and two were Hindu. One of the Muslim households heads informed us that he had arranged his sister's wedding seven or eight years ago. As he was very poor, and only had 0.2 hectares of farm land along with a few other small assets such as a bed, a few kitchen utensils and eight chickens, and only two members out of a family of nine were earning an income, he had to sell a young, pre-mature mango tree to meet the expenses of his sister's wedding. An amount of 3,500 *taka* was paid in cash as dowry, and a wrist watch costing 500 *taka* was also given to the groom.

Out of the other two households, one was settled in this village only fifteen years earlier. The household members stated that they had some trees at their old house. During the wedding of their first daughter, they spent at least fifteen thousand *taka* for the dowry, of which at least two thirds were provided by selling two pre-mature mango trees. The other family had neither farm land nor other valuable assets such as cattle or jewellery. This family arranged their daughter's wedding when she was only fifteen years of age. Although the family borrowed some money from their

relatives for their daughter's wedding, they had to pay it back in the following year by selling one mango tree and 10-15 bamboo clumps.

Both of the Hindu families had arranged the marriages of their daughters, and spent a lot of money on dowry and wedding functions. Both families had businesses involving fish. One family had seven family members, while the other had 13. Neither family had any farm lands and only two members were income earners. Both families had some jewellery belonging to the brides' mothers, which helped to partially meet the wedding expenses. As both the families had fish businesses, they had some capital (about five thousand *taka*). During the weddings, both families were forced to spend at least 50 percent of their business capital. But this was not enough. They tried to borrow money from the rich farmers, but failed because of the lack of guarantors. As they needed more money, they were compelled to sell their trees, mainly mango, jackfruit and palm trees and bamboo to meet the rest of the wedding expenses. One family sold one mango and two mature palm trees worth about 12 thousand *taka*, while other family sold two pre-mature jackfruit trees and 20-30 bamboo valued at about 15 thousand *taka*.

6.2.3 Village Two

In village two, seven households, all poor, supported themselves from homestead trees on the occasion of marriage of family members. Out of the seven, four were Hindu and three Muslim. One Hindu family had eight family members, and only the head of the household was a regular income earner (tailor). This family had no farm land, but had a homestead plot with a few trees. Before the Bangladeshi liberation war (1971), they had at least 70 trees, but about 75 percent of these trees were destroyed during the war. However, the family still relied on the rest of the trees which not only met their need for fruit, fuel and house building materials, but also helped them in contingency situations. For example, their elder daughter's wedding expenses compelled them to sell four mature mango trees.

The second Hindu family had a similar situation. However, the difference was in terms of their occupations and land ownerships. The household head was a retired employee who inherited his maternal grandmother's homestead land. This family informed us that, before the war of liberation (1971), they had many fruit trees (about 50), especially mango and palm trees, and that a major portion of their family expenditures was met by selling fruit. As most of the trees were destroyed during the war of liberation, their incomes from this source were substantially reduced. The situation worsened even more during the wedding of their elder daughter. The nominal pension income of the household head was not enough to meet the wedding expenditures including the dowry for the bridegroom. As a consequence, the family was forced to sell two mature mango trees which met at least half of the wedding expenses.

The third Hindu family reported that, over the last twenty years, they had sold at least 20 trees. This helped them meet both the wedding expenses of their elder daughter, and other, more regular, family expenditures.

The fourth family reported that they used to have a big homestead plot (0.3 hectares) and a large number of trees (about 60) including mango, coconut, black berry and tamarind in the homestead. But at least 50 percent of these trees were destroyed during the war of liberation. However, the head of the household said that out of the existing trees (about 30), at least 13 had been 'usurped' by a neighbour, five trees had been sold during the wedding of two family members (one daughter and one brother), and two trees were cut down for the cremation of his wife.

Among the three Muslim households, one family was very poor and the only earning member, the head of the household, was a wage earner. During the marriage of the elder daughter, the family had spent three thousand *taka*, of which seven hundred came from selling one non-mature mango tree. The rest was borrowed from a rich villager and had to be paid back by working as a day labourer for the lender (bonded labour).

The second family had not only paid a dowry to the groom, but had taken the groom into their home as *ghorjamai*. As the family head was aged, unable to earn and had no farm land or other valuable assets, they were compelled to sell some of the trees for wedding expenditures.

The third household was a small family, but it too was forced to sell a few trees during their elder daughter's wedding. There was a big homestead plot (0.3 hectares) and at least 70 trees which the family enjoyed as a joint unit, until the father died. The land along with the trees, was divided among the sons soon after the father's death. As a consequence, the next generation of the family had smaller plots (0.1 hectares) with fewer trees. But having no other assets, this household was forced to sell four trees during a daughter's wedding.

6.2.4 Village Three

In village three, six poor households reported that they had used homestead trees and bamboo to raise money connected with the wedding expenditures of their household members. Out of the six, two families had female heads and, unlike the families with male heads, these families were much more dependent on homestead forests because of their lack of earnings. One family had no daughter but the (female) head had to arrange her son's wedding. She spent at least ten thousand *taka*, of which at least five thousand *taka* was raised by selling trees and bamboo. The second family had to arrange the wedding of one of the daughters and a son, and both weddings had cost about eight thousand *taka* of which about three thousand came from selling one pre-mature mango and one palm tree.

The third household head was a share cropper and had a family of eleven members. Only two members were income earners, and both of them were wage labourers. The family had spent at least 12 thousand *taka* as dowry for the elder daughter's husband. Having no other sources of extra funds, they sold two pre-mature mango and one palm trees for the dowry. They were able to sell some trees because the head of the

family inherited some trees from his father's homestead soon after the father's death. Otherwise, it would have been very difficult to raise the money for the dowry.

The fourth household head had retired from paid employment. He reported that he had arranged marriages for three of his daughters. Although he had used the savings out of his pension, for one of the daughter's wedding, he had had to spend a lot more for the other daughter's marriage and this money came from selling fruit trees like mango, jackfruit, palm etc and bamboo. The head of the household reported that although he had spent large amounts (about 20 thousand *taka*) on the purchase of a bicycle, a radio, some ornaments, clothing and other necessary materials, he did not feel that he was under compulsion. Though dowry is usually a social obligation for many poor households, this family explained it in a different way. The head of the household informed us that he had spent the money out of generosity and to maintain his 'social status'. By social status, he meant that this family was of a 'noble lineage', and his ancestors were wealthy and influential people in the locality. This made him spend the money he did out of a sense of 'social propriety', although it was beyond his own ability at the time he made the payment. However, he admitted that he had to dispose of some trees and bamboo for money which would otherwise have been spent on family welfare.

The fifth household head was a rickshaw puller who was the only income earner for a family of seven members. He reported that at the time of the marriage of his elder daughter in 1972, he spent 1,000 *taka* of which 500 *taka* was spent on the social functions and another 500 *taka* was given as dowry, and both of these came from selling one pre-mature mango and one *rendi* tree.

The sixth household head was a cultivator who reported that his elder daughter's marriage in 1982 cost him 7,000 *taka* of which 3,000 was raised selling homestead trees.

It is worth noting that none of the survey respondents from the rich and the middle income households of village two and three relied on homestead forests resources to

meet the wedding expenses of their family members. One important reason for this was that these households had enough resources other than homestead forests to use in times of need.

6.2.5 Village Four

In village 4, nine households reported using homestead trees and bamboo for wedding expenditure. Among the households, two were rich income households, two others were middle income households, and five were poor.

Out of the rich households, one spent at least 50,000 *taka* on a daughter's wedding. Although this household was an affluent farming one, and had enough land (about 5.7 hectares of cultivable land) and other assets, it was reported that it sold neither land nor any other valuable assets other than resources from its homestead forest to raise money for the wedding. It used some savings (about 20 thousand *taka*) which came from selling jackfruit. In addition, the family sold four mature fruit and timber trees worth about 30 thousand *taka*.

It was reported by the second rich household that the family spent at least 40,000 *taka* on the wedding of the elder son. Most of the money was spent on the social functions, and to buy ornaments and clothing. The family further reported that they had a relatively big (0.7 hectares) homestead garden especially of jackfruit and banana trees which contributed at least twenty thousand *taka* to the family income every year. So it was not much of a problem for the family to spare the large amount it did at the time the of wedding.

One of the middle income household heads reported that his family spent at least 20,000 *taka* on his own wedding. Although he was a primary school teacher, and had a stable income from both his job and the land he owned, still the expenditure proved burdensome for his family. So, when he married twenty years ago, he had to raise at least 50 percent of the expenses from homestead forest resources.

The second middle income family head was a cultivator, and the family head indicated that because his parents had both died, he had to arrange the wedding of one of his sisters. This cost 22,000 *taka*. He further said that, as he had a very limited cash income from the agricultural resources, he was forced to raise most of the required expenses (about 75 percent) for the wedding by selling one jackfruit tree and three timber trees (mature).

Among the five poor income households, one household head reported that he was a fruit trader and that he spent at least 12,000 *taka* on his son's marriage mainly to buy ornaments and meet the cost of the feast hosted by the family. He further reported that at least 80 percent of the expenditure was met by selling of two homestead forest trees, especially the pre-mature jackfruit trees.

The second respondent was a small cultivator who reported that he had spent at least 11,000 *taka* on his son's wedding. At least 3,000 *taka* was raised from homestead forest sources. These included selling one pre-mature jackfruit tree and a few bamboo.

The third respondent was a fruit trader and reported that he had arranged his elder daughter's wedding some six years ago and spent at least 12,000 *taka*. The total amount was borrowed from a money lender (a rich farmer) at a high interest rate of 75 percent. Although he started repaying the money along with the interest from the following year, he was unable to repay the total amount in one year. As a consequence, the repayable amount increased further because of the high interest rate and he was compelled to sell three jackfruit trees to repay the amount.

It would be appropriate to digress here and explain the situation with regard to credit availabilities in Bangladesh villages. Banks and other organised lending institutions operate mainly in the urban areas. Those that have rural branches cater only to the needs of the rich and the middle farm households who can put up an equity and are generally creditworthy. For the vast majority of the poor, these institutions are inaccessible. They therefore have to rely on either close kin, friends and households

of the same economic group, when their needs are small, or on private money lenders who operate in their areas. This latter group comprise usually rich farmers or other village entrepreneurs. They are prepared to lend larger amounts either for agricultural uses to enable borrowers to meet an emergency or a contingency expenditure. Because of their near-monopoly situation they charge exorbitant interest rates-sometime ranging up to 75 percent². This means that the borrower is often unable to repay the loan and, is forever indebted to the village lenders. It is worth noting that accepting interest is against the islamic *sariwa* law, and Bangladesh is a country with a large Muslim population. Nevertheless the practice of 'usury' is quite common in the rural areas. Thus, greed and differences of social class go against one of the principles of the Islamic law to perpetuate a social evil of which many poor villages become victims.

Getting back to the survey responses, the fourth household was a joint family, and the household head reported that, he had arranged the weddings of his two sons and a granddaughter. He further reported that as the family had fourteen members, and only two were income (wage) earners, he was unable to obtain money from any sources other than homestead forests. He did it by selling jackfruit trees.

The fifth household head was a 90 year old man. After the death of his first wife, he married a second time twelve years ago. As there was a big age gap between him and his wife, he was compelled to provide some valuable assets (mainly gold ornaments valued about 10,000 *taka*) and a large amount in *mohar*. He also spent about 5,000 *taka* for the wedding feast. As a consequence, he was under financial stress and had to sell five to six fruit trees which met at least fifty percent of the wedding expenses.

6.2.6 *The Economic and Social Obligations of Weddings and the Role of Homestead Forests in Meeting such Obligations*

The discussion above explains the usefulness of homestead forests to a significant number of rural people on occasions such as weddings. Without the support of such

an asset, most households, especially the poor ones, would feel acutely desperate and vulnerable in times of a regular and predictable needs in economic, financial and social terms. Inability to pay the dowry would often considerably reduce the chance of arranging a family member's marriage. The consequence of this would be very damaging economically, socially and psychologically not only for the guardians but also for the unmarried family member, particularly a female member.

In rural areas, early marriage of the female members was a common practice until the early 1970s. For example, the mean age at marriage for woman in 1927 was 10.9 years. By 1947, this had risen to 11.2, which gradually increased to 13.3 by 1957 (Momsen and Vivian, 1993). This had further risen to 14 in 1971 (Hong, 1980). In the Pakistani period (up to 1971), a wedding was not considered as much of a burden for many rural households because they had different kinds of disposable assets such as a small piece of cultivable land, some furniture, a few head of cattle etc. But the war of liberation (1971) dislocated the lives of many rural people as the whole country was scarred by the Civil War. Many of the railways, roads and bridges were damaged or destroyed and, behind all this, were the dark memories of arson affecting one village after another, looting, rape, and execution. Cultivation was neglected in that year not only because of the massive migration of nine million people to India but also because of the scarcity of fertilisers, pesticides and irrigated water. As Bangladesh became independent (December, 1971), most of the refugees returned home and started a new life. Although mass starvation had been avoided, many of the rural poor started selling land and other assets to meet basic needs such as food, clothing and shelter after the devastation caused by the war. The situation was further aggravated during 1974 when there was a sharp increase in food prices which was caused by a near-famine situation. As people started losing important assets to be able to buy food and other basic items, they became more defenceless against social demands such as the times of marriage and dowry payments. As a consequence marriages, especially for the girls, started getting delayed. Although late marriages have had a favourable impact on population growth, they have caused psychological sufferings for the unmarried girls and their guardians. In rural areas, there are no organised security arrangements for the villagers. As a consequence,

most of the poor people feel insecure for their unmarried girls. Sometimes there is the fear of sexual abuse by local gangs. Sometimes some influential farmers take advantage of poor people and abuse their unmarried girls. Sometimes the poor are compelled to accept the marriage of their young daughters to aged persons who already have a wife and adult children. Sometimes guardians are forced to arrange the marriage with a vagabond or an unemployed man who demands money and other valuable articles from the in-laws. Failure to have such demands met can result in abuse of the wife not only psychologically but physically too. Another problem is the community outlook. If the girl is not married in time, not only her youth is considered spoiled, her family becomes the target of gossip of the neighbours and the community. Moreover, the ultra conservative religious leaders declare a 'fatowa', an edict, which prescribes early marriage of girls not only for the so-called well-being of the girl and her family, but also for the welfare of 'society' as a whole. Unmarried women are therefore regarded as a threat to the moral atmosphere of a community.

Another important phenomenon is the growth of a new rich urban class made up of civil bureaucrats, army officials, contractors, industrialists, political merchants and blackmarketeers who have been able to amass immense wealth in a short period of time since the war of liberation of 1971. This class spends their wealth on their every comfort and luxury. Since marriage is an important social event, they spend considerable proportions of their wealth on marriages. As a consequence of their immense wealth, an unwritten rule about giving a 'valuable gift' at weddings has developed within this class. The daughter's parents hand over 'valuable gifts' to the groom's family in order to marry off their daughters, so that their daughters could lead a peaceful life in comfort and luxury at the in-laws' or husband's residence. The practice of 'valuable gifts' has had a negative impact on the rural marriages too. Most of the rural rich people tend to follow the urban practices in marriages of their daughters, including the offer of 'valuable gifts' to the grooms' families. This practice has now extended to the poorer segments of the rural population. Although the payment of a 'dowry' is an established practice, there were no hard and fast rules in respect of 'valuable gifts'. The influence from urban areas has made the value of the dowry an important issue. About 20-30 years ago, the family of the groom among

the poor would perhaps demand valuable articles such as a radio set, a bicycle or a small piece of land as dowry. Nowadays their attitudes have changed so that they demand articles of greater value, such as colour television sets, motor cycles, or a job or a substantial amount of cash, ranging between 10 thousand and 50 thousand *taka*, as dowry. These kinds of demands compel many poor people to count on their last resources or assets to meet them. Homestead forest resources help many poor people in meeting such demands, as documented in the previous section.

Marriages involving wealthy urban brides can be rewarding for prospective grooms from rural areas, especially where the financial expenses for educating the groom for a career can be reclaimed. When the bride's family comes forward to make the match, the groom's family would agree subject to being given valuable gifts such as cash, land or other assets in consideration of the groom's educational and other expenses. This practice has a negative impact on the economy of the rural poor. When the guardians of a girl look for a prospective groom, they are forced to offer more valuable gifts as a dowry, a burden such families can seldom afford.

Another type of a matrimonial arrangement occurs between a rich and a poor family. If a poor household has a talented boy, a rich household may offer to support his educational expenses in return for a promise to marry a girl from the rich family. This means that the poorer families with girls also have to come up with higher offers to match those of the rich families. The search for educated grooms therefore becomes very expensive for the poorer families who must sacrifice a greater proportion of their assets including homestead forests.

So strongly felt are these social and psychological obligations, that most poor people come forward with their last valuable resources like land, cattle, jewellery and trees to pay for a family member's wedding. The survey findings confirm that many rural families, especially the poor, rely on a small stock of assets such as homestead trees for such expenditure.

6.3 The Role of Homestead Forests on Contingencies Other than Weddings

Having discussed how the rural people use resources from the homestead forests to meet the expenses of a major family commitment, particularly the wedding of family members, we turn now to the role of homestead forestry in meeting the financial needs of the rural people in other areas of ordinary and extraordinary expenditure. Such expenditures arise out of a) social and or religious ceremonies, such as funerals or religious festivals, in which gifts and offerings are made; b) physical incapacity, including sickness, accident, and other medical contingencies; c) expenditure on basic consumer durables like furniture, clothing, household utensils, umbrella, lamps etc.; d) irregular expenses such as those on civil or criminal litigations; e) regular outgoings on agricultural inputs and tools such as seeds, irrigation water, fertilisers, pesticides, spades, axes and ploughs; f) costs of building, maintenance and repair of dwellings and tools; g) occasional purchases of valuable assets, such as agricultural land and cattle; and h) other expenditure such as the repayment of a loan, costs of education of family members, and, sometimes, investments in a small business.

Demands similar to those detailed above are part of the rural household's regular experience but create great hardships for the poor. Several studies exist which document these aspects narrowly. Among these are the ILO Study (1977); Esman 1978; Chambers, 1983; Chamber & Longhurst, 1986; Longhurst, 1986; Lipton, 1986; Sinha, 1984; and Griffin, 1985. Chambers, for example, observes that the poor households are locked into a cluster of disadvantages, which he calls a 'deprivation trap'. This has its roots in the physical weakness, isolation, poverty, vulnerability and powerlessness of the rural poor. He further notes that as most of the poor become even more vulnerable during crises, it is often necessary for them to mortgage or sell capital assets such as land, cattle, jewellery and trees (Chambers, 1983) which pushes them into an even deeper state of immiserization.

6.3.1 *Survey Findings*

The survey findings confirm that a significant number of rural households especially the poor, relied on homestead forests for different contingency expenditures which are detailed below.

6.3.2 *House Building, Repairs and Homestead Forests*

A large proportion of the rural people use homestead forests as a source of house building and repair materials. The data indicate that, despite the differences amongst household categories, about 90 percent of the survey households used homestead trees and bamboo for house building and repair. The respondents further reported that homestead forests were used not only as a ready source of house building materials, they were also often a source of cash for buying other materials for houses and covering the costs of human labour for building their houses.

6.3.3 *Food, Other Daily Essentials and Homestead Forests*

Homestead forests help, directly and indirectly, to provide food and daily essentials to a significant number of households. The survey data indicate that at least 52.7 percent of the poor households and 30.7 percent of the middle farm households were assisted by homestead forests in regard to their needs of basic food items such as rice, flour, oil, vegetables, salt and other cooking ingredients and other essential items like kitchen utensils and soap. Most households claimed to have sold not only fruit to buy food items and other essentials, but trees and bamboo too.

6.3.4 *Agricultural Inputs and Homestead Forests*

Many rural people perceive a need for different kinds of inputs such as improved seeds, chemical fertilizers, irrigation facilities, pesticides and so on. They also need ploughs, spades, axes, ladders and other agricultural equipment for the cultivation of land. Human labour is another essential element required for ploughing, weeding,

irrigation and harvesting. As most of these items are expensive, many people count on homestead forests for financial backup. The survey data indicate that 80.7 percent of the middle farm households were supported by homestead forests, followed by 70 percent of the rich and 37.8 percent of poor households. Although most of the rich and middle farm households had other means such as saved cash, they too relied on homestead forests for major support in times of need. The middle and rich farm households were more reliant than the poor ones, mainly because these households had more homestead forest resources to fall back on. Another factor is that the rich and middle farm households had big plots of cultivable land which needed inputs and finance in larger doses, whereas the poorer households had relatively small plots or no cultivable land, and therefore smaller investment needs³.

6.3.5 *Education Expenses and Homestead Forests*

Expenditure on children's education is not likely to be a directly productive investment for most of the rural poor because their male children traditionally help their parents in farming activities, while the female children help in other household activities. Though people are becoming more aware of the importance of education, and are beginning to send their children to school, the poor households cannot afford to pay for their children's education. Although primary education is free, with no tuition fees, one still needs money for buying clothes, books and other necessities. For secondary and tertiary education, most students have to pay a tuition fee, the examination fees and, in some cases, hostel and or boarding costs. The survey data indicate that 38 percent of the middle income households derived funds from homestead forests for their children's education, as did 30 percent of the rich and only 12 percent of the poor households.

6.3.6 *Clothing and Homestead Forests*

Clothing is one of the basic needs of all human beings. But it can be quite difficult for many rural poor to buy even a single piece of cloth for their family members because prices can be too high for them. For example, one ordinary piece of *saree*

can cost one hundred *taka* which is the equivalent of three days wages for an agricultural worker. A piece of *lungi* likewise can cost around forty *taka*. As a consequence, many poor families cannot afford to buy clothes with their regular incomes and most would depend on other resources. The survey data indicate that 51.3 percent of the poor and 50 percent of the middle farm households were dependent on incomes from homestead forests for buying clothes for their family members, as were five percent of the rich farm households. However, it was reported that most of the middle and rich households bought good quality clothes for their family members, and in most cases, these clothes were in the nature of spare or extra dresses, whereas what most of the poor households bought was of inferior quality because of their limited financial abilities. In most cases, they were buying only the bare essentials.

6.3.7 *Sickness, Treatment and Homestead Forests*

There are many forms of sickness suffered by the rural people, and many factors contribute to them. Malnutrition, unhealthy living environments, pests and parasites all have a role in the observed incidence of sickness. Nutritional intakes of the rural Bangladeshis have fallen from an average of 2094 calories in 1975 to 1943 calories in 1982 (The Third Five Year Plan, 1985-90). This deficiency can cause sicknesses such as night blindness, iron deficiency (anaemia), iodine deficiency (goitre) and protein-calorie deficiency (kwashiorkor and marasmus), for example. Communicable diseases like cholera, typhoid, tuberculosis, leprosy, tetanus, diphtheria, whooping cough, measles, rabies, venereal diseases and parasitic diseases are all wide spread in the rural areas of Bangladesh. Among the females, the sequence of pregnancies, childbirth and postnatal complications, gynaecological problems and age related sufferings are quite common. There are also the chronic cases like gall stone obstructions, ulcers, tumours of the uterus, heart diseases, kidney problems, prostatic enlargement, all requiring surgery.

The findings of the survey establish that 58 percent of the poor households found support from their homestead forests during a family illness. This was followed by

38 percent of the middle income and 35 percent rich farm households respectively. For poor households, most of the chronic and acute cases, such as the cases involving surgery, needed treatment in modern hospitals, costing a lot of money. Similarly, pregnancy and child delivery complications, parasitic and communicable diseases also needed substantial expenditures. On the other hand, viral diseases, such as fevers, and skin diseases cost less.

As most households were unable to pay for modern treatment in urban hospitals and clinics, at an early stage of these sicknesses, they were treated either by a local *kaviraj*, or a quack doctor or, only eventually, by qualified doctors at government hospitals. But the most complicated cases were referred to the urban hospitals and clinics (various aspects of medical treatment are dealt with in full in chapter eight). These involved large expenditures for the families. For example, one poor family in village 4 reported that it spent about 15,000 *taka* for a gallstone operation. Having no other valuable assets to fall back on, this family sold 13 mango trees to raise money for the treatment. Two female headed poor households of village 3 also sold trees for the treatment of their husbands. One family sold four pre-mature mango trees for the treatment, raising about 3000 *taka* whereas the other sold two *rendi* trees for 2,000 *taka* to pay for the treatment. Another female headed poor family of village 2 sold several mango trees for her husband's treatment. One poor family in village 1 spent about 2,000 *taka* for the wife's treatment (a gynaecological problem), and the amount was raised by selling several mango trees.

These examples show that the poorer households are more dependent on funds from their homestead forests to meet contingency situations involving sicknesses. The rich and the middle farm households are not always dependent on the sale of trees and bamboo to raise money for medical treatment. However, it was reported that some households in these categories sometimes did rely on homestead forest resources for emergency medical expenses due to a lack of cash or other marketable goods. They also had what they considered 'surplus' trees or bamboo. In some cases a member of an extended family needed such treatment. For example, one household in village 3 spent 7,000 *taka* for the treatment of a brother, who was separated from the joint

family three years earlier. Another family of the same village had spent 5,000 *taka* on an aunt's (mother's sister) operation. The same family also spent money for the medical treatment of the maternal grandfather.

6.3.8 *Credit Repayment and Homestead Forests*

The survey data indicate that over 50 percent of the poor households do not own any land other than their homestead plots, and about 70-80 percent of these households do not possess enough land or other valuable assets to support their family budget, particularly in times of contingency need. One of the causes of landlessness relates to borrowing for consumption purposes by mortgaging land. Their inability to repay or service the debt often leads to a forced sale of their land to the money lenders who are usually the rich farmers. With increasing landlessness, the predominant existing social organization (the patron-client relationship) has been partially eroded in recent years. As many of the poor households are involved in share-cropping arrangements (about 20 percent of survey households are share-croppers) and many landless and near landless households depend on agricultural wages, a credit system exists covering the rich and the poor households. This is a form of bonded servitude which ties the poor farmers in long term debts to be repaid through free labour.

The survey findings indicate that about 43.2 percent of poor households were reliant on homestead forest resources to service or partly repay their debts. The amounts raised and the modes of repayment varied widely from household to household. The average credit amount raised varied between 1,000 and 5000 *taka*, and the interest rate paid varied from 13 to 75 percent, when the rate of annual inflation was around 12 percent. Many poor respondents reported that they needed the money to meet household needs such as food and other daily essentials. Repayments were made by selling trees and bamboo. In some cases, fruit from homestead forest resources were also sold for this purpose. Some poor households used trees and fruit as securities for the loans they managed. This was particularly noted in village 4 where jackfruit trees and their fruit were mortgaged by some poor households. Debt payments raised in this fashion ensures that the families will not benefit from the fruit they might

grow. The families therefore go without an important source of seasonal fruit supply. This must certainly affect their nutritional needs.

The burdens of debt among the rich and the middle income families are usually much less than those of the poor, particularly in relation to their respective incomes or wealth. The reliance on homestead trees on the part of the former to repay debts is also therefore much less.

6.3.9 *Civil/Criminal Cases and Homestead Forests*

Disputes involving land, stealing and robbery lead to court cases which require money. Two types of land disputes were noticed in the survey villages. One was the *khash* land (government land) disputes and the other concerned disputes relating to inheritance. The former dispute happened in village 1 which had several acres of *jola*, low lying *khash*land. As the *jola* is always under water, it was not in use until the water was drained and a barrage constructed during 1975. Since then the land became useable and was treated as a valuable reservoir for fishing projects. In some cases, influential villagers occupied much of the available land unlawfully, and started digging ponds for fish cultivation. Meanwhile, these lands were being officially distributed amongst the landless and the destitute under a *Khashland* Distribution Scheme of the government. Naturally, conflicts arose between the illegal occupiers and the new legal owners. Physical conflicts occurred involving the two groups and even deaths were reported. These lead to court cases over land rights. The cases were always legally complicated and needed good lawyers which cost a lot of money. As there was no legal aid, the poor but legal owners were often compelled to rely on their handy assets (the fruit trees) for the purpose. Another type of court case involved homestead forest resources of families (both Muslims and Hindus) who had migrated to India in the months prior to the war of liberation in 1971. In many cases, the unoccupied houses were looted and the homestead and agricultural lands were occupied by unscrupulous and influential people of the locality. Some neighbours took advantage (illegally) of the absence of the owners next door and annexed their adjacent homestead plots. After the liberation of Bangladesh in

December, 1971, most of the villagers returned home. Many of them got back their homestead plots and lands but many others, especially the poor Hindu families, lost their homestead lands which were illegally occupied by the neighbours. Unable to get back their land through mutual agreement, court cases were often lodged. These tend to continue for a long time, and the complainants had to find money to pay legal expenses. For example, one case in village 2, lodged by a Hindu family against his neighbour's illegal occupation of 13 mature mango trees, lost a significant amount of money. Meanwhile, as the trees remained in illegal ownership, the family was deprived of any fruit and income from them.

In village 3, one poor household head defended himself against a theft case which was lodged by one of his rival villagers. According to the defendant, he was not involved in the theft but, as there was a dispute involving land with the other villagers, the latter lodged the theft case to harass him socially and financially. To defend himself, he had to lease out his cultivable lands and later sell his cattle and part of his house (some corrugated iron sheets). With no other assets to spare, the defendant also sold a few trees to raise money. In village 4, two poor household heads defended themselves in court cases involving cultivable land. One family spent about 20,000 *taka* and another about 2,200 *taka*. These amounts were raised by selling paddy, jackfruit and some trees.

6.3.10 *Land Purchase, Land Lease and Homestead Forests*

The survey data show that about 34 percent of middle farm households bought lands with the help of revenue raised from homestead forests, followed by 30 percent rich and 21 percent poor households. It was also reported that five percent of the poor households obtained lease of cultivable land with funds earned from homestead trees and fruit, as did four percent of the middle farm households. It was found that households of village 4 had more support from homestead forests than did the other villages. For example, among the sixteen buyers of land from the poor households, ten were in village 4 followed by three each in villages 1 and 3 respectively. Households in village 2 did not buy land with earnings from their homestead forests

and fruit, except for one middle farm household. Out of six rich households that bought land using homestead funds, four were from village 4 and two from village 3. For eight middle farm households, four each were from village 1 and 4. All the lease holders were from village 4. The amount of land purchased varied from household to household. It was found that rich households purchased more land than the middle and poor households. For example, one rich household of village 4 purchased three acres of land over the last 20 years and the money (about one hundred thousand *taka*) was raised by selling mature sal and jackfruit trees. Another rich household of the same village purchased two acres of land over the last 15 years and the money again came from forest and fruit resources. However, for the poor buyers of the land, an average 0.1 hectares of land was purchased out of homestead resources and the amount spent was approximately seven thousand *taka*. The size of land taken as leases averaged 0.2 hectares and the cost was approximately 10,000 *taka*⁴.

6.3.11 *Miscellaneous Expenditure and Homestead Forest*

In addition to the expenditure detailed above, many households sought support from their homestead forest resources to meet other types of non-regular expenditure. For example, the excavation and re-excavation of ponds for fish cultivation, development of land for irrigation purposes, investment in petty businesses, payment of bribe to secure a job, buying and commissioning of shallow tube-wells for drinking water, payment of registration fees for land, meeting family expenditure in mishaps like accidental disabilities of earning members and so on.

Despite the differences in household incomes, at least 25 percent of survey households were supported by homestead forests and fruit with respect to the miscellaneous expenditure. There were variations as to the nature and the amount of the expenditures. For example, some rich and middle households used homestead resources as a source of capital for the excavation and re-excavation of ponds for fish cultivation and the development of land for irrigation purposes. On the other hand, most of the poor households had used the resource to meet the expenditures on

cremation, *sraddha*, and other social festivals like *idd*, *puja*, *navanna* and *annaprashan*.

Table 6.3.1 summarises household expenditure data as to the purposes of such expenditure by different household categories.

Table 6.3.1

The Economic Status of Households and Their Reliance on Homestead Forests for Household Contingencies: Summary Findings

Supports	RICH	MIDDLE	POOR
House Building Materials	85.0	96.1	89.2
Medical Treatment	35.0	38.0	58.0
Purchase of Land	30.0	34.6	21.6
Purchase of Clothing	5.0	50.0	51.3
Purchase of Fertilizer, Seeds etc.	70.0	80.7	37.8
Buying of Food, daily essentials	0.0	30.7	52.7
Credit Repayment	0.0	0.0	43.2
Expenditure on Cases	5.0	4.0	11.0
Educational Expenditure	30.0	38.0	12.0
Leased in of Land	0.0	4.0	5.0
Miscellaneous	25.0	24.0	25.0

Sources: Field Survey, 1992 N=120

6.4 Emergency Disasters and Homestead Forests

Disasters affecting the households take many forms. Human generated disasters include events such as the theft of livestock, tools or jewellery; the death of livestock, fire damage and wider occurrences such as civil unrest and war which can instantly impoverish the rural folk. Other widespread natural disasters include events such as famine, floods, droughts and epidemics. In Bangladesh, floods, droughts, cyclone,

tidal waves, epidemics and famines are common phenomena. The human generated and natural disasters can and do interact so that their impacts are cumulative and magnified. In the study areas, most households had suffered from many kinds of disasters. To cope with these situations, they adapted several strategies including the use of forests as a primary source of food as well as for selling fruit, tubers and roots or trees, and bamboo and other homestead forest assets.

Any true understanding of disasters should be grounded in the context in which they occur. The occurrence of disasters may be natural, environmental or man made, but the response to such disasters is greatly influenced by social, economic and structural factors and that is why we have focused on the processes of interaction between disasters and human society. The ways in which the rural people face disasters are a function of the social and economic conditions in which they live. For example, rural people experience the destruction of standing crops and dwelling houses. They lose their cattle and even their lives. They also experience famines, epidemics and other social consequences out of these disasters. This study seeks a holistic understanding of the rural people's responses to such crises. The findings confirm that the rural people's response to disasters should be viewed within the existing social and economic context as well as from local and personal view points. Once we start looking at the responses of rural people, we understand that there are a number of survival strategies that the rural people adopt depending on their varying economic and social conditions. Homestead forests are an important resource that helps many rural people during such emergency situations.

6.4.1 *Disasters, Famine and the Role of Forests: An Overview*

Famine⁵ is a catastrophe afflicting large numbers of people of particular localities or of the country as a whole. Unlike an earthquake (a sudden occurrence), a famine is usually a long-drawn-out calamity in which supplies of food dwindle over months. Famines cause 'starvation' which can be simply defined as a result of lack of food, which can be absolute or relative (Aykroyd, 1974).

There are many causes of famines. Some of the important causes are droughts⁶, floods, cyclones, tidal waves⁷, and wars or civil disturbances.

As famine is a dreadful economic and social phenomenon, social scientists from different disciplines have focused on the causes and consequences of their incidence. One of the approaches to studying the causes of a famine is embedded in the so called 'food entitlement approach' popularised by the economist Sen⁸. The approach concentrates on the forces that determine the bundles of commodities over which a family or an individual can establish command. A person can be reduced to starvation if some economic change makes it no longer possible for him or her to acquire any commodity bundle with enough food in it. This can happen either because of a falling endowment for a person or a family such as from landlessness, loss of other assets like livestock, furniture, jewellery, or the loss of even labour power due to ill health. It can also happen because of an unfavourable shift in the conditions of exchange (e.g. loss of employment, fall in wages, rise in food prices, drop in the prices of goods or services sold by the persons and reductions in social security provisions). Therefore, averting famine can be seen essentially as a question of 'entitlement protection', either recreating the lost entitlements, or providing alternative means as entitlements to the vulnerable groups (Dreze and Sen, 1990)

If we examine some of the worst famines around the world⁹, we can identify the differences in the coping strategies and methods used by the people affected. For example, cannibalism has been recorded in many countries because of a total lack of other entitlements to which the starving people could turn. Although there are taboos against eating human flesh in most societies, in extreme hunger people are sometimes compelled to practice cannibalism as evidenced in the Russian famine of 1891-1892 and the Indian famines of 445, 917 and 1661 AD. Many famine victims, in their desperate search for food, also eat tree leaves, stalks, roots, mixed refuse and even saw dust (Aykroyd, 1974).

Aykroyd (1974) also examined the causes and consequences of the Great Bengal famine of 1943 and analyzed the reasons why thousands of poor people had to starve

and die. He examined the methods adopted by the poor people to survive such a prolonged and severe famine. He noted that many poor people were affected by cyclones in 1942 and 1943 which caused severe damage to standing crops and to stocks of the staple food, rice. The Second World War which affected the Indian subcontinent in many ways, also made the distribution of food from one region to another difficult. Many poor people were forced to sell their domestic assets, like utensils, ornaments, tools, clothes, parts of their dwellings such as doors and windows and anything else that they found a buyer for. Meanwhile, the price of rice kept rising which made it impossible for the poor to afford it. Many who had lost their regular standing entitlements such as jobs, or a share of the crops had to survive on unusual foods such as fruit, roots, vegetables and tubers as the main source of sustenance over a long period. Thus, their resources were severely reduced and their nutritional intake had to come from alternative vegetation even if such alternatives were insufficient to sustain them over a long period of time. The very availability of such alternatives helped them to survive in the face of major disasters.

In the Bihar famine of 1965-66, a higher consumption of green leafy vegetables was found in severely affected villages due to an extensive use of wild leaves. Wild tubers were consumed in drought-affected parts of Andhra Pradesh (Longhurst, 1986).

In the famine in Karamoja, Uganda, during 1980, it was reported that 41 percent of the population subsisted on wild weeds, fruit and seeds collected from the bush (Biellik and Henderson, 1981).

In the Bangladesh famine of 1974-75, people consumed banana trees, wild arum, plantain saplings, leaves and rice husks to survive (Rahman, 1978).

Currey's (1981) study mainly shows how riverbank erosion, heavy rainfall or flood can interrupt agricultural works and reduce productivity causing seasonal unemployment and the destruction of entitlements. High food prices in rural Bangladesh can affect the food purchasing power of the rural poor, which can, in turn, create a famine syndrome, as Currey notes. He focuses on how most of the

poor people had adjusted their food consumption patterns by eating alternative foods, including forest foods, during crisis situations.

Kabeer (1991) in her study mainly focused on the role of poor women in food procurement in rural Bangladesh. She briefly examined how poor women managed food through their own effort (i.e. gathered edible fruit from plants and trees along with borrowing rice or rotten and discarded vegetables from well-off households during the food shortage).

From these studies, it is evident that the main cause of famines is a sudden disruption to regular standing entitlements and that the poor people are forced in such circumstances to resort to alternative, often inferior, kinds of food to survive.

Although this discussion focuses on the survival mechanisms in relation to food adaptability, there is another coping mechanism during famines which poor people sometimes use. This involves the sale or the leasing out of their farm lands and or other valuable assets.

The research findings show that many affected families preferred mortgaging out or selling their farm lands during crisis periods. For example, in Northern Nigeria, many poor people sold agricultural land during crises involving famines. Among pastoralists, sales of livestock are more common, if not inevitable, during crises (Longhurst, 1986).

Jodha's (1975) empirical research in Rajasthan investigated the curtailment of commitments and sale of assets, inventories and migration as the drought progressed through the year. The survey findings show that a series of strategies were followed during out-right selling or mortgaging-out of assets to raise loans. The first coping mechanism was the curtailment in current consumption such as reducing family food consumption, followed by the sales of inventories such as fuelwood, dung cakes, timbers, ropes, mats and wool. Once these were exhausted, mortgaging, and in a few

cases, selling of other valuable assets began. Such a process often involves the loss of articles of sentimental value such as certain ornaments and utensils.

6.4.2 *Natural Disasters and Coping Mechanisms in Rural Bangladesh*

The historical evidence and official records since at least the sixteenth century indicate that the whole of the Indian subcontinent is prone to frequent natural disasters and calamities like floods, droughts, cyclones and earthquakes. Almost every year, disasters cause huge losses of property and life of both humans and animals. From June to early October, flood and monsoon depressions paralyse the normal life of the country. In the pre-monsoon season periods (March to May), Bangladesh is exposed to *kalbaishakhi* (severe storms, popularly known as norwesters) and droughts¹⁰ both of which can cause severe damage to dwelling houses and standing crops. In the post-monsoon season, Bangladesh can experience cyclones of severe intensity. Sometimes, earthquakes occur but their occurrence is not as frequent or damaging as other disasters (Karmaker, undated). As mentioned earlier, most of the disasters cause major disruption to the lives of local residents by damaging properties, crops and lives. These create famines and famine syndromes which make many people vulnerable.

The survival methods used by the rural people are discussed with the help of official statistics and the survey data. The villages covered in the survey have suffered many famines over the years. An attempt is therefore made to analyze historically the nature of these disasters and the methods used by people to cope with them. After this historical review, the survey findings are brought in to examine any significant differences between the long term trends and the present situation. The historical survey is done on a village by village basis.

6.4.3 *Disasters and Coping Mechanisms: Official Data and Brief Historical Review*

6.4.4 *Village One*

In October 1864, village 1, along with other parts of the district, suffered a cyclone and strong winds which caused widespread damage to houses and crops¹¹. A famine followed in their wake, necessitating a government relief programme for the affected people. This programme provided both food for the hungry as an immediate measure and helped with the reconstruction of houses and homestead properties as a longer term measure.

Another severe cyclone swept over this village and its surrounding localities in September 1872, causing widespread damage. Most of the *kutchha* houses (huts made of mud and other non-permanent materials) were destroyed. Although relief measures were undertaken to prevent a famine situation, people relied on homestead forests to a limited extent, but relied more on the forests around their villages, which were still a valuable communal asset for house building materials.

In 1874, when Bihar and Bengal both suffered major famines, village 1, along with other parts of the district, was also affected. The wealthy villagers escaped the worst effects of the famine because of their easy access to the staple food, (rice) from their own lands, despite the poor harvests. The poor and vulnerable, who constitute a large proportion of the rural population, however, were not so lucky as they were mainly without land or other assets. In the early stages of the famine, there was some support from relatives, neighbours and other villagers who shared their food with the poorer people, but as the famine continued, the poor had to rely on unusual food such as fruit, tuber, roots and dry, uncooked food for a regular diet.

There were also many devastating floods in village 1. Among these, the floods of 1890, 1906, 1968 and 1970 have been particularly devastating for the standing crops of the locality. Although small scale grants from the government and the local

authorities were made available, many of the affected people had to rely on their own resources such as grains in store including seed grains, dry food, seasonal fruit, tuber and roots.

In April 1969, a severe cyclone swept over village 1 and its surrounding localities causing widespread damage to properties. Repairs and reconstructions which took place immediately afterward, relied mainly on materials such as bamboo and timber from the homestead forests. By this time, the communal village forests had become more scarce, as land had been cleared for farming and house building.

6.4.5 Village Two

In 1779 and 1783, there were severe droughts in village 2 and in other parts of the district to which the village belonged¹². The main cause of the drought was the failure of rains, which made it difficult for farmers to pay their revenue to the *Raja* (ruler), the absentee land lord. The resulting famine situation was alleviated by forbidding the export of food grains from the locality, and through distributing relief items included food to the distressed people. However, many people survived by eating stored grains, dry food and fruit. In 1784, there were devastating floods in village 2 and its surrounding areas, causing severe damage of standing crops which, in turn, brought about a famine syndrome. The revenue collection was stopped by government order to alleviate the sufferings of the affected people.

In 1799, there was an unseasonable drought in the Gumti and the Meghna river basins, causing damage to crops at high and medium levels and suffering to the people of the locality. However, the regional Collector sanctioned agricultural loans and temporary remissions of revenue to meet the needs of the affected people. Restrictions were also placed on the movement of food grains out of the areas. Many people still had to depend on unusual foods including food from the communal forests and the villages.

Two floods took place in relatively quick succession (in 1853 and 1870) in village 2 along with some other parts of the district. Both of the floods inflicted considerable damage to the crops but not such as to affect the moderate prosperity of the district.

In 1866, when Orissa and Bengal suffered what is regarded as the worst famine of the century, the price of rice rose to five *taka* per *mond* (38 kilograms approximately), which would be about 20 times its price in normal times. The situation was partially alleviated by bringing in food grains from other parts of the country. Many people in the affected areas faced food rationing and had to take unusual foods including some from the village forest.

The whole of the district in which village 2 is, was devastated by storms and cyclones in 1893 and again many non-permanent houses were destroyed. There were heavy floods as a consequence of the cyclones and crops and cattle were destroyed. "Those", wrote the then District Collector, "who had property, borrowed money to buy food at usurious rate of interest, rising to 25 percent" cited in Bangladesh District Gazetteers Comilla, 1977:23. However, most of the villagers relied on village forests and home gardens for reconstruction materials.

In 1897, village 2, along with other parts of the district suffered an earthquake which caused damage to houses and other buildings. In its wake, most of the damaged houses were repaired and reconstructed with timber and bamboo and the village forests were again used extensively.

The winter rice crop of 1905 was much damaged in village 2 and in the nearby areas by abnormally late rainfalls. As a consequence, prices rose rapidly in 1906 and there was a lot of suffering especially in the west of the district. The situation was relieved somewhat with the help of interest free distress loans under the then Agriculturist Loans Act. Many people, however, had to rely on their own store of food grains and or fruit for survival.

The record floods of 1954 and 1970 again affected the majority of the people of village 2. There was also major loss of *aus* (one kind of paddy) crops. Although grants and loans were provided by the authorities, many distressed people had to sell their trees and bamboo to support themselves.

6.4.6 *Village Three*

Village 3 along with other parts of the districts to which it belongs is prone to storms and tidal waves and bores¹³. There is a brief reference in Abul Fazl (1893) to a storm and its resulting waves of 1584. "Most of the houses and boats were swallowed up, leaving only the Hindu Temple's height", noted Abul Fazl. Another great event in the history of the district was the inundation it suffered on June 6th, 1822. The then Collector of the district wrote, "not only rural areas were inundated, my office was many feet under water and most of the roads were swept away". The mighty river, from the fury of the winds, broke over its boundaries in every direction. The river kept on rising rapidly and by the 8th, there had been upwards of five feet of water in many houses. No fewer than one *lakh* (one hundred thousand) lives were said to have been lost on this occasion, together with the cattle, and grains of every description both in store and what was on the ground. In the 'Calcutta Journal' of 1822, the following curious incident was mentioned. "One of our correspondents mentioned that he saw a child who, being only a few weeks old, was on the tree, when the whole surface of the country was under water."

Other recorded devastating storms and tidal bores occurred in 1825, 1832, 1855, 1867, 1870, 1876, 1910, 1965 and 1970. In most cases, there was a general failure of the rice crop and destruction of *kutcha* dwelling houses. However, the cyclone of 1970 was as devastating as the storm of 1822 referred to earlier. Famine was inevitable in the district in the aftermath of this cyclone. Before government and other agencies came forward with their relief measures, the affected people had to support themselves to stay alive. The fruit bearing trees of homestead forests came in very handy for this purpose. Sufficient quantities of fruit were fortunately

available for use. Thus, here too resources of the homestead forests proved extremely valuable to the poor people particularly in times of natural disasters (Rashid, 1980).

6.4.7 Village Four

Several famines have occurred in village 4 and its surrounding areas at different times¹⁴. Among these, the famines of 1662, 1769-70, 1781, 1784, 1787-88, 1906 and 1943 were the more devastating. Naturally, in all these cases, the villagers suffered acute food shortages and starvation. The main factors causing the famines were either crop failures due to droughts or excessive rainfall/tornado/cyclone and/or shortages of regular food supply from other parts of the country. A related factor contributing to the famine of 1943 was the disruption to the import of food from the Arakans and Burma due to the Second World War, which had cut-off the natural links between Bengal and these areas.

Although several measures were taken by the *zamindars*, governments and other voluntary organizations to tackle the famine and the famine syndrome, in some cases the situation was so desperate that most of the poor villagers were compelled to subsist largely on fruit, tubers and roots, if they were available and on aquatic plants during periods of acute crisis (Rizvi, 1975). About the Great Famine of 1781, Lindsay (1781) records: "I saw many instances of men and women diving from their canoes to tear bottom roots of grass and other vegetables as the sources of miserable food". The then District Collector reported about the famine of 1784, thus, "how grave was the distress can be judged from the fact that a brisk trade arose in children who were sold by their starving parents to the low-caste Portuguese and shipped by them to Calcutta" (cited by Rizvi, 1975:35).

6.4.8. Disasters Experienced by Rural People: Survey Findings

Having surveyed the crises the survey villages have experienced in recent history, we now proceed to analyze the findings of our own survey of the four villages conducted in the later half of 1992.

It was noted above that the survey villages used various coping strategies in the period before the liberation of Bangladesh. The present survey, therefore, extends the period to the post-independent era.

As is known and documented, the pressure of increased population and the impact of the liberation war of 1971 forced many rural people to sell their land and other valuable assets. They have, therefore, to rely on alternative resources for their livelihoods. The situation has been further aggravated by frequent natural disasters such as floods, droughts, cyclones, crop failures, storms and so on. Although the survey people of the different regions were affected by different kinds of disasters at different times, we present our findings in a way that makes our analysis comparative and convenient.

It was reported by the survey respondents that most of them had experienced, and had been affected by natural disasters of one sort or another. The resulting crop failures, damages to their dwelling houses, the lack of food, health and sanitation facilities disrupted their lives and livelihoods. The disasters never affected the populations of the villages surveyed here at the same time. For example, village two was frequently affected by floods whereas village one was affected only by the severe floods of 1971, 1987 and 1988. On the other hand, village three was affected by the cyclonic storms and tidal bores of 1970 and 1988. By contrast, village one was affected by the devastating norwesters of 1974 and 1977. Village four experienced the hail storms of 1976 and 1990. All the villages except village three were affected badly by the drought of 1976, 1978 and 1979. Epidemics followed natural disasters, affecting all the villages but in different ways.

The survey data show up variations among regions and farm households. It was reported that 93 percent of the poor households experienced famines followed by 15 percent middle farm households. By contrast, the variations (among the rich, middle and poor) were very little in the case of cyclones, floods and droughts, the reason being that only a few households were spared the consequences of the nature's fury. For example, the poor households suffered damages to their dwellings, while many

rich and middle farmers lost their standing crops, all groups suffering loss of assets. About 14 percent of the respondents also suffered from the epidemics that followed and they were all from the poor households. The region-wide data show that more than 70 percent of the respondents of village one and village four were affected by the droughts followed by 43 percent of village two. About 65 percent of the respondents of village four, three and two, with minor differences among them experienced famines, while another 43 percent in village 1 were affected. Tables 6.4.1 and Figure 6.4.1 summarise these statistics.

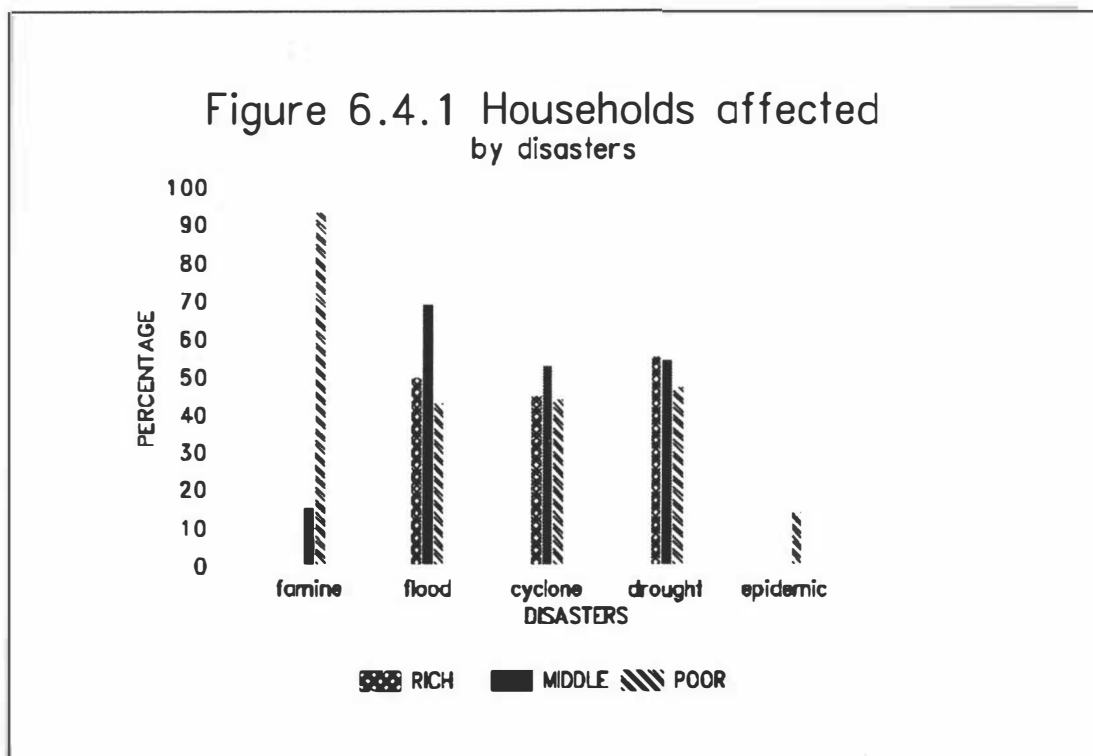
Table 6.4.1

Percentage Distribution of Survey Households Suffering from Disasters Since 1971

Disasters	VILL-1	VILL-2	VILL-3	VILL-4
Cyclone/ Tidal bore	80.0	0.0	96.0	10.0
Drought	83.0	43.0	0.0	73.0
Epidemic	10.0	6.6	13.3	3.3
Famine	43.3	66.6	63.3	73.3
Flood	100.0	100.0	0.0	0.0

Source: Field Survey, 1992

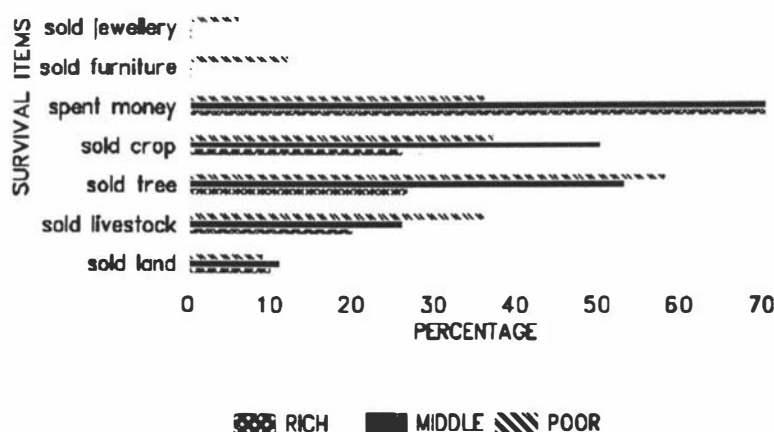
N= 120



6.4.9 Disasters and Coping Mechanisms of Rural People: Survey Findings

An analysis is conducted below to identify the methods used by the rural people to cope with the effect of natural disasters. Most respondents informed us that they had adopted either a particular strategy or a number of them depending on the availability of resources during periods of crises. For example, they sold agricultural land, livestock, crops, jewellery, furniture and so on. The importance of trees and tree products in such situations is brought-out very clearly by all respondents. The use of unusual foods from homestead forests, communal forests and even the water is also highlighted in the survey frequently.

Figure 6.4.2 Coping Strategy
During Disasters (as % of total)



The data graphed in Figure 6.4.2 shows that about 70 percent of the rich and middle farm households spent money followed by 36 percent of the poor during the crises period. While the rich and the middle income households spent their savings, the poor households borrowed money¹⁵ during the period. It was further reported that about 58 percent of the poor households sold tree and tree products, followed by 53 percent of middle income and 26 percent of rich households. Only 12 and 6 percent of the survey households sold their furniture and jewellery respectively, and they were from the poor households. About 50 percent of middle farm households sold crops, followed by 37 percent of the poor and 26 percent of the rich. A few respondents (only 10 percent) sold their land, whereas 36 percent of the poor sold their livestock, followed by 26 percent middle and 20 percent rich¹⁶. In addition to raising money to purchase food and other bare essentials, the households also had to adapt to a regime of unusual diets to survive. It was reported that about 70 percent of the poor households took such food¹⁷ followed by 26.9 percent of the middle income and five percent of the rich.

Table 6.4.2 shows the regional variations. It was that the highest number of respondents of village four found support from homestead forests and forest food, followed by village one and three in that order. By contrast, village two had received the least support, the reason discussed in the text is the scarcity of trees in this village.

Table 6.4.2

Percentage Distribution of Survey Households Adapting Different Strategies during Disasters

Strategy	VILL-1	VILL-2	VILL-3	VILL-4
Sold land	5.0	16.6	0.0	20.0
Sold livestock	6.7	60.0	26.6	33.0
Sold tree	60.0	30.0	56.6	76.6
Sold jewellery	6.6	10.0	3.3	10.0
Sold furniture	3.3	3.3	0.0	6.6
Spent money (out of savings/ borrowings)	60.0	46.6	30.0	46.6
Took forest food	56.6	20.0	63.3	60.0
Sold crops	50.0	16.6	43.0	53.3

Source: Field Survey, 1992

N= 120

Figures 6.4.3, 6.4.4 and 6.4.5 show the relative importance of homestead forests for different farm households. It can be seen that the poor households were much more dependent on homestead forests than the rich and the middle. Table 6.4.3 also presents this information in summary form.

Figure 6.4.3 Resources Utilized by Rich Households During Disaster

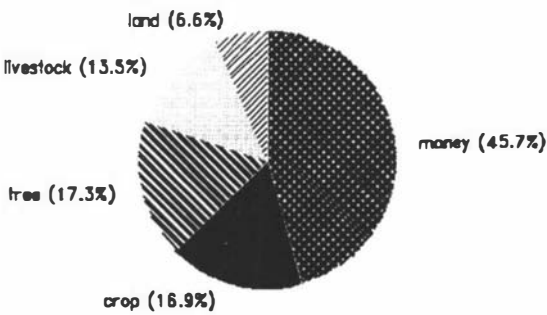


Figure 6.4.4 Resources Utilized by Middle Income Household During Disaster

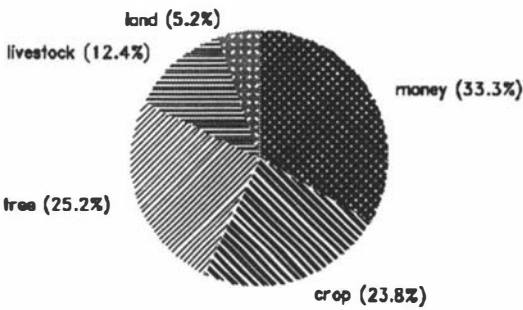


Figure 6.4.5 Resources Utilized by Poor
Income Households During Disaster



Table 6.4.3

Percentage Distribution of Resources Utilized by Households During Disasters:
A Summary

Resources	Rich	Middle	Poor
Livestock	13.5	12.4	18.6
Land	6.6	5.2	4.6
Money	45.7	33.3	18.6
Tree	17.3	25.2	29.9
Crop	16.9	23.8	19.1
Furniture	0.0	0.0	6.2
Jewellery	0.0	0.0	3.1

Source: Field Survey, 1992. N=120.

6.5 Summary

In this chapter it has been argued that, in a country like Bangladesh, forestry, especially the homestead forests, play a very important role in contingency and

emergency situations of the rural people. Trees provide a large variety of the basic necessities as well as emergency support to these people.

Disasters are natural and human phenomena, and their recurrence is obvious in human societies. The impact of disasters varies with the social and economic differences of rural people. The impact on poor people, however, is usually much more severe than that on the affluent. Poor people have little opportunity to acquire their needed food and shelter for survival during the occurrence of disasters. The impact of disasters is more severe on the poor people because of their increased landlessness and lack of other valuable assets. Defending against any disasters requires short and long term remedial strategies, which are dependent on resource availability. The rural poor do not have these resources. They, therefore, have to rely on their own very limited resources. Homestead forests are one of the important resources which help mitigate such needs. The findings of this study bring out this aspect very clearly.

A major change with regard to this reliance on forests and forest products has been that the communal forests which used to be a feature of all villages in Bengal even a century ago have all but disappeared. The pressure of population and the development of alternative, more commercially profitable, uses of land have brought about this transformation. The ecological consequences of the loss of these forests are often described, but the social, cultural, religious and other aspects are now also beginning to be appreciated. In this study an objective has been to emphasise precisely these roles of forests and trees in general and of homestead forests in particular. With the fast disappearance of the forests, the importance of the homestead forests and trees has become even more vital to the rural folk of Bangladesh. These forests too are facing increasing pressure from alternative uses. Their survival is crucial to the economic and social needs of the rural people, particularly the poor. Policy makers must therefore take these facts into consideration in making decisions about economic development and social change.

ENDNOTES

1. *Mohar* is an amount of money set after negotiation between the Muslim groom's family and the bride's family, to be paid by the groom to the bride.
2. In one of the studies, the interest rate was found to be up to 50 percent. For details, see White, 1992).
3. The rich households had cultivable land of over 7.5 acres whereas the middle farm households owned cultivable land ranging between 2.5 and 7.49 acres and the poor households owned cultivable land of up to 2.49 acres (for details, see chapter three of this study).
4. Most of the land was highly fertile and was being cultivated under irrigation schemes. The approximate annual profit from .40 acres of irrigated land was 5,000 *taka*, and this amount was reasonably helpful for the household in terms of monetary value.
5. There is no unique definition of famine. The encyclopedia Britannica defines famine as "extreme and general shortage of food causing distress and death from starvation among the population of a district or a country". This is unlike the definition given by an early Indian Famine Commission(1867), namely: "suffering from hunger on the part of large classes in the population", or by Ancel Keys and others(1950) who state "famine denotes the semi-starvation of many people- a substantial proportion of the population of some sizeable area" (quoted by Aykroyd, 1974).

Famines or near-famines caused by wars or civil strifes are found in all stages of human civilization. The two World Wars of this century and the Liberation War of Bangladesh (1971) caused food shortages and famines in Bangladesh.
6. Droughts occur due to insufficient rainfall which can prevent crops from being sown or harvested and can cause the deaths of domestic animals and human beings.
7. In Bangladesh, floods and tidal waves have been a frequent cause of famine, where the inundation of arable lands lead to the widespread destruction of crops. Likewise, cyclones arising in the Bay of Bengal generate tidal waves which not only sweep across the standing crops and fertile land but also kill thousands of people and animals and destroy houses.
8. Food entitlement, according to Sen, critically depends on two things the resource endowment vector and an exchange entitlement mapping of a person or a group. These two specify the commodity bundle which a person can choose through 'exchange' (trade and production). The exchange entitlement mapping will, in general, depend on the legal, political, economic, and social characteristics of the society in question and the person's position in it (Sen, 1981; Sen, 1989; Dreze and Sen, 1990).

9. Famine of ancient Egypt (1870 B.C) due to the flooding of the river Nile; the famine of India (297 A.D and 1943) occurred due to drought, flooding and war; the famine of Ireland (1845) occurred due to total destruction of a staple crop (the potato) by a parasite.
10. Drought occurs due to the deficiency of rainfall not only in the pre-monsoons but also during the post-monsoon periods. However, the drought conditions never affect the whole country with its total population. Rather, drought is a spatially limited phenomenon, affecting certain parts of Bangladesh (Chowdhury and Hossain, 1983).
11. For details on natural disasters and the coping mechanisms, see the Bangladesh District Gazetteers (1978) and the records of District Collectorate Office, Pabna.
12. For details on natural disasters and the coping mechanisms, see the Bangladesh District Gazetteers (1977) and the records of District Collectorate Office, Comilla.
13. For details on natural disasters and the coping mechanisms, see the Bangladesh District Gazetteers (1980) and the records of District Collectorate office, Bakerganj.
14. For details on natural disasters and the coping mechanisms, see the Bangladesh District Gazetteers (1975) and the records of District Collectorate office, Dhaka.
15. Most of the respondents of the poor farm households had borrowed money from the money lenders majority of whom were rich farmers. Money was borrowed at high interest rate, which varied from fifty to one hundred percent.
16. For the selling of livestock, trees, land and crops, it was found that the percentage of the rich households was found to be relatively low, the reason being that most of the rich had some stored food as well as cash to purchase additional food, while the poor had neither.
17. Homestead forests provide various items of food during crises periods. Most of the women of poor households were mainly found to be knowledgeable about forest food. Women collected varieties of fruit, plant roots, aquatic plants during the crises period. For example, many women collected *kolar mocha* (banana flowers), *vadal* (main stem of banana tree), papaw, green fig fruit, kachu roots and leaves, sajina, green jackfruit, aquatic plans like *saluk*, *kalmi sak* and water lily from the nearby ponds and *nala*. Some households took mixtures of fruit (such as ripe banana, mango, jackfruit) *chatu* and *muri* as their main meals. For details on how forest food helped many poor households during and after floods in rural Bandladesh refer to Mahbuba Begum (1995).

CHAPTER SEVEN

Homestead Forests, Women and Development.

7.1 Introduction

The previous chapter examined the role of homestead forests to the rural people during contingency and emergency situation. This chapter explores the inter-linkages between homestead forests, rural women and economic development. The second section identifies the contribution of rural women to economic development by showing their historical role in forestry activities. The third section focuses on some approaches which have examined the role of women in forestry and economic development. The fourth section examines women's involvement and economic role in the planting and management of trees by citing some examples from developing countries and from field survey data. This section also examines the relative contributions of women and children (female) as compared to other household members in the planting and management of homestead trees in rural Bangladesh. This section shows how the rural women of Bangladesh contribute their labour in collecting fuel items from forest resources and this section also extends the theme by citing some examples from other researchers. This section also examines how the Bangladeshi rural women and children play an important role in household economy by collecting and preparing food items from homestead forests. It shows the role of rural women in collecting fodder by citing some examples from developing countries and from survey data of rural Bangladesh. Finally, this section examines the relative role of women and children in collecting fodder in comparison to other household members. The fifth section considers the role of Bangladeshi rural women in other miscellaneous homestead forestry activities. The sixth section examines how the rural women of other developing countries spend a higher proportion of their working time than do Bangladeshi women in forestry related household activities.

On the whole, this chapter examines the women's role in planting and managing trees, collecting food, fuel, and fodder from them and in other activities.

7.2 The Role of Women in Forestry: A Brief Historical Survey

From prehistoric times, women all over the world have had the task of planting trees. While men might go great distances to hunt, women gathered seeds and plants near their camps or homes. In settled areas some women also raised fruit and vegetables around the home. They helped in house construction, made mats and baskets, medicine, fish nets, clothes and dyes. All this they did with the forest resources that grew around them (Hoskins, 1980).

In traditional hunter-gatherer societies, like that of the !kung bushmen of the Kalahari Desert, women are major food providers through gathering in woodlands (Draper, 1975). Anthropologist Sally Slocum states that the concept of 'man the hunter' as the only provider of family food is quite inadequate. Of equal or even greater importance for family well-being is the role of 'woman the gatherer of forest food' (Reiter, 1975).

The role of women in forestry is important in many ways. First, women are major users and managers of trees. The division of labour in many societies places on women the responsibility for obtaining food, fuel wood, fodder and products that are obtained at least in part from trees (Cecelski, 1985; Chen, 1986; Fortman, 1985; Hoskins, 1983; Molnar, 1985; Williams, 1985). Second, no matter who plants the trees, women's help and labour are crucial for keeping them alive. Third, it is women who suffer the most from forest degradation, their workloads rising beyond what is manageable as they must go farther and farther in search of wood, fodder and fuel (Molnar, 1985). This statement is also supported by others studies. Wood *et al.* (1980) noted that women are primarily responsible for wood collection and utilization and often the initial establishment and tending of the wood stock around the village. Momsen (1991) reported that as much as two thirds of the time collecting fuel wood is spent by women. Women's intimate involvement with forest products and agricultural production often results in their having a greater knowledge of environmental problems than men.

7.3 Women, Development and Forestry: An Overview

In the 1950s, when scholars and policy makers had just begun to discuss the meaning of development for most of the world, the role of women in the process of economic and social development was barely addressed and even less frequently understood. Only since the 1970s have development discussions focused on the majority of the human race, women. Now the phrase 'women and development' is used so widely that it seems almost faddish (Charlton, 1984).

During the 1970s, the growing interest in women's issues was manifest in different ways. In the first of these, Boserup in her *Women's Role in Economic Development* (1970) helped to put women and development into an international context by clarifying both the human dimension of economic development and the policy issues raised by the development projects undertaken in the 1960s. In the second, the 1975 International Women's Year represented a turning point on women's issues. For many it was a natural outgrowth of the new visibility of women and their role in development and concerns that had been dramatized by the women's movement of the late 1960s and early 1970s. For others, it was a way of responding to women's demands and to the realization that women are an integral part of development. The fundamental questions posed by the women's movement could not be disregarded any longer. An unprecedented amount of research, programmes and policies addressed to specific issues had sprung up during the 1970s (Lourdes, ed., 1982).

In addition to the attention generated by researchers and policy makers, another factor contributed to the ongoing discussion of women and development: our growing awareness of the complexity of the development process itself. Explanations for low productivity and poverty that seemed straightforward in the 1950s or 1960s were now widely viewed as inadequate, misguided or worse, patronizing and imperialistic. Anyone who attempted to rethink what happens in development and why, or to understand simply what the word 'development' means could ill afford to ignore the majority of the human race (Charlton, 1984).

Two distinct approaches have examined the role of women in economic development. Both approaches start from the basic premise that women are economic actors, but they emphasize different aspects of women's performance and use different analytical languages. The first, the **equity-oriented** approach, developed in the early stages of interest in women's issues, has focused on the effect of economic development programmes on the situation of women, suggesting that women lose ground relative to men as development proceeds (Tinker *et al.*, 1976). The main premises of this argument are 1) women have a productive as well as reproductive role in society; 2) conventional (i.e., Western) measures of economic activity under-estimate the magnitude of women's productive role by failing to acknowledge the value of unpaid work and by under counting women's paid work outside the modern sector; 3) this underestimation and the glorification of motherhood in industrialized societies have helped to define a development policy for the Third World that erects barriers to paid work for women; and 4) as a result of this type of development policy, women are relegated to the economy's traditional sector, and the income gap between the sexes is widened (Buvinic, 1983).

Only qualitative evidence of the negative impact argument and few quantitative results have been obtained from the analysis of the **equity-oriented** approach. This has contributed to a lack of communication between those doing research on women's issues in development (Buvinic, 1983).

In the face of a lack of interest by economic theorists and policy makers, the **equity** approach to research on women has evolved into an alternative **poverty-oriented** approach which links women's issues to poverty and tries to quantify the positive efforts that may result from incorporating women's concerns into economic development programmes (Rothschild, 1980; Staudt, 1979).

Focusing on women as participants in, rather than as beneficiaries of, development programmes and restricting those being studied to women in economic need, this approach is based on the following premises: 1) the ratio of women to men is greater in the poorest groups than in the population as a whole; 2) the economic performance

of households in the lowest income brackets is directly related to the economic activity of women in households; 3) the importance of women's productive role increases with poverty but the extent of their reproductive functions doesn't diminish; 4) to promote balanced economic growth, a major goal of development policy should be to increase the productivity and income of women in the lowest income households (Buvinic, 1983).

The shift in emphasis from an **equity-oriented** to a **poverty-oriented** approach substantially changes research questions and methods on women and development issues. There is a shift from description to analysis of women's conditions, from the definition of women's economic problems to the quantitative documentation of their existence, and from anthropological to sociological and economic methodologies. Under this approach, measurement of the economic contribution of women to the households and in the market place is undertaken, rather than retrospective assessment of the impact of programmes on women's economic condition. Phrasing women's issues in terms of poverty and economic growth facilitates the translation of women's issues into development strategies (Buvinic, 1983).

The assumptions of the **poverty-oriented** approach can only partially be related to the forestry sector. To understand the role of women in forestry, it is necessary to look at the rural households, partly because of its role as the basic production and consumption unit. Rural women are always involved in some form of forestry activity. They spend time in the planting and management of trees, gathering wood fuel and fodder and are taught many uses of trees and plants, including mat-making and basketry. Many women are involved in collecting food, nuts, fruit and medicinal raw materials from the forests. In many, if not most rural societies, it is only the women who have accumulated the traditional knowledge about the food and other household products that trees can supply. Third World rural areas depend mainly on biomass such as fuel wood and this fuel collection is mainly a task for women, with the help of children.

Small-scale, forest-based enterprises, such as the collection and processing of raw materials into useful products, are a major source of income for the poor, especially for rural women, including those from landless families. Women also contribute their labour in planting trees in the household compound, in agro-forestry, in social forestry, and in many other plantation schemes.

Experiences from all over the world also show that women, despite their long and arduous working schedule, have an important role in defending and restoring the forest ecosystem. Throughout the Third World, commercial forestry is dominated by industrial plantations and reserve management which ecologically, as well as socially, often have serious negative consequences. Monoculture replaces multi-species forests, and this disturbs natural balances so that forests are no longer able to meet people's, and especially women's needs. Massive afforestation programmes in Peru and India, for example, met industrial demands but removed grazing and agricultural lands from local use (Cecelski, 1985).

Natural forests are still being converted into monocultured forest of such species as eucalyptus, destroying the water balance, soils, ecological diversity and the capacity to produce fodder and organic fertilizer. As a consequence, much attention is now being paid to 'forestry for local community development'. The recent emphasis on basic human needs has promoted concern for the local community and greater women's involvement in forestry activities. Kenya's Green Belt Movement, started in 1977 by the National Council of Women, is a well known example of such development and, in Bolivia the Young Womens' Christian Association is conducting a major project on forest preservation and care of the environment (Cecelski, 1985).

In India the *Chipko Andolon Movement* has an important role in environmental rehabilitation. The *Chipko* movement began as an attempt by the local people to prevent the indiscriminate commercial exploitation of their forests. The specific incident which is said to have sparked off the movement in 1972 is the action by the women in Chamoli district against the allotment of vast tracts of ash forest for felling to the Simon Company (Agarwal, 1989). Women were confronted with the prospect

of local forests being destroyed by a commercial enterprise (Dunkelman & Davidson, 1988). When the contractors arrived, at least twenty seven women, on their own, prevented the contractors' employees and forest personnel from felling a large tract of trees by clinging to the trees throughout the night. Ultimately, their agitation led to the banning of tree felling in the locality. The aims of this movement were to end the contractor system of forest exploitation, the banning of tree felling and excessive resin tapping, and to ensure minimum wages for forest labour. The campaign is now focused both on forest protection and reforestation (Agarwal, 1989).

The spirit of *Chipko* now spans the whole Himalayan region. In Uttar Kashi, for example, hundreds of women formed a procession to demand the preservation of natural mixed forests. In the Jakur valley, villagers appointed their own forest guards, having formed rules and working plans for the preservation of the neighbourhood forests. In Khirakot, a small village in the Almora district of Uttar Pradesh, women collect fuel and fodder from the surrounding forests and they preserved these forest very carefully until a contractor obtained a lease for soapstone mining in the hills. The women realized that their forest access was being hindered by mining activities and that the forests would be killed by the mine debris. Although local men were employed by the mine, women protested. "Either the mine will remain or us", they stated. Despite threats by the contractors, the women brought them to court and the mines were officially closed (Dankelman, 1985).

These are but a few examples of women's action. Similar action has been taken in the villages of other Asian, African and Latin American countries. From the discussion above, it is evident that the forest is a very important resource for the Third World rural economy and that women play a vital role in this economy. In Bangladesh the survey data show that though men play the dominant role, women participate in all aspects of homestead forestry and do so at similar rates. The role of women in forestry includes a wide variety of activities, ranging from all those concerned with planting, management, the collection of wood fuel, fodder, food and other processing, and income generating activities. Some examples follow.

7.4 The Role of Women in Forests: A Brief Survey of Literature and Village Findings

7.4.1 *The Planting Activities: An Overview*

How women are actively involved in the planting and management of trees in Tanzania is discussed in a study by Johansson (1991). In a village of Tanzania, more than a hundred women planted fruit trees in their home garden. The survival rates were very high and the trees and their harvests seem to remain under the management of the women who planted them. Another fuel wood plantation scheme in Tanzania which was supported by a particular women's group has also proved to be a successful one.

How a rural afforestation programme in Senegal became successful because of the involvement of women is discussed in a study of Hoskins' (1979). In one area of Sierra Leone, women listed 31 products they gathered from village trees. Local men did some of the same activities but they were neither focused on nor limited to the use of resources found near the home as were the women.

In China, where reforestation schemes have had a considerable degree of success, women have been at the vanguard of the reafforestation efforts. In the 8th World Forestry Congress in 1978, Chinese delegates are noted to have said that female tree-planting crews were more successful than male crews. Trees planted by the female crews had a 95 percent seedling survival rate (Williams, 1982 cited by Agarwal, 1989:123).

7.4.2 *The Planting Activities: Survey Findings*

Results based on the survey data from rural Bangladesh provide some interesting information on the role of family members including women in various aspects of the planting, management and harvesting of homestead forests.

The tables and the figures of this section present some of these results. A glance at table 7.4.1 shows that, on average, 97.7 percent of the heads of households (of whom 83.7 percent are male and 14.3 percent female) participated in the planting of trees. The household participation of spouses, fathers, sons, mothers, brothers, in-laws, daughters, and servants are also shown in the Table. The poor households had the largest number of heads participating in the planting of trees, while both the rich and middle income ones had similar or higher proportions of participation.

Table 7.4.1

Percentage Distribution of Household Members Participating in the Planting of Homestead Trees of Different Economic Status

MEMBERS*	RICH	MIDDLE	POOR
Head of Household	100.0	100.0	93.2
Spouse	50.0	73.1	59.45
Son	45.0	38.4	28.37
Daughter	25.0	30.0	18.9
Mother	5.0	15.38	0.0
Father	10.0	11.5	6.7
In-laws	5.0	3.8	1.35
Brother	0.0	0.0	8.1
Servant	10.0	11.53	0.0

Source: Field Survey, 1992. N=120

* The family relationships all relate to the heads of the households.

The participation of the female household members, i.e. wives, mothers and daughters, is quite significant in all income categories as shown in Figure 7.4.1.

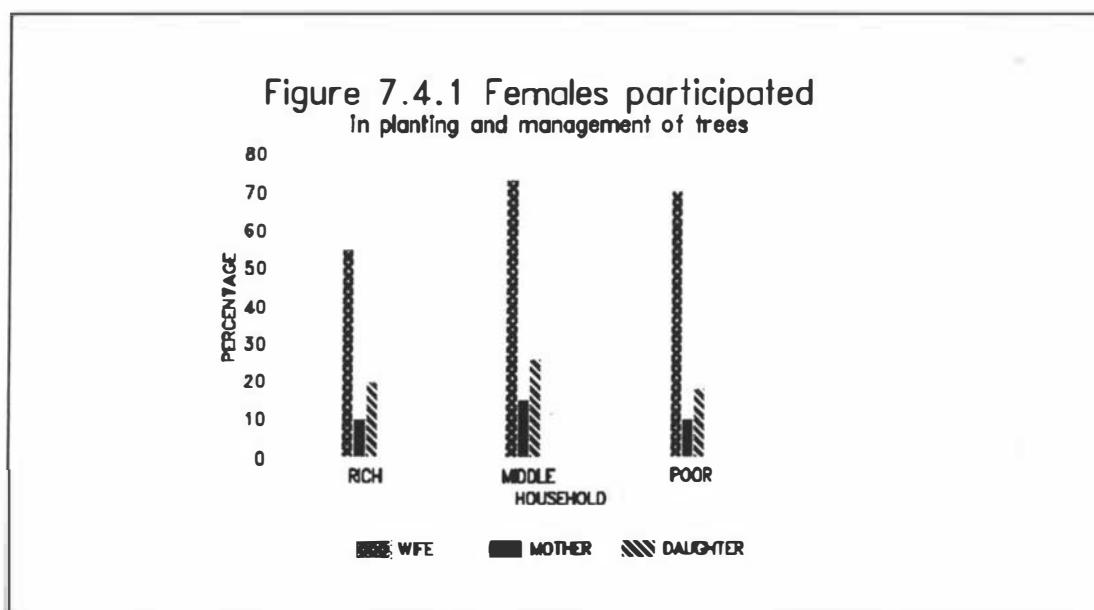


Table 7.4.2 presents information on the pattern of participation by household members of different regions in tree planting. It is observed that the participation of women is lower in village 2 relative to the other three villages which have a largely similar pattern of female participation. Village 2 has more low lying, flood prone lands, and less land areas devoted to homestead forests.

Table 7.4.2

Percentage Distribution of Household Members Participating in the Planting of Homestead Trees by Households of Different Villages

MEMBERS*	VILL-1	VILL-2	VILL-3	VILL-4
Head of Household	93.0	86.0	96.0	100.0
Spouse	66.6	36.6	73.3	66.6
Son	40.0	20.0	30.0	43.3
Daughter	26.0	16.6	20.0	26.0
Mother	16.0	13.0	3.3	16.6
Father	0.0	13.0	20.0	0.0
In-laws	0.0	6.6	3.3	0.0
Brother	6.6	10.0	3.3	0.0
Servant	3.3	0.0	3.3	3.3

Source: Field Survey, 1992.

N=30 in each village

* The family relationships all relate to the heads of the households.

7.4.3 The Management Activities: Survey Findings

In all villages, management activities included protection, irrigation, fertilization and weeding. Villagers protected tree seedlings from livestock damage by putting temporary fences around them. The fences were usually made of bamboo and bamboo sticks, jute sticks, branches and twigs of trees. During summer and winter seasons there is a need to water younger trees. Fruit trees and valued timber trees were given special care with fencing and weeding. Rich and middle farm households enhanced soil fertility by applying cow dung during plantation time, whereas ash and conditioned soil and waste organic materials were generally used by poor households. No chemical fertilizers were used by the villagers.

As Table 7.4.3 shows how different family members participated in the management activities and, as with planting, the heads of the households had the highest degree of participation (90.8% of which 76.7 percent male heads and 14.3 percent female heads) in all income categories. The participation of the other family members are as shown in the table.

Table 7.4.3

Percentage Distribution of Household Members Participating in the Management of Homestead Trees by Economic Status of their Households

MEMBERS	RICH	MIDDLE	POOR
Head of Household	100.0	88.4	89.2
Spouse	55.0	73.1	70.0
Son	40.0	30.7	22.0
Daughter	20.0	26.0	18.9
Mother	10.0	15.4	10.0
Father	10.0	11.5	6.7
In-laws	0.0	3.8	3.8
Brother	0.0	0.0	5.4
Servant	30.0	0.0	0.0

Source: Field Survey, 1992. N=120

* The family relationships all relate to the heads of the households.

The participation of the female household members, i.e. wives, mother and daughters, is quite significant in all income categories as was shown in Figure 7.4.1.

Table 7.4.4 presents information on the pattern of participation by household members in different regions in tree management. It is found that the participation of women is lower in village 2 relative to the other three villages which have a largely similar pattern of female participation. The reason is related to the fact that the number of trees was lower in village 2 which is located in the low lying, flood prone area.

Table 7.4.4

Percentage Distribution of Household Members Participating in the Management of Homestead Trees by Households of Different Villages: A Summary

MEMBERS	VILL-1	VILL-2	VILL-3	VILL-4
Head of Household	93.3	86.6	86.6	96.6
Spouse	60.0	43.3	76.0	76.0
Son	30.0	10.0	30.0	40.0
Daughter	20.0	13.3	26.6	23.3
Mother	13.0	10.0	6.6	16.6
Father	10.0	10.0	3.0	0.0
In-laws	0.0	6.6	0.0	0.0
Brother	3.3	6.6	3.3	0.0
Servant	6.6	6.6	3.3	3.3

Source: Field Survey, 1992.

N=30 in each village

* The family relationships all relate to the heads of the households.

When the total respondents from all villages and all income groups are divided into males and females, it is found that 47.96% of the female members (wives 29.1%; daughter 8.9%; mother 5.0% and female head household 4.96%) participated in management activities. On the other hand, 52.1% of the male members (male

household heads 33.7%; son 11.7%; father 2.5%; servant 2.1%; brother 1.4% and male in laws .7%) participated in management activities. It is therefore evident from the data that the female participation rate was quite significant and not much lower than the participation rate of the males. The ratio of male to female participation works out at 109 percent.

7.4.4 The Fuel Collection Activities: A Brief Overview

Wood is one of the fuels most commonly used in the rural areas of developing countries. While information available on the overall magnitude of firewood use in developing countries is inadequate, one estimate is that some two billion people world wide are dependent upon fuel wood and crop residues for their fuel needs, especially in rural areas (Arunguolende, 1984). It has been estimated that over one billion people are in dire need of fuel, wood or are experiencing serious shortages (FAO, 1981).

The collection of firewood in most parts of the Third World is done primarily (and sometimes exclusively) by women. The time spent by women for collection of wood fuel varies between regions according to the availability of tree resources, but in most cases it is a strenuous and time consuming task. Some studies indicate that the time taken is 3-4 hours a day and more in cases where very long distances are involved. For example, in the Sahel, women have to walk up to ten kilometres for fuel wood. In Gambia, it takes from midday to nightfall to gather an evening's supply, while in parts of India, women spend five hours per day on average, travelling five kilometres or more, often over difficult terrain (Agarwal, 1989).

In Ghana, women may spend 3-4 hours a day for gathering fuel wood. On average one full day's search provide wood for three days. In Niger, women spend an average five hours a day and walk, at times, 25 kilometres in search of fuel wood. In Peru, women spend an average of 2.5 hours a day gathering fuel wood and more time in cutting it. In Senegal, women spend at least 4 to 5 hours a day collecting and the firewood often has to be carried (about 45 kilometres) by the women . In

Tanzania, women spend eight hours and often one member of the family has to spend every day gathering fuel (Srinivasan, 1984).

In Bangladesh, one of the most important sources of fuel for rural households is the homestead forest. According to one estimate, approximately 70% and 90% of fuel wood and bamboo respectively, come from homestead forest in Bangladesh (FAO, 1982). This estimate was close to that found in the survey villages. The main sources of fuel from homestead forests in the survey villages were wood, leaves and twigs, branches of trees, bamboo and bamboo leaves. Other sources of fuel were cow dung, crop residues, rice-husks, straw, *nara*, *kher*, jute sticks, dry *dhanicha* and water hyacinth. In rural Bangladesh women are the primary collectors of these fuel. As most poor households do not own cultivable land, they cannot obtain fuel from agricultural sources such as crop residues, *kher* and *nara*. The majority of the rural poor relied on homestead forest for fuel.

7.4.5 The Fuel Collection Activities: Survey Findings

The survey data support findings from other Third World countries that female adults and female child members spend more time collecting fuel than male adults, male children, servants and hired labourers. For female adult and female child members, the poor farm households had the highest participation rates, followed by middle farm households, while the rich had the least. Analysing the survey data we find that 50 percent of female adult and 40 percent of female children of the rich households did participate in fuel gathering activities. The participation rates for female adults and children of the middle and poor households was found to be much higher at 89 and 60 percent respectively. Despite differences among the farm households, the overall participation rate of male adult and male children was found relatively lower than the female adults and children in all the survey villages. For male adults and children, the rich household had the lowest participation rates (about 10 percent both for male adults and children), whereas the middle and the poor households were higher (about 50 percent for male adults and 20 percent for male children).

Turning to the regional variations, we find that the overall participation rates for female adults and children were relatively lower in village 2 (about 60 and 20 percent) in comparison to other three villages where the participation rate was about 87 and 65 percent respectively. On the other hand, the participation rates for male adults was relatively higher (45 percent) than the other three villages (about 30 percent). There were several possible reasons for this situation. The first was the scarcity of homestead land and the second was the location of the village in a flood prone low lying area. Because of frequent flooding, it was not possible to have many trees and plants around the homesteads. In general, women collect dry leaves, twigs, bamboo leaves and branches from homestead forests but due to the scarcity of forest resources, women and female children had little scope to collect such materials.

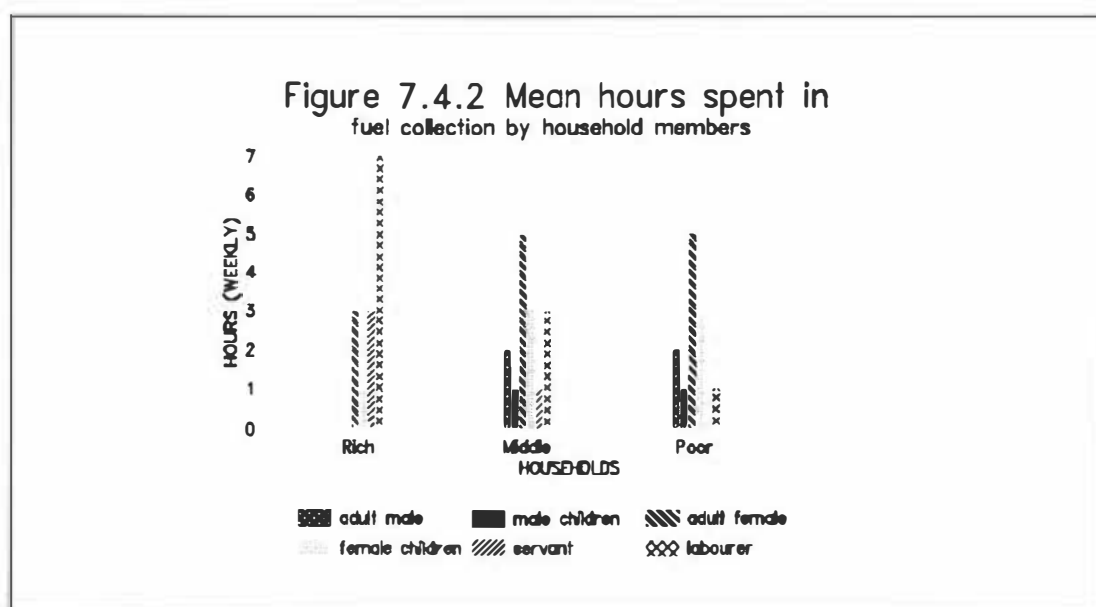


Figure 7.4.2 indicates the mean hours spent weekly by different family members, servants and hired labourers for fuel collection. It was found that females of poor and middle farm households spent more time (average five hours per week) followed by the rich (average three hours per week). On the other hand, the female children of both poor and middle farm households spent on average three hours a week, followed by the rich (average one hour per week). Compared to female adults and female children, the male adults and male children of poor and middle farm households spent less time (average two and one hour respectively per week). By

contrast, male adults and male children of rich farm households spent less than an hour per week. The reason is that these farm households had servants and hired labourers for the task¹.

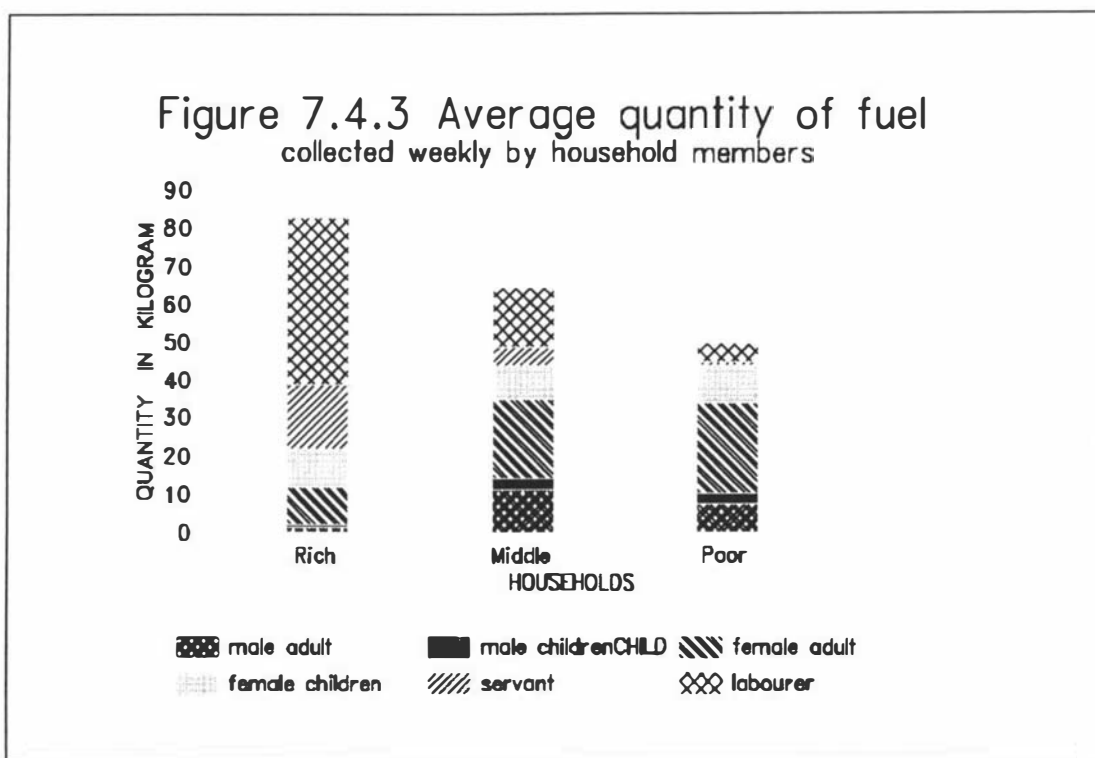


Figure 7.4.3 shows the average quantity of fuel collected weekly by different family members, servants and hired labourers. It was difficult to measure the actual quantity of fuel because the sources of fuel were different in items such as leaves, branches of trees, twigs, bamboo, bamboo leaves and wood. However, an estimate was done on the basis of time spent by family members, servants and hired labourers. The estimate also considered some other elements such as income, family size cooking time and food habit of different farm households.

The data show that the female adult of poor households collected more fuels (average 24 kg per week) than middle (average 21 kg per week) and rich (average 10 kg per week) households. The collected quantities were higher than those collected by male adult members of all household types. The female child members collected higher quantities of fuel (average 10 kg per week) than male children

(average three kg per week for poor and middle and only one kg for rich farm households). Although the rich households relied more on servants and hired labourers, the data show that for poor and middle households, it was mostly the female adults and female children who collected maximum amount of fuel for family consumption. Even for rich farm households, it was also adult female and female children who collected more than male adults and male children.

Given the amount of time and energy involved by women, as already discussed here, it is surprising that this activity has been given so little attention by development planners.

7.4.6 *The Food Gathering Activities: An Overview*

The best known human foods from trees are fruit, leaves, nuts, roots and tubers. Most are available all the year round and they are primarily collected by women. The locust bean is a perennial tree legume food in Africa, Asia and South America. The beans of the Savannah species in West Africa is taken as food during the dry season; the nuts are preserved as food for lean seasons and all the collection, preservation and food preparation are primarily done by women. The mongoggo tree, a staple food of the Basarwa (bushman) in Kalahari in Botswana is collected by women and the fruit of these trees are also harvested by women for their family diet (Chambers and Longhurst, 1986).

Little *et al.*, (1988) found that nomadic women of Turkana, a pastoral people of Africa collect fruit, berries, sap and beans round the year to meet their dietary needs. Bernus (1988) observed that the Sahelian nomadic pastorals women contribute a lot for family consumption by collecting forest food during severe food shortages. This study also states how women collect seeds from distant out-hills when domestic resources are scarce to meet the dietary needs. Food is collected from short lived species, evergreen trees, and parasitic plants and these foods are considered nutritious and cooked in various ways by women.

Pagezy (1988) noted that the forest supplies the basic food, cassava, of which the tubers and leaves are eaten while the oil palm, *elaeis*, whose nuts are used in most dishes in the Oto and Twa communities of Zaire. Women of these communities not only collect and prepare forest foods, it is also their job to prepare the land for planting fruit trees (sweet and plantation bananas, oil palms, oranges, avocados, papayas, bush butter etc.) which surround their houses.

In many societies, during seasonal decline in food supply or natural disasters, rural women depend very much on forest food for a large proportion of their family diet. For example, Bailey and Peacock (1988) found that the rural women of the Efe Pygmies of North-East Zaire depend on forest foods during crisis periods.

Forest foods are also collected by women in other parts of Africa and Asia. For example, the oil palm provides oil which is a valuable source of vitamin A and energy in West Africa. Palm for wine, though collected by males, is preserved by women. The sago palm provides a secure food year-round in parts of South East Asia and Oceania and the pulp is collected and prepared by women. Food availability over an extended period is also achieved by women through 'storage' of some fruit or trees, or picking and drying them for storage in the home (Chambers and Longhurst, 1988).

Ali (1984) found in his study that during food crises, when men cannot earn enough to feed the whole family, women become the food procurers for their household members. This study also found that during famine or other food shortages, women gathered forest food and engaged in other gainful works for the family's survival. Ali cited examples from the Indian film of Ray, entitled *Ashani Sanket* (Distant Thunder), where, during a famine Brahmin women crossed the higher caste barriers to get food by husking paddy for others and by collecting forest foods.

Agarwal (1991) noted that to cope with seasonal fluctuations, people draw upon household stores such as grain, dried berries and grasses, most of which are built up by women. Citing examples from tribal societies of West Bengal, Banarjee (1988)

and Mitra (1988) state that during lean seasons, people change their diet by shifting to coarse grain and forest foods. People also reduced their cooked meals and ate unusual forest foods as substitutes for rice.

7.4.7 The Food Gathering Activities: Survey Findings

The homestead forests of rural Bangladesh provide items of family food. Within most homestead dwellings are found mangoes, jackfruit, bananas, coconuts, guava, lemon, lychees, black berries, date palms, *bels*, *amra*, palms, nuts, *ata* and many other fruit trees. Fruit was found to be a part of the regular diet of most rural people. In general, it was found that women involved more in collecting fruit than men. It was also noticed that women of poor and middle farm households were more involved in fruit collection than rich households. Children also participated in fruit collection. During the seasons for mangoes, jackfruit, lemons, *bels*, *amra*, coconuts, palms, litchies, guava and other kinds of fruit, women and children are involved (generally) in collecting the fruit from the trees. Women often made various food items from them. For example, women make many kinds of pickle from mango and lemon. Another activity of women is making *am-shotto* from mango. The pulp is spread in a thin layer over *chalun*, *kula*, plate or clean clothes. It is then dried in the sun and several layer of pulp are spread over the first layer over a few days and it is then allowed to dry. When it is dried it is ready to serve. But it is mainly prepared to store for a long time.

Another kind of fruit is guava. Generally, women and children collected mature guavas from trees as edible fruit. Sometimes women made jelly from guavas. Fruit and jellies were often sold in local *hatts* and bazaars. Palm fruit was found to be another kind of delicious food for rural people. The fruit is grown in a cluster at the crown. The green palms contained some sweetened juicy syrup which is a very tasty drink item for rural people during hot weather. Another form of food from palm is sweet dessert and is prepared by women. When palms are ripe, the yellow mass is taken out and mixed with milk and *gur* (molasses) and cooked by continual stirring. The palm is also tapped for juice which was then boiled for several hours to make

gur which is traditionally the women's job. Sometimes women made sweet dessert with this juice. The date palm fruit is also eaten as food item by poor people. *Gur* were also prepared from date palm juice by poor women. This *gur* is used for making many kinds of snacks and *peetahs* by women for family food. Coconut was found to be another common delicious fruit. The juice of green coconuts is a popular drink with villagers. Ripe coconuts are used as vegetable items and desserts by women. Oil is also made from coconut and used for both household consumption and commercial purposes. Chutney and pickle are prepared from a variety of fruit by women. The seeds of ripe jackfruit are used as vegetables and sometimes as snacks. *Kancha-Kala* is another kind of food for poor families. Poor women boiled *kancha bichi-kala* and *anaji-kola* to eat as a main meal with other family members. *Paka-kalas* are also eaten with *pantha-bhat* as a main meal by poor families. Another kind of food is *amm-bhat*. *Paka-amm* is mixed with a small quantity of rice and taken as main meal by some poor families.

From the above discussion it is evident that homestead trees are a very rich and reliable source of food for rural people, especially for the poor households, and it is the women who play the major role in the collection and preparation of such family food from homestead tree resources.

From the survey observations it is also evident that forest foods are an important part of the rural households' daily meals, and such foods are collected by women, especially the poor women who often prepare their main family meals using these and other ingredients. In general, the forest foods supplement and complement the family meal for the poor households throughout the year. But the most important contribution of forest foods to the poor families must be that they are available to them during the agricultural lean seasons and other bad times of the year when there is a big slack on male labour demands in agricultural activities. We know from our observations as well as from the survey findings that the most important means of rural livelihoods are the crop and animal husbandry products. However, the productivity of these activities has diminished over the years due to the changing economic and social conditions of the rural people. Moreover, they are also subject

to seasonal variations in crop and animal productivity. The results of these factors take the form of low or even no income and food for the rural poor. In practice, we observed many poor women making use of forest foods to help their families to mitigate these seasonal deprivations.

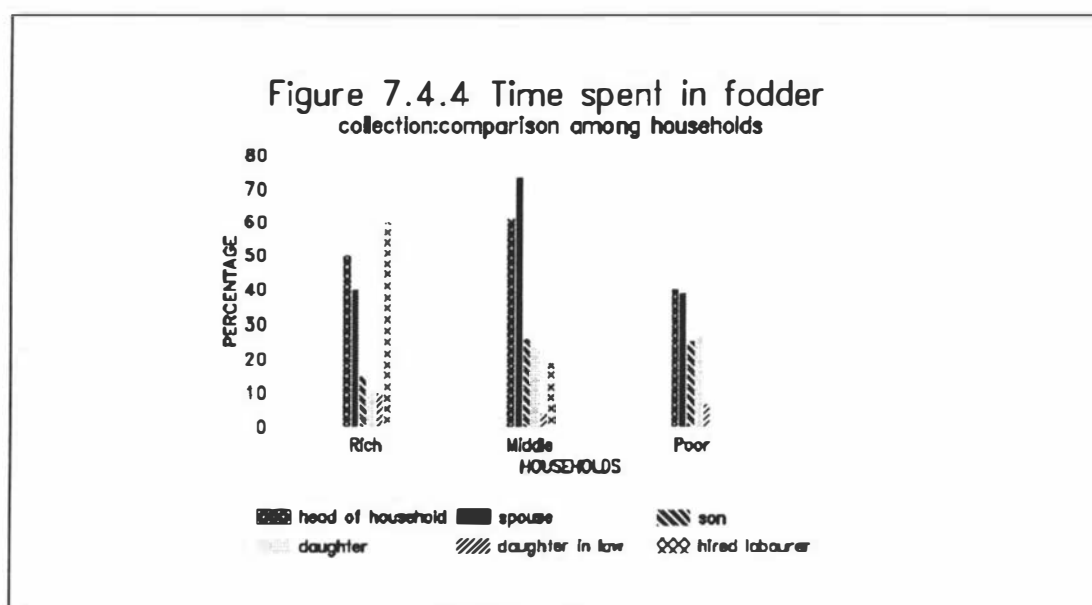
7.4.8 *Fodder Gathering Activities: A Brief Overview*

Forests contribute to animal fodder in two ways: indirectly, through their effects on the underlying pasture, and directly through leaves, pods and fruit. In savanna conditions where trees are not too dense, there can be beneficial indirect effects where grasses in the understorey of trees start growing earlier and continue growing for longer, spreading the period of availability (Robinson (1985), cited by Chambers and Longhurst, 1986:46). Generally, it is women who collect these grasses for feeding livestock. There are also direct supplies of fodder from the forest. In many parts of the world, fodder is provided by the green and dry leaves of acacia (Asia & Africa), *khejri*-tree (in India), jack fruit tree (India & Bangladesh), banana (tropical countries), bamboo (Asia & Africa), acacia albida (West Africa) and other herbs and shrubs. Sometimes the flowers, fruit and stems of some trees are also used as fodder. It is mainly the women's task to collect this fodder for livestock, however, other members of rural household also participate in this activity.

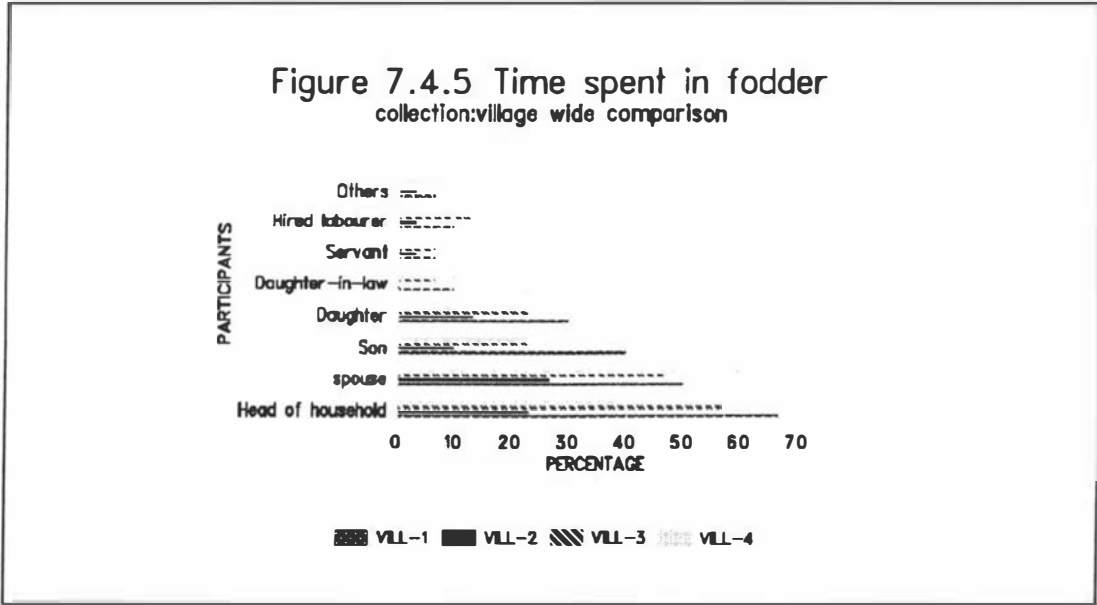
7.4.9 *Fodder Gathering Activities: Survey Findings*

In Bangladesh, homestead forests provide items of fodder for livestock. Among these, acacia leaves, jackfruit leaves, bamboo leaves, banana trees and leaves, several kinds of grasses (generally grown under the shade of big trees) and leaves of some other trees are used as fodder. Women and children play an important role in fodder collection. The survey data show that mainly the wives, husbands and children participated in fodder collection. Among others, servants, hired labourers and in-laws also participated. The data indicate that in 56 percent of households, the wife collected the fodder. The participation rates for other family members were: 47 percent for head of the households (of which 61 percent from middle, 50 percent

from rich and 40 percent from the poor households); 24 percent for sons; 23 percent for daughters; 14 percent for hired labourers, 6 percent for daughters in-law, 5 percent for servant and 4 percent for others, which includes mainly parents and sister in laws. It was also found that, among the wives, 73 percent were from middle farm households, 40 percent from rich and 39 percent from poor households respectively. The reason for low participation of wives from poor households was mainly their lack of cattle and the low availability of fodder resources on their small homesteads. For rich farm households, it was servants and hired labourers who collected the fodder. As the rich households could afford servants and hired labours so the participation rate of wives was low. For middle farm households, it was mainly the husbands and wives who collected fodder, the participation rate of the wives being relatively higher (Figure 7.4.4).



When the data from the regions were compared, it was found that the participation rates of wives were almost similar in all the three regions, the only exception being the Eastern region (village 2). The same exception was also found in regard to the participation of other members such as husbands, sons, daughters, daughters in-law and hired labourers (Figure 7.4.5). The main reason for these differences was the scarcity of homestead forest resources already mentioned in previous sections.



7.5 Miscellaneous Activities: The Role of Women

Apart from the involvement of rural women in different forestry activities as discussed in the previous sections, women in the survey areas were also involved in other forest related activities such as the making of different handicrafts, mats, fish catchers, kitchen implements such as *chalun*, *kula*, *dhama*, *katha* and *dala*, food grain preservers like *motka* and *dohl*, utensils like wooden and bamboo spoons, brushes, brooms and bowls. Women also relied on homestead trees to maintain many parts of their household works. It was nearly always the women's job to carry out minor repairs to their houses. Homestead forests provide nearly all that is needed: poles for buildings and sheds, leaves for thatch, canes and stems for wattle and fibres for twine. Many of the other items that are used in and around the houses for agricultural activities were also made from trees and women were mainly involved in making these items. Gathering, building and repairing fencing around household compounds is often the women's responsibility but depends on the availability of homestead forest resources.

Although the involvement of women in different activities was quite high, women's contributions were almost always invisible and unrecognised. However, a few women of poor households were identified as part of the active labour force because

they were earning some money by making and selling some forest products. From survey observations it was found that in all villages women of all categories were involved in different homestead forestry activities (see chapter five for more). The poor women of village 2 were involved in certain types of processing activities like women of the other regions. However, it is interesting to note that although the homestead forest resources were scarce in this village, involvement of the poor women was similarly high in making forest products. There were several reasons behind it. The first was that most of the women who were involved in forestry activities were immigrants from nearby villages. They had no land or other resources for subsistence. Their husbands were also active in making forest products and there were no social barriers to their involvement in these activities. The second reason was that they had better scope for marketing these products because there was a big bazaar near the village. The third was that they could easily buy the raw materials near most villages and local bazaars.

7.6 Homestead Forests: Low Workload for Women

Rural women in Bangladesh and most other developing countries spend a considerable proportion of their working time in forestry related household activities compared to rural men who have other pre-occupations such as agriculture and non-farm activities. A survey of Philippine rural households revealed that, among small farm families, men put in an average of 8 hours per day and women 9 hours per day, while in non-farm families men put 8.77 and women 9.98 hours per day for farm work, plus household chores (Quizon & Evenson, 1978). Other studies from the Philippines have also found that, in general, women put in more total work time than men do, both in poor and rich rural households (King, 1976). Similarly, detailed data by age and sex on the daily workloads of the rural population in Nepal indicate that female members of rural households put in longer hours of work than male members (Nag *et al.*, 1977).

Another Asian study, based on a sample of rural Javanese households, noted that women spent an average of eleven hours a day in such productive work as fuel wood

collection, child care and food preparation (White, 1976). In the Pakistani Punjab, women from small peasant households are observed to work for an average of fifteen hours a day, even in the non-peak periods (Khan and Bilquees, 1976).

In the African context too, examples of the high workload borne by women are numerous. The evidence from Ghana, parts of Malawi, the United Republic of Tanzania and from Nigeria all indicate that women tend to contribute more labour than men, especially when housework is taken into account (Dasgupta, 1977). Evidence from Zimbabwe and Uganda also clearly shows that rural women put in longer hours than men when housework is taken into account, and in the case of Uganda and Zimbabwe, this seems to hold true even when the comparison is based only on the work done on the farm (Cleave, 1974). A similar pattern emerges from a survey undertaken by Wilde (1967) of a number of African studies (cited by Ahmed, 1985).

However, the evidence from our survey data reveal a somewhat different situation. Although women in rural Bangladesh spend a considerable amount of their time in homestead forestry activities, especially in the planting and management of trees, and in collecting fuel, food and fodder products, they, on the whole, spend less of their time working than do other women around the world (for details, see related sections of this chapter). The main reason for this difference relates to the fact that while women in other countries have to collect different usable items mainly from wild or natural forests, which tends to take a longer time, the women of Bangladesh collect such items mostly from homestead forests which take up relatively less time and energy.

The survey data also indicate that the cultivation and management of homestead forests by women is a widespread phenomenon in rural Bangladesh. Unlike the wild or natural forests which consume so much of the time of rural women, the homestead forests provide them with an opportunity to intensify their labour inputs by supplying food, fuel, fodder and other useful materials from their immediate neighbourhoods. Less time needs to be spent away from home and a flexible schedule can be shaped

around other household responsibilities. The homestead forest, comprised of multi-purpose trees for fruit, timber, fodder, fuel and medicines is, therefore, well suited for the economic well-being of women in rural Bangladesh. A considerable amount of economy in the use of time is achieved by rural women in the utilisation of the many products from the homestead forests.

7.7 Summary Conclusion

From the survey data and field observations it is clear that homestead forests and rural women are very much inter-woven in the rural development programmes of Bangladesh. But before going on to generalise on the role of women in forestry related activities in rural Bangladesh, we need to examine their overall situation.

The socio-economic condition of rural women in Bangladesh may be explained in terms of their control over land and the law of inheritance, the division of labour by gender within households, their contribution to agriculture and forestry related activities such as food gathering and processing, fuel and fodder collection, various processing activities related to agriculture and forests, social and cultural institutions such as the religious norms and values, unemployment among rural women, male attitudes towards working women, and the coverage of government official statistics regarding the productive activities of women.

The laws of inheritance in Bangladesh are complex. Within the same family, men generally inherit more than women. The Muslim laws of inheritance as applied to daughters and wives are, in a nutshell, as follows: a daughter who has no siblings inherits half the estate of her late father or mother. If there is more than one daughter and no son, then the daughters jointly inherit two-thirds of the estate, the rest going to other eligible relatives. However, if there is a son (or sons), each daughter would inherit half of a son's share. In the absence of a son, a daughter inherits a fixed share, and the balance of the estate is inherited by other agnatic relations such as the brothers or the father of the deceased (Choudhury and Ahmed, 1980).

These patterns of unequal land inheritance among men and women have existed in Bangladesh due to the complex law of inheritance. Because of the highly unequal distribution of land among men and women in rural Bangladesh, political power is also held by men who dominate and exert power over women by virtue of their controlling land, share-cropping arrangements, employment and other occupational and social facilities.

A related problem relates to the unequal ownership of land among the rural people in general, based on economic status i.e. regardless of the gender-based inequalities. Land is the most basic resource of agricultural production and it is the rich farmers who own most of the land (for details, see both the methods and introductory chapters of this study). As a consequence of this unequal control of land, the rural rich dominate the rural poor and the women among the poor suffer the most from this structure of domination. Moreover, with the increased landlessness experienced in rural Bangladesh, the male labour force are ceasing to be owner occupants and must work on family agricultural farms. They are becoming dependent wage labourers and depend on jobs offered by the rich land owner (United Nations, 1985). This has created more pressure in the work place and/or at home for the poor females.

The demand for agricultural labour is confined largely to the peak season of agricultural harvesting, planting and transplanting. For the rest of the time, most rural people either seek non-agricultural work for an income, or migrate elsewhere (to the cities, for example) or remain unemployed. In such a fragmented work environment the women's role in productive activities increases enormously. While the men occupy the organised avenues of employment and are involved in the 'market place', women, specially the poor women, contribute to the household and family economy by participating in multifarious activities in the fringe areas of rural society. Although women are predominantly engaged in subsistence production in areas such as agriculture and forestry, due to the restrictive social system they do not have control over what they produce. They tend to spend most of their lives within the boundaries of their homesteads and their kin-based extensions as is expected by the existing social and economic systems and customs. Moreover, the poor women are

likely to be dominated by the women who belong to the rich category because of the socio-economic inequality which favours the land owning members of the community.

More than 80 per cent of the population of Bangladesh live in rural areas, and the women's everyday activities take place around the households in the rural areas. Religious and cultural practices in Bangladesh confine women to their households, and their home-based activities are largely invisible. Within the socio-cultural, economic and political conditions, the situation of Bangladeshi women can be understood by analysing the position of women in their households. Gender enters into all social arrangements in the country but is more immediate and visible in the household situation. The household is critical for the analysis of gender roles and relations and is usually the key point of the gender division of labour. There is a conventional and traditional division of labour which determines the work of men and women. All domestic work is done by women who also perform other production-related work, some working for a wage as men do but men usually do not participate in the domestic or household work.²

Our survey data recognise that many forestry activities like the planting and management of trees, collecting fuel, food and fodder from trees and the various processing activities performed by the rural women take place in the households where there is a conventional or traditional division of labour.

From the discussion it is also evident that women collect fuel, food and fodder more than men do during normal times and especially in times of crises or emergencies. Yet, unlike rural women of other developing countries, Bangladeshi women need to spend less time working on these tasks because they are able to rely on their homestead forests which are 'more generous' in terms of their 'bounty'.

Despite gender differences, women also play a key role in agriculture such as in the cultivation of rice through preparation, storage and rearing of seedlings. Poor women pick young plants in the fields and weed the fields. They also play a key role in

food or cash crop production or both, in making craft products for sale and in caring for animals. The discharge of these responsibilities means that they work long hours. When men share women's work, they do not see it as a domestic task. Likewise when a man plays with children he does not regard this as women's work. Nonetheless, men spent much quality time with their children. After work, men return to home to relax, eat, talk or sleep. Their domestic tasks are limited to tasks such as house construction or shopping for household consumption. Women often participate in these tasks too. Despite economic differences, women from all farm categories involve themselves directly or indirectly in the processing of the crops harvested by men. Some women often work in the fields. It is also women who grow vegetables to supplement their family's basic meals. Therefore, to understand the socio-economic condition of rural women, attention must be paid to women's productive role and activities.³

Thus, our survey establishes the vital role that women play in the household economy of Bangladesh. The survey findings also bring out the contributions homestead forests make to the rural poor in their struggle for existence. The involvement of women in the various forestry related activities is part of the women's role in making the most of the limited opportunities provided by nature. It is a fact that without the support of homestead forest resources it would be very difficult for the rural people to maintain their livelihood, humble as that is. On the other hand, it is also true that the rural women are using their valuable time in homestead forest activities. Without their involvement, it would be impossible to have the numerous returns from homestead forests in the form of fuel, food, fodder and other household items. Even if it was possible for rural males to spend their time and energy (which they normally spend in agricultural and other activities) their productivity would possibly be less than women's in these activities as well as in their usual activities. It is, therefore, evident that both the homestead forest and the collective effort of rural women, are contributing to the economy of rural Bangladesh very significantly.

The survey indicates the importance of the homestead forests not just to the rural economy as a whole but also to the different income groups in rural Bangladesh.

The survey reveals that the forestry workload ratio of women to men is greater in the poorest households than in the population as a whole. This is helpful not only to the family income directly but its indirect contribution comes in the form of the male members being given the time to seek gainful economic activities elsewhere. In addition to the direct involvement of women in the homestead forests themselves, there are various processing activities based on the resources of these forests which also involve paid female labour. This economic role of the poor women is often overlooked because of the perception commonly held about these women that they are no more than 'reproductive agents' who also perform some daily household activities which are unpaid. Their contributions in supplementing the family meal with products from homestead forests, or in gathering fuel, fodder or other animal feed is not negligible, but is often not recognised enough. The women themselves, however, feel their worth to the households to be much more because of these activities of theirs which no other rural enterprise could possibly provide. In any case, the rural environment at the family level and at the social level is male dominated and the work of women is usually unrecognised and not taken into account. The homestead forests on the other hand are the 'natural habitat' of the women and their families make good use of their services in the many ways described above. This role could be further enhanced if forestry development projects incorporated the homestead forests and other activities based on them in their policy making. The economic and social benefits of such an orientation of forestry development projects would be enormous in a society which traditionally suppresses its women folk.

ENDNOTES

1. A few poor farm households had female headed households and in some cases they were old so they had to hire male labourers for fuelwood management.
2. For details, refer to Begum, 1995.
3. For more, see Begum, 1995.

CHAPTER EIGHT

Homestead Forests: A Treasure House of Medicinal Trees, Herbs and Plants For Primary Health Care in Rural Bangladesh

The previous chapter examined the inter-linkages between homestead forests, women and development in rural Bangladesh. This chapter explores the inter-linkages between homestead forests, health care and rural people in Bangladesh. The first section states the historical evolution and cultural importance of herbal medicine. The second section focuses on the anthropological and sociological importance of ethno-medicines by citing some research findings. The third section examines the welfare role of homestead forests for social medicine in developing countries. The fourth section seeks to examine the contemporary attitudes to herbal and other natural cures. The fifth section shows how homestead forests help the rural poor in Bangladesh by providing herbal medicines at low or no cost. This part also examines the reasons why a large number of rural people are still reliant on the herbal system of treatment. The sixth section examines the role of herbal medicine for the income and employment of rural poor in Bangladesh.

On the basis of survey data and other available research findings, the final section shows how homestead forests meet the demands of health care in rural Bangladesh and other developing countries in significant ways.

8.1 Introduction

If we look at the dawn of civilization, we may realise how people lived centuries ago and how much they were dependent on plants, herbs and trees not only for food but for many other purposes. Their clothes were from the barks and leaves, and they lived for generations under the shade of trees, especially to protect themselves from the elements and wild animals. There was no medicine as we know it now. People had to rely on trees, herbs and plants for remedies.

The wild growing medicinal plants, herbs, trees, roots or seeds that enrich our heritage were familiar to the people of the Stone Age. Like the American Indians or the people of the South Seas, these people had a very close relationship with nature. Precise observation and the collected experience of many generations indicate that they had a reliable knowledge about the plants in their environments.

More precise information concerning the history of trees, herbs and plants has come down to us via the written accounts of ancient civilizations. Thousands of years before Christ, the Chinese and the Sumarians consolidated their knowledge on trees, herbs and plants and wrote it down for posterity. In India, Egypt and Babylonia, trees, herbs and plants were similarly collected and cultivated (Kreuter, 1985). At the dawn of modern civilization Hippocrates, Theophrastus, Galen, and Dioscorides had a great influence due to their knowledge of the medicinal and healing powers of trees, herbs and plants in the Western world.

In the course of centuries, these trees, herbs and plants slowly wandered beyond the walls protecting the cloister and palace gardens and into the home gardens of peasants. When the art of printing was invented toward the end of the Middle Ages, it provided the vehicle for transmitting the knowledge of these herbs and plants together with many recipes but not for many centuries (to 'the common folk'). The books of well-known herbalists like Otto Brunfels and Leonhard Fuchs have described the mysterious properties of these herbs and plants and how they worked for healing purposes. Thus, the printed as well as the spoken word formed an unbroken chain of transmission of knowledge about trees, herbs and medicinal plants up to the beginning of the 20th century. It also sometimes happened that ancient stories and magical rites concerning popular 'holy herbs' gained adherents. So, in a number of ways, people have maintained their familiarity with these plants in their daily lives (Kreuter, 1985).

Many of our present day drugs are still obtained from trees, herbs and plants and their use was developed from the old systems of our forefathers. The trees, herbs and plants grown in home gardens/homestead forests are still providing a number of

medicinal drugs and making a significant contribution to public health in modern civilization.

8.2 Anthropological and Sociological Studies of Ethno-medicine and Their Significance

Every human community has responded to the diseases they have suffered in terms conditioned by their economic, social and cultural backgrounds and values. Ethno-medicinal study groups have tried to find out about the traditional medicinal beliefs and practices in different societies, cultures and sub-cultures. The published accounts of the world's medical systems have made possible the new discipline of 'ethno-medicine', namely "those beliefs and practices relating to disease which are the products of indigenous cultural development and are not explicitly derived from the conceptual framework of modern medicine" (Encyclopedia of the Social Sciences, 1968:88).

The ethno-medical accounts cover both the supernatural and natural causes of illness and treatment. Illnesses caused by angry deities, ghosts, ancestors, and witches fall into the first category, while those due to an upset in body humours and consequent loss of bodily equilibrium, fall into the second. Supernatural explanations appear to predominate in the traditional systems of Africa, pre-conquest America, Oceania and indigenous Siberia. They also underlie the more complex systems of contemporary China, South Asia, and Latin America. In contrast, naturalistic explanations predominate in humeral pathology, *Ayurveda*, *Unani* and traditional Chinese medicine (Foster, 1983).

Both in industrialized and developing societies, a variety of types of therapists, each with a specialty or specialities, is usually found. The most common types are religious leaders or priests. Among others some possessed supernatural medical power such as *Jinn* and Witch-finder. Herbal therapists, bonesetters and midwives are also common. The last three are probably to be found in all societies; the others, while widespread, are not universal. In contrast to supernaturally and magically endowed curers, herbal and other therapists usually acquire their knowledge of herbs

and their skills in treatment procedures from older practising curers. Thus, two major classes of curers emerge from the data of traditional medicine: those with supernatural or magical powers who diagnose and who also may administer therapy, and those who accept the patient's self-diagnosis and administer the appropriate remedies by using herbal medicine.

It was not the anthropologists who first drew attention to the role of herbal medicine. Rather it was the travellers, missionaries and other observers who recount the native mode of treatment in their personal records and biographies. However, Sigerist (1951) reviews the history of the study of what he calls 'primitive medicine' and showed how large a body of information was available in the writings of Tylor, Frazer and other European-American contemporaries. Rivers and Seligman who were rising medical research workers, were converted to anthropology as a result of a Torres Straits Expedition of 1898. Both gave attention to ethno-medical problems in their field studies. Rivers (1914;1924) described the traditional medical practice and belief of the people of the Asia-Pacific region and concluded that the 'art of medicine' of these people was in some respects more rational than modern medicines, because the mode of diagnosis and treatment followed more directly from ideas concerning causation. It was a simple step from this conclusion to a special emphasis on the apparent efficacy of the traditional medicine of tribal people. Rivers' work is widely accepted in ethno-medical research and remains usable to some extent today.

During the 1950s and 1960s, anthropologists directed their attention predominantly to studying traditional beliefs and practices of tribal groups and populations, mostly in rural areas. Exemplary fieldwork in this area, includes studies in the British tradition of Radcliffe Brown's structural-functional comparison at the micro level. Under the influence of Evans-Pritchard's (1937) study of health and healing, anthropologists such as Turner (1964) focused his attention on the ritual aspects of health and disease, in which magic and religion were linked with the concept of 'primitive medicine' (Slikkerveer, 1990). This reduces the study of health and disease to studies of witchcraft, sorcery, magic and in general curative or socially adjustive ritual practices, with herbalist and empirically rational diagnosis, treatment and

prophylaxis as residual categories (Loudon *et al*, 1976). An impressive counter example is the book by Harley (1941;1970), a trained medical doctor who spent many years in Liberia as a medical missionary. In order to supplement his medical qualifications, Harley went to immense trouble to master the ethnographic and sociological literature and theories having a bearing on African folk medicine. Harley does indeed compare real pathology and appropriate treatment as determined by scientific western medicine, with native Liberian Mano categories, diagnoses and modes of treatment. This results in an elucidation of the division in Mano medicine between empirically rational procedures and treatment facilities and an assessment of their respective application in accordance with the native classification of diseases. The author's conclusion is that the Mano are evidently a people with a considerable knowledge of many useful herbal remedies and a respectable range of empirically sound forms of treatment. It is also a picture that could be paralleled from elsewhere in West Africa (Loudon *et al*, 1976). Harley thus combined modern diagnoses and treatment and traditional ones to enhance the usefulness of both.

Towards the end of this era, anthropological studies gradually came to pay more attention to the phenomenon involving utilisation of both traditional and modern medicine by the local population. During the 1970s, two major areas of research have predominated in medical anthropological and sociological research. Firstly, expanded ethno-medical studies have focused on local disease etiology and medicinal knowledge as components of help seeking and utilisation behaviour, a broader dimension to the study of medical systems.

Secondly, under the influence of sociological theories of social and cultural change, a number of studies have emphasised the role of traditional medicine in developing nations. In this respect, Colson and Selby (1974) refer to the important category of studies in social epidemiology representing a research focus on socio-cultural factors in relation to disease, particularly among rural populations. In general, this approach is analogous with a tradition in medical sociology, termed 'sociology in medicine' centred upon the patient and the sick role (cited by Suser and Watson, 1971).

A new era dawned in the early 1970s which Bibeau (1981) describes as the health political era. In recent years, the focus of attention in the health sector has shifted from regarding the total population as the target group to regional groups, whose health problems are placed in a broader socio-economic and political context. Health care then is primarily linked with the political responsibilities of the society. It is noticeable that, in addition to anthropologists, sociologists and social scientists, more medical social scientists including medical economists, political scientists, and health care policy makers have become active in health care in developing countries (Slikkerveer, 1990).

It is worth noting that, by the end of the 1970s, due to the productive fieldwork by medical anthropologists and sociologists, together with health planners and administrators, the World Health Organisation (WHO) and some other international organisations recommended actions to encourage the new policy by promoting and rehabilitating the traditional medical systems which already existed in most of the developing countries. But their aim was not to maximise the utilization of these systems within Bangladesh or other Third World countries, the aim was rather to revive a worldwide interest in and consciousness about the value and usefulness of these medical systems.

Although large sections of the rural population of Third World countries depend on herbal medicine for their primary health care, the national health care policies of these countries, including Bangladesh tend to be dependent mostly on the Western systems of medicine and despite the high costs of such medicine. These high costs of Western medicines have compelled many developing countries to examine afresh the alternative of traditional herbal remedies which their societies had used over generations. The revival of interest in traditional herbal medicine has attracted a variety of small and large pharmaceutical companies of the Western world to explore, process and develop these remedies. They then market them as modern medicines both in developed countries and in developing ones. They are also investigating the way medicine is used by the local communities of developing countries so that this experience can also be used in developed societies. For example, about 25 percent

of the prescription drugs used in the United States of America have active ingredients extracted or derived from the plants, herbs and trees of developing countries (Miller, 1995). They also use a variety of local institutional and independent collectors in the countries where such plant life is naturally abundant. One example of such a collaborative arrangement is between the Central Drug Research Institute (CDRI) of India and a variety of the Western pharmaceutical industries. The CDRI is known to collect and analyze medical ingredients from local forestry resources. While the Western drug companies use them to generate patented drugs for sale, the benefits of such collaboration are likely to be more in favour of drug companies than the public of developing countries (Miller, 1995).

An example of this is found in the many patent arrangements some Japanese and American firms have entered into in relation to the ingredients of the familiar neem tree which grows in the Indian subcontinent. For centuries, products from this tree have been used as medicine, fuel, fodder, building material as well as a contraceptive and a useful hygienic product. Its chemical properties however have never been patented in the Indian subcontinent. But, since 1972, at least a dozen patents for a variety of the neem tree components have been taken out by Japanese and American companies (National Research Council of U.S.A., 1992). Some American companies have also started growing neem trees commercially in the Florida region of the U.S. Extensive research in other countries is also going on involving the many medicinal and other aspects of the neem tree. While such efforts are useful in extending the benefits of a particularly useful tree, it transfers the control of the methods of delivery of the medicinal products of the tree to commercial interests outside the poorer countries. The planners and policymakers of these latter countries are also often Western trained and sympathetic to 'modern medicine'. This helps to further erode the confidence and the emphasis of the rural people on the ingredients of the herbs, plants and trees around them. Once again the powerlessness of the poor masses of developing countries falls victim to the commercial interest of big businesses and social elites.

8.3 Homestead Forests and Their Welfare Role for Social Medicine

Most of the developing countries of the world lie in the tropics or semitropics. A large variety of flora is found around homesteads in these countries, and there is a rich history of the use of these trees and herbs for treating diseases. The trees and herbs are mainly used by traditional practitioners such as traditional healers, herbalists, midwives, and spiritualists. Sometimes older members of the rural households also use trees for the treatment of diseases. This type of treatment is called home remedy. The methods of diagnosis and treatment by traditional practitioners vary from region to region but their way of using plant medicine, grounded in some kind of rudimentary medical practice, have merged in the course of time into well-defined and distinct systems. They are influenced by local culture, religion and tradition, and are practised through trial and error, keen observation, intuition, accumulated experience, folk customs and ancestral beliefs.

The traditional practitioners command the implicit faith and confidence of their rural clientele as they form an integral part of village life. They can treat most common ailments which comprise about 80 percent of diseases. Treatment in these systems is much cheaper, and is especially effective in dealing with chronic ailments, allergic conditions, parasitic infectious, viral and psychosomatic diseases. The practitioners use locally available herbs and other ingredients in their day to day practice.

In most African societies, herbalists use many kind of local trees, plants and herbs for treatment of diseases like diabetes, bronchial asthma and skin diseases (Ampofo, 1977). In Mexico, several different trees such as *tepegnaje* and *solda con solda* are used to make casts for keeping bones in place (Werner, 1977). Another tree, *casimiroa edulis*, which was used for inducing sleep during the Aztec civilization, is today used for its beneficial effects on the blood pressure and also *Chenopodium ambrosioids* is a plant, widely used as a parasite-expellent there (Xavier, 1977). In Pakistan, about two-thirds of the rural population rely on locally available herbal medicines. They are very much dependent on the *hakim*, a herbalist, who resides in the local community (Said, 1983). In Vietnam, eighty percent of medicine used

comes from trees, and each village has its own green dispensary (WHO, 1983). In China, herbal medicine has been used for more than 4000 years. In Malaysia, village vegetation with its rich variety of forms, is both the source of traditional treatment and a pharmacopoeia. For example, the betel nut is prescribed for parasitic worms and the root of a certain leguminous plant is used for sexually transmitted diseases such as syphilis and gonorrhea (Jurgen, 1977). In Fiji, about 300 native plants are used as medicines by traditional healers who are active and numerous in all parts of the country and in their practices, healers use either psychic and spiritual methods or solely physical and pharmacological methods (Kun, 1983). The rural Indian villages are rich in medicinal trees, herbs and drugs such as, *atropa*, *belladonna*, *nux vomica*, *mentha*, *podophyllum emodi*, *previfolia*, *gokhru*, *bidarikand* and energy giving *brahmi* and *sankhpusip*. *Bhang* leaves and *datura* seeds, taken in larger quantities, act as poisons, but in moderation they work like stimulants and tonics. *Rauvolfia* (*sarpagandha*), which has now rocketed to worldwide popularity is a useful antidote for snakebites and insect stings and insanity. There are many other trees, herbs and plants of medicinal value too in Indian villages (Mamoria, 1975). Indigenous plant medicines are also widely practised in rural areas of Sri Lanka. The accumulated wisdom of the rural people and their experiences constitute the substantive knowledge and skills in traditional medicine in Sri Lanka. Native plants and ailments are used as traditional medicines in the treatment of asthma, respiratory distress, coughs and other diseases in Egypt (WHO, 1978).

Medicinal trees, herbs and plants are used in many systematically developed ways. Among the developed systems, *Ayurveda*, *Unani* and Chinese Medicine occupy the foremost place. The *Siddah* and *Tibetan* systems of medicine have also been developed with the availability of local tree resources. *Ayurveda* literally means the science of life. It is a fully developed science, with eight different branches of medical science. Some 1200 drugs are in frequent use either in the form of single drugs or as compound formations (Kurup, 1977b). The practitioners normally prepare herbal medicines for their patients in their own clinics. For simple concoctions, powders, and so on, the physician often advises patients to prepare them in their own homes from locally available herbal sources. The large scale production of *ayurvedic*

drugs is mainly from domestic and wild forest sources (Kurup, 1983). The *Unani* system owes its origin to Greece but has absorbed native herbal plants during its long journey through the Arabian and Asian countries. This system is based on the theory of humours. The treatment of each individual is expressed according to the preponderance of humours and herbal drugs are determined according to the temperaments. Local herbs, plants and trees are the main sources of *Unani* medicine. In Pakistan, India and Bangladesh, a large segment of the rural population are relying on *Ayurvedic* and *Unani* Medicine for the remedy of a number of diseases. The *Siddha* system of medicine practised in Tamil-speaking parts of South-East Asia has a long and rich tradition. Its unique feature is that it makes extensive use of herbs, plants, trees, minerals and metals and made notable advances in treating various diseases. The *Tibetan* system of medicine has drawn considerable knowledge from *Ayurveda* and has been influenced by the Chinese system. It also makes use of drugs of plants, herbs, trees, mineral and animal origin (Kurup, 1977b).

In the preceding discussion, the role of herbs, trees and plant medicines in providing health care to different communities, and the various systems that have survived in the course of civilization and that are still found in different countries have been briefly described. It is evident that health services in developing countries are mainly reliant on the traditional systems of medicine. It was found that the national health services in developing countries cover not more than fifteen percent of the rural population (Ebrahim, 1988). Health resources tend to be concentrated in urban areas which accommodate only about twenty percent of the total population. The wide difference between high costs and low returns in health care has also become apparent in both the developed and developing countries. In several developing countries, while about five percent of the national budget is allocated to the health services, some thirty percent of that amount is absorbed by the drug bill alone. It should be noted too that all the drugs for such relatively poor countries are imported against payments in hard currency (Bannerman, 1983). The high costs of drugs and the inability of many developing countries to purchase such drugs have prompted several countries to look for local products of traditional medicines. In certain Asian and Latin American countries, the cultivation of commonly used medicinal plants,

trees and herbs is undertaken in home and community gardens to ensure an adequate and continuous supply of plants (Bannerman, 1983). The locally available and commonly used medicinal trees, plants and herbs would, therefore, have an important role in primary health care in developing countries.

8.4 Contemporary Attitude to Herbal and Other 'Nature Cures'

As previously shown, a number of well-defined and well developed traditional medical systems are prevalent in different parts of the world.

The healers, herbalists, spiritualists, and midwives constitute a vast resource of traditional practitioners all over the world. Though their method of diagnosis and treatment vary from region to region, the use of trees and herbs as medicine is similar worldwide.

Currently, most developing countries are grappling with the reality of vast public health problems. The efforts made so far to include 'modern' forms of medical care are still far from meeting the demands of their fast growing populations. In this situation, traditional medicines and practitioners are increasingly recognised as important to the future development of national public health policies.

It used to be generally assumed that traditional medicine could now be relegated to footnotes in the medical history of the developed world. This verdict has turned out to be premature. Medicinal plants, with their chemical composition wrested from them and their active ingredients identified by the western pharmaceutical world, still remain important for the people of both the developed and the developing world (Xavier, 1983).

Because of the negative manifestations of modern drugs, various social movements have questioned Western medical practice. Their citizens have begun to condemn the excessive, almost daily use of pharmaceutical products and the winds of change have started to blow through the health care policies and programmes. An increased

awareness of Eastern culture has developed which lends fresh impetus to the search for alternative healing methods. Herbalism and acupuncture in particular, have attracted the curiosity of industrialized society. The study of medicinal plants has been revived in the West under the influence of this 'back to nature movement'.

In turn this has led to the further study and development of traditional medicines in developing countries. People are once again acknowledging the important social function fulfilled by traditional practitioners and traditional medicine which, it is claimed, helps to restore cultural and human dignity in places where more modern forms of medicines seem to have lost it. The poor themselves are also realising the value of traditional medicines and the need to assess their curative properties in existing health care systems.

Today, science is investigating the curative power of trees, plants and herbs and has analyzed the active ingredients of decoctions and ointments made from trees for traditional health treatment.

Studies continue on the curative properties of herbal remedies, as observed by Xavier (1983). The usefulness of the local application of *saicylates* such as aspirin (the original method of using the remedy based on the powdered bark of the willow tree) to treat rheumatic complaints is recognised. Percutaneous absorption (through the skin) can achieve a therapeutic effect in the affected part of the body with much smaller quantities of a given drug. The application of poultices, massage with plant based liniments, and the therapeutic use of essential oils are taking on a new dimension in the health care of the future. The plant based infusions are described as 'mild' remedies for treating minor ailments and general diseases of the body. Studies on the way in which *camomile* tea, for example, alters the hormonal balance or helps to reduce the inflammatory process appear to revolutionise some of the dogmas for 'orthodox' pharmacologists. The treatment of diabetes mellitus with plant extracts is becoming part of Western medical practice. In reproductive biology too, potions made from herbs have made an appearance¹. Thus simple plants in their traditional form of use, laxative concoctions of roots, antipyretic teas of leaves or

flowers, oily poultices of analgesic or stimulating herbs, crude extracts to regulate menstruation, glycaemia-reducing plants taken orally in combination with food, fomentations or massages using natural anti-influenzal substances, and sedatives of vegetable origin have all gained acceptance in primary health care in both developed and developing countries during late twentieth-century science.

8.5 Traditional Medicine and Homestead Forestry in Bangladesh

8.5.1 *Homestead Forests and Their Welfare Role In Traditional Medicine in Rural Bangladesh: A Brief Historical Overview*

In the first decade of the 17th century, *Hakims* were the only well known official physicians in Bangladesh. The Portuguese doctor, Clarenti was a trained medical surgeon and a popular physician in Dhaka in the early 19th century (till 1823). His means of treatment were leaves of trees and herbs. His men would collect leaves and prepare mixtures for the treatment of diseases. Among others, *Kaviraj* had extensive practices throughout Bangladesh and were noted for their eagerness to treat poor patients (Rizvi, 1975).

Hunter (1875) wrote: "The remedies used by the *Kaviraj* are cold sedatives, relaxants, depressants and cooling agents generally; dry astringents, absorbents etc.; warm tonics, carminatives etc.; hot stimulants, condiments, etc. and most diluents, demulcents, watery food etc, the *bish-bari* or poison pills administered in low fevers. Arsenic and opium, with doses of *panchan* (a thick febrifugal infusion of a number of drugs), as their sheetanchor were used in all ordinary fevers. In dysentery and diarrhoea, *kutaraj*, barks of wrightea anti-dysenterica, dried pulp of *bel* fruit, mango stems etc. were largely used" (cited by Rashid, 1980: 202).

The indigenous drugs, used by the *kaviraj*, were mainly from local herbs, trees and plants. For example, with *bablar-ata*, the gum is an excellent substitute for gum-arabic and is used as a demulcent; *supari*, a solution is given as a demulcent; *bel*, the pulp made into sherbet is given as astringent, nutritive and tonic; *mader*, the bark of

the root reduced to powder forms is a tolerably effective substitute for ipecacuanha; *lal-maricha*, used as a stimulant and carminative; *bhat*, an infusion or concoction of dried leaves, is used as a tonic, vermifuge, antipyretic and febrifuge; *narical* or coconut, the oil is used as an emollient; *golancha*, an extract made from the stem of the plant is used as a tonic and is best used in the curvalescent form for fevers and other diseases; *kachu*, the fresh juice is a powerful styptic in external haemorrhages; *anantamul*, a concoction made from the root is given as an alternative tonic and diaphoretic and is a good substitute for sar sa parhelia, *modhu* or honey, a demulcent; *lal-chita*, or red lead, a plaster, used as a rubifacient and vesicant; *hara haritaki*, a powder, given as a laxative, alterative and tonic, *indrajalo*, the seeds and barks used as a tonic astringent; *shunt* or dried ginger, a powder given as a stimulant were used for treatment of diseases (Rizvi, 1975). Among these ingredients, more than 90 percent come from homestead gardens of rural households.

The *Kaviraj* and *Hakims* seemed to classify most diseases as originating from three separate causes, or from a combination of them, viz., *Bai*, or wind; *Pitta*, or bile; and *Kaph* or phlegm. In cases of treatment, they prescribed a combination of the above mentioned herbs and plants. We can understand how important was the role of *Kaviraji* and *Hakimi* treatments in primary health care in the 18th and the 19th century, from the writings of Taylor (1832). He mentioned that "there was only one native hospital in Dacca in 1803, being small, ill ventilated and capable of containing only 40 patients and altogether ill-adapted to the purpose it was created" cited by Rizvi (1975:260). In 1907, there were only 164 doctors with diplomas or certificates in the capital district, and the remaining districts and divisions had only 34 doctors and the total patients were treated by them in the year 1901 was not more than 2,627. Most of these patients, however, were treated in urban areas. There were, in 1907, only eight dispensaries to every million inhabitants and the treatments were mainly given for communicable diseases, such as malaria, cholera, small-pox and tuberculosis (Taylor (1832), cited by Rizvy, 1975:260-261). The above statistics clearly indicate that millions of people had to rely on *Kaviraji* and *Hakimi* systems of medicines, the sources of which were trees, herbs and plants supplied mostly from home gardens.

The increasing demand for and popularity of herbal medicines led to the establishment of a few *Ayurvedic* medicine manufacturing factories in Dacca during the early part of 20th century. Since then, the district of Dhaka has been famous for three reputed *Ayurvedic* medicine manufacturing concerns, viz., Sadhona, Sakti and Ayurveda pharmacies, the first of which is probably the biggest and the foremost *Ayurvedic* medicine manufacturing concern in the Indian sub-continent. Due to the wide demand for these medicines, branch offices are in operation in most district towns. The Sadhona's main factory produces about 800 varieties of *Ayurvedic* medicines and the main sources of raw materials for these medicines are the trees, herbs and plants of homesteads and wild forests.

Sadhana Ayurveda Limited, Dhaka, has at present 135 branches in India and 93 branches in Pakistan. It has some overseas agencies and medicines are exported to Pakistan, Middle-East countries, U.K, U.S.A, East and West Africa (Rizvi, 1975).

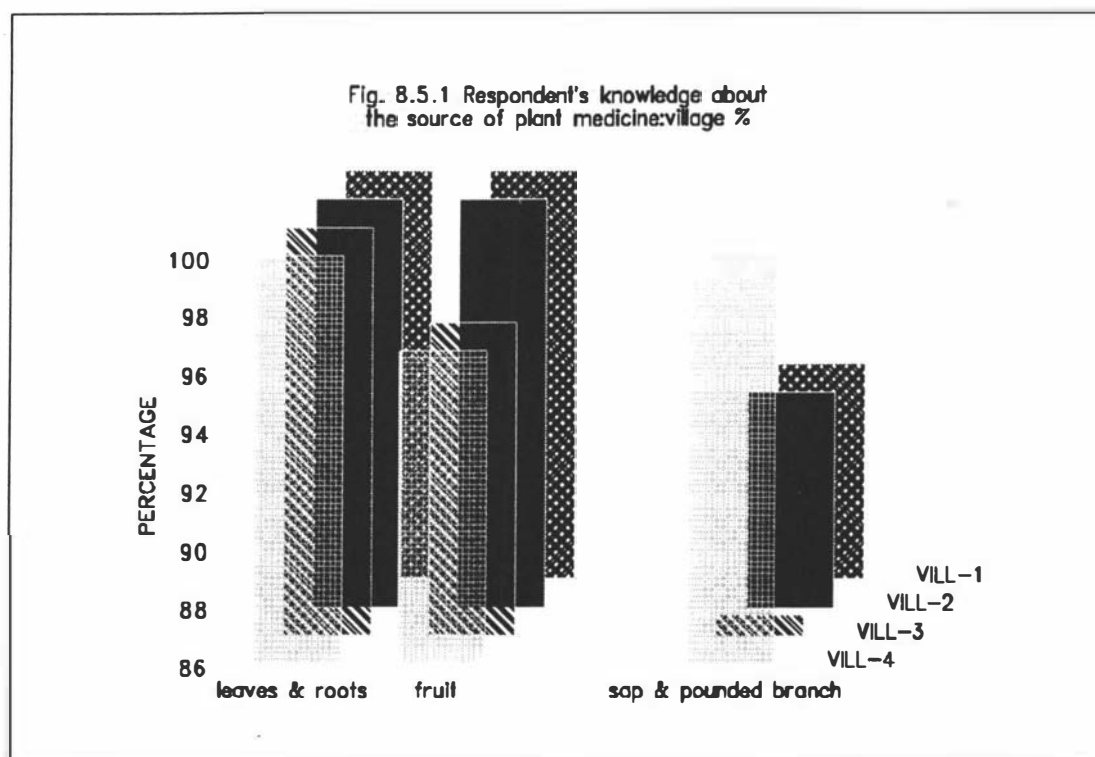
Unani medicine became the state system during the Mughal period (1685-1757). With Dacca being the capital city during this period, the *Unani* system got prominence in this part of the country. But with the downfall of the Muslim rulers, the *Unani* system gradually went into oblivion and the Western system of treatment gradually replaced it with the backing of the British rulers. However, the system did survive due to the untiring efforts of some prominent Hakims who had higher degrees in *Tibbi* from Delhi and came to Dhaka during the 1900s. They started practice and soon became very popular. In recognition of their service and contribution towards the advancement of medicine, one of these prominent Hakims was given the title of honour 'shifa-ul-Mulk' by the British government in 1939. During that time, there was a published monthly Bengali Magazine *Shefa* (remedy) which mainly dealt with various medicinal trees, herbs and plants (Rizvi, 1975).

Even after the partition of 1947, both the *Unani* and *Ayurvedic* systems of medicines have not declined or been replaced by modern systems of medicine. These systems are still practised by the traditional midwives (*dai*), traditional herbalists, and religious leaders. In rural areas, traditional herbalists include the *kaviraj*, the *hakim*,

the sapure, the *vaidya* and other community people who are involved in herbal treatment. The religious leaders (*peer* and *fakirs*) mostly follow their own religious way of treatment although they also rely partially on trees and herbs. For example, the *peer* and *fakirs* who are religio-magical practitioners and generally dominate the rural medical scene treat with *tavij* which is a mainly Qur'anic quotations written in Arabic but sometimes they also use roots of local trees, plants and herbs with their religious treatment. The *kaviraj*, *hakim*, *sapuray* and *vaidya* communities, who provide health care facilities to rural people, earn an income from them too. In most villages, there is at least one *kaviraj*, *hakim*, or religious leader who does the treatment of villagers. The main source of these traditional treatments are trees, herbs and plants, mainly from homestead forests. The homestead forest thus plays a vital role in the primary health care of rural people.

8.5.2 *The Role of Herbal Medicine for Primary Health Care: Survey Findings*

The survey population was asked about their knowledge and use of plant medicines. In all the villages, on average, at least 90 percent of respondents replied that they are familiar with plant medicines and the source of these medicines were leaves, roots, fruit, sap and the pounded branches of homestead trees, herbs and plants (Figure 8.5.1).



The data also indicate that this knowledge was very similar among respondents of different income households (Figure 8.5.2).

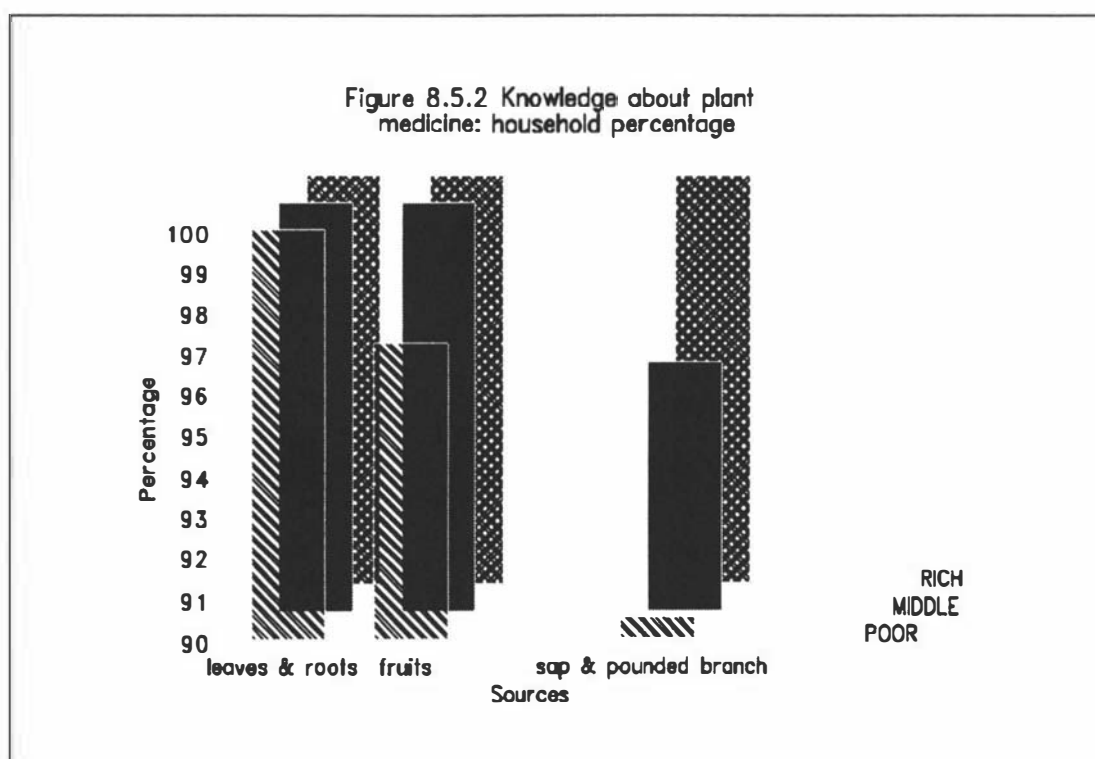


Table 8.5.1 shows the sources of knowledge about plant medicines in different villages. Overall, 49 percent of respondents replied that the main source of knowledge was the traditional herbalist and an average 21.2 percent of respondents mentioned their family as the second most important source. The other sources were aged male and female villagers (average 13.5 and 15 percent) and unqualified village doctors (quackers) (1.4 percent) respectively. There was a regional variation but it was not very significant.

Table 8.5.1

Respondents' Sources of Knowledge about Plant Medicine: Village Wide Comparison

Sources	VILL-1	VILL-2	VILL-3	VILL-4
Family	27.8	15.4	19.6	22.6
Herbalist	44.9	61.6	45.7	42.0
Elder Villager (Female)	10.3	15.4	15.2	19.4
Elder Villager (Male)	17.0	7.6	17.3	12.8
Unqualified Doctor	0.0	0.0	2.2	3.2
Total %	100.0	100.0	100.0	100.0

Source: Field Survey, 1992. N=30 in each Village.

When the data were categorised into different income households it was found that in the case of the herbalist as a source of knowledge the poor income households had the highest response (68.9 percent) followed by the middle (50 percent) and the rich households (35 percent) respectively. This indicates that the poor and the middle income households are much more reliant on herbal treatment than the rich households.

Table 8.5.2**Respondents' Sources of Knowledge about Plant Medicine: Household Percentage.**

Sources	RICH	MIDDLE	POOR
Family	10.0	19.2	35.0
Herbalist	35.0	50.0	68.9
Elder Villager (female)	5.0	3.8	27.0
Elder Villager (male)	10.0	0.0	27.0
Unqualified Doctor	5.0	3.8	0.0

Source: Field Survey, 1992. N=120

Table 8.5.3 shows the variations in treatment methods in the survey villages. It was found that, on average, 59.2 percent of respondents (from all villages) followed some herbal system of treatment and there were some regional differences. This table also shows that on average 60.8 percent of the respondents were treated by the modern medical system and 43.6 percent were treated by unqualified doctors (quacks). Treatment by religious leaders and midwives was followed by a very few respondents (average 7 and 5 percent) and there was little regional variation.

Table 8.5.3**Households Using Various Treatment Methods: Village Wide Percentage**

Types of Treatment	VILL-1	VILL-2	VILL-3	VILL-4
Herbal	73.3	53.3	56.7	53.6
Modern	95.0	60.0	46.7	73.3
Quackery	16.7	37.7	63.3	56.7
Religious	6.7	10.0	10.0	6.7
Midwives	6.7	10.0	6.7	3.3

Source: Field Survey, 1992. N=30 in each Village.

The data of Table 8.5.3 indicate that in all the survey villages, there were three main methods of treatment and most of the village people were treated by all these methods. However, a difference was noticed when the respondents were grouped in different economic categories. It was found that 64.8 percent of the poor households were treated by the herbal system and this was followed by 57.7 percent of middle and 40 percent of rich households. But in the case of modern methods, this situation was almost reversed. The data show that one hundred percent of rich income households were treated by the modern method, followed by 84.6 percent of the middle and 41.9 percent of the poor households respectively. In the case of unqualified doctor's treatment, it was found that 62.1 percent of the poor income households were treated by this method followed by the 11.5 percent of the middle and 15 percent of the rich respectively (Table 8.5.4).

Table 8.5.4

Treatment Methods Used by Different Households: Percentage Distribution

Types of Treatment	RICH	MIDDLE	POOR
Herbal	40.0	57.7	64.8
Modern	100.0	84.6	41.9
Quackery	15.0	11.5	62.1
Religious	0.0	0.0	9.45
Midwives	0.0	0.0	6.7

Source: Field Survey, 1992. N=120.

The above data indicate that a large number of village people relied on herbal treatment the causes of which are discussed in the sixth section of this chapter.

Table 8.5.5 and 8.5.6 show that most of the parasitic and viral diseases like stomachaches, toothaches, diarrhoea, dysentery, jaundice, worm, skin, cough and

sexual diseases were treated by the herbal system and despite differences among household income categories and villages, such treatments were very common.

Table 8.5.5

Plant Medicines Usage for Treatment of Common Diseases by Different Households: Percentage Distribution

Diseases	RICH	MIDDLE	POOR
Stomachaches	35.0	46.1	58.1
Toothaches	35.0	46.1	44.6
Diarrhoea	30.0	38.7	54.1
Jaundice	5.0	11.5	12.2
Abortion	5.0	7.7	10.8
Cough	25.0	46.1	56.8
Dysentery	35.0	53.8	54.4
Worm	20.0	30.8	35.1
Sexual Diseases	0.0	3.8	12.2
Burning	0.0	7.7	8.1
Skin diseases	5.0	23.1	37.8
Fracture	5.0	3.8	8.1
Others*	40.0	46.1	56.7

Source: Field Survey, 1992. N=120

- * Includes chicken pox, blood purification, ulceration of mouth, vomiting, labour pain, food poisoning, contraceptive, anaemia, hydrocele, scabies, heart problem, constipation, abdominal pain, paralysis, tuberculosis, piles, arthritis, fever, leprosy, snake bite, stone in the gall bladder and urinary bladder, malaria, rheumatic fever, diabetes etc.

Table 8.5.6

**Plant Medicines Usage for Treatment of Common Diseases by Different Villages:
Percentage Distribution**

Types of Diseases	VILL-1	VILL-2	VILL-3	VILL-4
Stomachaches	70.0	56.7	46.7	33.3
Toothaches	53.3	33.3	46.7	40.0
Diarrhoea	40.0	23.3	36.7	30.0
Jaundice	16.7	6.7	13.3	10.0
Abortion	13.3	3.3	6.7	13.3
Cough	53.3	36.7	56.7	50.0
Dysentery	63.3	33.3	50.0	56.7
Worm	40.0	20.0	40.0	26.7
Sexual diseases	6.7	6.7	13.3	6.7
Skin diseases	33.3	26.7	30.0	23.3
Burning	6.7	3.3	10.0	6.7
Fracture	3.3	6.7	6.7	10.0
Others*	53.3	43.3	50.0	56.7

Source: Field Survey, 1992. N=30 in each Village.

- * Includes chicken pox, blood purification, ulceration of mouth, vomiting, labour pain, food poisoning, contraceptive, anaemia, hydrocele, scabies, heart problem, constipation, abdominal pain, paralysis, tuberculosis, piles, arthritis, fever, leprosy, snake bite, stone in the gall bladder and urinary bladder, malaria, rheumatic fever, diabetes etc.

Appendix 2 shows a list of trees, herbs and plants with their vernacular and scientific names along with their different actions and uses. These medicines are mainly provided by the village *kavirajs*, *hakims* and other traditional healers and the source of these trees, herbs and plants were local homestead forests. Sometimes, the villagers themselves also used these medicines as home remedies for various purposes.

8.5.3 *Herbal Medicine, Income and Employment*

In the preceding section we have discussed the contribution of herbal medicine to primary health care in rural Bangladesh. Now we briefly examine how the herbal system of medicine provides income and employment for the rural poor.

It was reported by the villagers that at least 11 people were involved in providing herbal treatment in all the survey and neighbouring villages, and all of them were from poor households. Among these, four persons were in village one, two each were in villages two and three, and three were in village four. These providers of herbal medicines and related services are known as the *kaviraj* or the *hakim*. These *kaviraj* and *hakim* are very popular in their localities for their methods of treatment, and in most cases their incomes derive from their medical treatment. It was difficult to find out the exact incomes of these herbalists. We were however able to 'guestimate' their incomes indirectly in the course of our discussions about the various aspects of their treatment methods. It was reported that their incomes vary from season to season, and that they earn the highest incomes during the rainy season, and the lowest during the winter season. These incomes vary very little from village to village. The average income range during the rainy season was estimated to be between 1,000 and 1,500 *taka*, whereas during the winter season it was between 500 and 700 *taka*. Most of the *kaviraj* and *hakim* charged money only for the medicines and did not charge a service fee separately. This practice sometimes earned them an added 'bonus' for their generosity. For example, sometimes they would receive paddy, wheat or some seasonal fruits such as mangoes, coconuts, jackfruit and bananas for the special care and treatment of patients. These gifts may not add up to much in economic terms but they have a special social and psychological symbolic value. The grateful villagers whose access to any other form of medical treatment is limited or non-existent, treat the village *kaviraj* or *hakim* as an honoured member of their extended family. The *kaviraj* or *hakim* in their turn provide a kind of psychological support to the poor villagers in times of need.

Apart from the *kaviraj* and *hakim*, it was also reported that at least one to two *dais* (mid wives) in each survey village were involved in supplying herbal medicines to the patients, especially the females. Although the primary role of these *dais* is to help women during child birth, their role in promoting specialist herbal treatment is no less important. The role of the *dai* in providing herbal treatment is important particularly because of certain social, cultural and religious norms and values of the rural people. In most cases, the female patients are reluctant to disclose their diseases to the male *kaviraj* or *hakim*. In these situations, the *dais* are helpful in identifying the symptoms and disease which can then be treated by the male herbalists. Though these *dais* are not always paid in cash for their help, they may receive some sort of remuneration in kind. For example, they receive a *saree*, one or two kilograms of rice or wheat or some seasonal fruit as remuneration. Although this kind of remuneration is nominal and irregular, it helps to supplement the *dai*'s family income to some extent.

8.6 Summary and Conclusions

From survey data and field observations, it is evident that in rural Bangladesh the herbal system of treatment is popular and a large number of people are still reliant on this system of treatment. Although some people use modern or traditional medicines prescribed by unqualified doctors, the demand for herbal medicines is always high. The reasons for such demand are manifold. First, the *Ayurvedic* and *Unani* medicines experienced a revival in Bengal around the beginning of the 19th century. These physicians, especially the *kaviraj* and the *hakim*, would give their patients medicines they had personally prepared, or which had been prepared under their supervision. This satisfied the patients that the ingredients were pure and their efficacy was known to the *kaviraj* and the *hakim* (Leslie, 1976).

The second important reason is 'culture'. Although the importance of cultural factors in matters of health has not been recognised and considered in any systematic way in Bangladesh, the interaction between health and culture is specially important in such traditional rural societies. The rural people have long adopted certain health

practices together with particular traditional systems. Tradition is the sum of attitudes, opinions, habits, ritual, beliefs, resource knowledge and customs that are handed down from generation to generation in a given society. The herbal system of treatment in the Bengali rural society derives from such a tradition that goes back many generations. It is, therefore, no wonder that they still prefer traditional methods of medicine in primary health care. This has helped the traditional system to survive even where modern medicines are available.

The third factor is related to the changes in the degree of 'fatalism' in matters of illness in Bengali families. In rural Bangladesh, the health care system has a historical and socio-cultural basis. Primarily it may have developed out of the prevailing culture and religiosity of the people. Although religion may have provided most of the beliefs and traditions of people, the objects of one's belief and the forces affecting them are not always confined within religion. For example, when someone in a family falls ill, the first and foremost action of the family is often to pray to the Almighty for his/her recovery. Although this is a general reaction of many people during an illness, most of them do not hesitate in calling a *kaviraj*, a *hakim* or a physician (either a quack or a qualified one). Such a practice is relatively recent; even a generation ago the situation was somewhat different. In general, the villagers then would have been opposed to calling a *kaviraj*, a *hakim* or a quack doctor for the treatment of a patient straight away. Rather a *maulvi* (traditional priest) would be called for treatment. The *maulvi* would reinforce the villager's belief in their own helplessness 'in the face of the will of the Almighty'. They had a vested interest in not letting the villagers get too enlightened because they would then not pay much attention to the *maulvi* or seek their blessings in time of distress. When the villagers would go to the *maulvi* for the treatment of an ill person, they would have a jar of water known as *pani-para* (sanctified water) and a *taviz* (armlet) which would contain a piece of paper in the form of a verse of the holy Qur'an. The general belief underlying such a practice was that the *maulvi* possesses a sort of power, given to him by God, which was capable of relieving pain and illness. It is significant that such practices, with minimum variations, were found amongst both Hindus and Muslims. They were thus as much a religious matter as a social or cultural one.

These practices no doubt reflected a degree of fatalism amongst the village people. However, as illnesses are not always cured by these practices, the belief in their efficacy is put in doubt. Over the years, due to Westernising attitudes and practices taken up by the most educated and influencing others, many villagers have come to place less reliance on traditional (religious) methods of treatment. This has helped to enhance the role of the *kaviraji* and *hakimi* methods of treatment which have a material basis to them. Our survey findings confirmed these significant changes in the attitude of the villages. Very few people surveyed had been treated in the traditional religious way while more were treated in the *kaviraji* or the *hakimi* ways. An additional factor may be related to the improvements that have come about in herbal systems of treatment in recent years.

The fourth reason is the existing system of health care facilities. The primary health care facilities in Bangladesh are inadequate. Health care facilities have so far covered only 30 percent of total population (The Third Five Year Plan, 1985-1990). Although there has been a gradual expansion of health services with the *thana* health complex, the existing facilities are still very inadequate in rural areas in terms of qualified doctors, supplies of essential drugs, services for emergency and life savings surgeries and other medical care. Though government hospitals are formally free, in practice patients have to pay to receive treatment and this certainly keeps poor people away. Even if the poor people would like to obtain modern hospital treatment, most could not afford it. The *thana* health complex is far away from most of the villages which adds to transport costs. Sometimes an ambulance is available but at a cost beyond poor people. Even if one could afford it, at least one person would need to stay with the patient. This would be difficult for a family with insufficient labours. Therefore, hospitals are not seen to be the right place for poor villagers when they can be treated in a peaceful way at their own home by the local herbalists. Herbal systems (both *Ayurvedic* and *Unani*) have prescribed treatments for all type of acute and chronic illnesses. The treatment is locally done by practitioners and the treatment appears to be effective in chronic metabolic diseases such as diabetes mellitus, atherosclerosis, and lipid storage disease. Arthritis, gastrointestinal and urinary tract diseases, nervous ailments and some mental ailments are also sometime

amenable to this system of treatment. This system of treatment is very cheap. The practitioner charges a nominal amount for fees and the cost of drugs is also affordable to the patient.

The fifth reason is the attitude and behaviour of medical practitioners. The modern medical practitioner sometimes has a mechanical attitude towards the patient. During the course of treatment, he gives little time to listening to the causes of disease, and as a consequence sometimes fails in his diagnosis. Sometimes doctors also prescribe costly drugs and request elaborate tests without knowing the patient's economic condition. Moreover, doctors seldom visit a patient's house. By contrast, the herbalist is the first contact for the villager who falls ill; he is easily accessible, part of the community, and is blessed with the intimate knowledge of local customs and culture. He has a very positive attitude to spending time with his patients and is willing to care for them over many weeks. This establishes a personal relationship which is important for healing purposes.

The sixth reason is the economy. Agriculture is the largest sector of the rural economy and land represents both economic and social security for rural people, the landholding pattern, however, is highly skewed and one of the important causes of poverty in rural Bangladesh. According to the Agricultural Census of 1983-84, about 57 percent of rural households are effectively landless. Our survey data also shows a similar statistic in this regard (for details, see chapter three of this study). The landless households constitute some of the poorest sections of rural populations, and often comprise a large section of village communities. This segment of the population cannot afford to pay for modern medical and health care treatment. They seek out the local healer especially, the herbalist because the cost of medicine is much smaller and in most cases there is no extra cost or fee.

The seventh reason is psychological. Traditional medicine responds directly to the rural society's need for psychological health and well-being. It also relates to rural people's desire for spiritual and artistic fulfilment. For rural folk, traditional medicine represents the sum total of practices, measures, ingredients and procedures of all

kinds, whether material or not, which for time immemorial have enabled villagers to guard against disease, to alleviate suffering, and to cure themselves. The majority of villagers regard life itself as the union of body, senses, mind and soul. In accordance with this conviction, they consider positive health as the blending of physical, mental, social, moral and spiritual welfare. Thus, for sound health and mind, most of them rely on traditional medicine. The eighth reason is resources. The raw material for herbal treatment is available from the local homestead forest (see appendix 2 of this study) and the extraction cost of these materials is small.

From the above discussion, it is evident that herbal medicines are essential parts of primary health care in rural Bangladesh. The lack of a proper policy, however, could lead to the eventual damage of this indigenous medicine. Most trees, herbs and plants are grown in homestead compounds which, with further fragmentation of land become smaller in size. Some very useful medicinal trees, herbs and plants have already disappeared and others are endangered due to overuse. As a consequence, we are in danger not only of losing our tradition and heritage but also of facing acute medicinal problems in the rural health care system.

Our health care policy is very urban biased. Although there is a provision of health care network up to the *thana* and in some cases the union level, adequate facilities have not been provided at these levels. On the other hand, most of the modern health facilities are provided for only 18 percent of the urban population. Until 1982, domestic drug production by international/multinational companies in Bangladesh stood at US 61 million but one third of these products were not essential drugs at all (Ahmed, 1986). Out of 4,000 drugs on the Bangladesh market, 1,700 were considered useless or harmful. The production of these drugs was finally prohibited with the promulgation of the Drug Control Ordinance of 1982. But the Ordinance did not permit any alternatives i.e. allowing local industries to manufacture only essential drugs. As a result, purchases of high cost drugs from developed countries has further aggravated the economic situation and done nothing to help rural people.

The high cost of modern drugs and the inability to purchase them should cause Bangladesh to look at the local production of traditional medicines which have

proved to be effective, safe, and inexpensive. The medicinal trees, plants and herbs are locally available and capable of commercial use when they have been tested and proven to be safe, effective and culturally acceptable to the local community. There are many records of traditional therapies employing herbal medicines under *Ayurvedic* and *Unani* systems that are said to be very effective against common ailments and usually have no side effect. The indigenous system of medicine may be taken as an example of the efficacy of a fairly well organized system of medicine and health care and, as an integral part of rural culture its importance cannot be ignored. The systematic utilization of these medicinal plants, herbs and trees has not been optimized due to the absence of a national pharmaceutical policy.

It is our view that necessary measures should be taken concerning the cultivation, collection, and preparation of pharmacopoeias for herbal and medicinal plants. Some form of integration of modern and traditional plant medicines needs to be attempted to achieve an enhanced level of use. Adequate training programmes should be established to meet the special needs of the indigenous practitioner, and priority should be given to community health practices. Practitioners of modern medicines also require instruction in indigenous systems in order to improve their knowledge and bring about changes in attitudes. Policies and programmes are also needed regarding the proper cultivation and preservation of medicinal trees, herbs and plants so that they may at least partially meet the demands of the rural health care system. Given that knowledge and experience relating to the use of herbs, plants and trees for medicinal purposes is likely to be diffused within the communities of the poorer countries, a practical approach to harnessing the available expertise could be to organize cooperative enterprises. The members of such cooperatives could contribute to the cultivation, management, collection, extraction and screening aspects of herbal plants and ingredients according to their particular skills. In this way the beneficiaries of such development will be directly involved in the revitalization of an old and familiar system in these countries. In addition to making useful drugs and prophylactics available, such activities would also contribute to employment generation and empowerment in those communities that suffer a lack of both. Government and other public bodies could help by making available to them the necessary investment funds and technical advice to such cooperatives.

ENDNOTES

1. The development of new plant based products which have the property of causing abortion - a fact known to the indigenous civilizations of Central America for more than 500 years - suggests the potential use of an infusion as a method of birth control (Xavier, 1983).

CHAPTER NINE

Homestead Forests: Social, Cultural and Environmental Significance

In the preceding chapter we discussed the important role of homestead forests in herbal medicine for primary health care. In this chapter we focus on the social, cultural and environmental significance of homestead forests. In part one we explore the social and cultural role of homestead forests whereas in part two we examine the environmental role of homestead forests in rural Bangladesh.

The introductory section of part one briefly explores the social and cultural uses and significance of homestead forests in rural Bangladesh. The second section examines the social anthropological and sociological significance of ritual, beliefs, customs, festivals and ceremonial activities related to tree and tree products from an historical overview. The third section explores the social and cultural significance of ritual, beliefs, myths, customs, festivals and legends of Bangladeshi rural society. The fourth section examines the symbolic and sacred significance of trees on the Indian subcontinent. The fifth section shows the importance of forest and forest products as a location for social, cultural and religious activities in rural Bangladesh. The sixth section examines the importance of homestead trees, fruit and fruit products in the Bengali festival calendar. The seventh section explores the role of homestead forests in various social and cultural gatherings in rural Bangladesh. The final section presents the summary of part one.

PART ONE

9.1 Introduction

Homestead trees, plants and shrubs have significant social and cultural uses. Some trees, plants and shrubs are considered sacred in the Hindu and Muslim religions.

Trees are also an integral part of rural life. There are myths, rituals and beliefs which involved trees and tree products as symbols. Trees, plants and shrubs also have a social and religious role in marriages of both Hindus and Muslims. There are many social festivals around the Bengali calendar, and in the celebration of these, the villages use fruit, flowers and other products of the forests. Social, religious and political gatherings are often held under the shade of big trees or clusters of trees which act as symbols of social and cultural harmony. Trees are also important meeting places of rural women who gather and exchange the pains and pleasures of their daily lives. For children, the canopy of the trees must be treated as important for fun and recreation. The old folk also use the areas under the trees as a place to gather for leisure and socialising. In the shade of trees much happens that is important in the life of the rural folk. They provide a joyous and harmonious atmosphere for all segments of the population.

9.2 Social Anthropological and Sociological Significance of Ritual, Beliefs, Customs, Festivals and Ceremonial Activities Related to Trees and Tree Products: A Brief Historical Overview

Sociologists and social anthropologists have long focused on the ceremonial customs, religious and magical beliefs, myths, legends and rituals of different cultures. Among the pioneers of such researchers are Durkheim (1915), Radcliffe-Brown (1922), Frazer (1924), Tylor (1924), Malinowski (1948) and Turner (1969). These thinkers have focused on particular objects of belief, rituals, customs and myths which are socially significant for many reasons. Ceremonial activities can be expressed in a symbolic way and a wide variety of things of a particular society can be identified through different symbols. Certain cooperative activities, therefore, may be interpreted in a symbolic way to express the solidarity or unity of a particular society, as Durkheim pointed out. For Durkheim, rituals and beliefs were the means of reviving and strengthening the basic moral precepts on which social life is founded. These precepts endow people with a compelling authority. He further stated that belief in the sense of ideas about spirits, ghosts, gods and nature is one of the important aspects of social life of a particular community (Durkheim, 1915).

Radcliffe-Brown (1922) noted that the performance of rituals generates certain 'sentiments' which are good for the social harmony and integration of a particular society as a whole. He claimed that, through rituals, human beings always manipulate their thoughts in a social way. The meaning of rituals and symbols could be discovered by observing the diverse use of the symbols in both religious and secular contexts.

In considering the Andamanese system of ritual and myths, Radcliffe-Brown developed a hypothesis about the relationship between rituals and myths within the larger context of religion. He argued that, for the Andamanese, religion has two important aspects: a belief in nature and an organized relationship of power between man and the 'higher powers'. This power relationship has a moral character, and is one of the principles that regulates and organizes the islander's ceremonial life, so that harmony is established and maintained. His analysis, therefore, emphasizes the social value of power, ceremony, natural phenomena, and religion (Radcliffe-Brown, 1922).

Frazer (1924) has stated that the rituals and beliefs were the central focus of primitive societies. Rituals were, for him, actions consequent on certain cosmological beliefs and manifestations of ideas about the nature of the world. His assumption was that certain beliefs and rituals were the key to an understanding of the primitive societies. He examined thoroughly how trees have played a significant role in the religious, cultural and social history among the Aryan race in Europe, the Finnish-Ugrian peoples, the African peoples, the Russian peoples, the Asian Indian peoples, and the French, Danish and Norwegian peoples (Frazer, 1994, revised edition).

Turner (1969) has analyzed the rituals and rites of the Ndembu who belong to great congeries of West and Central African cultures and conjoin, with considerable skill, in wood-carving and related arts an elaborate development of ritual based symbolism. He further elaborated on how different kinds of trees are treated as symbols of rituals in Ndembu culture. The *mudyi* (*Diplorrhyncus condylocarpon*) tree for example, is the symbol of a girl's puberty rituals meaning simultaneously breast milk and

matriliny; while the *mukula* (*Pterocarpus angolensis*) tree stands for the blood of circumcision and the moral community of mature tribesmen.

Beliefs, rituals, festivals and ceremonies are, therefore, among the most attractive features of a particular culture. All the special performances or complex of performances at special times- provide vital insights into the religious, aesthetic, social, economic and political values and concerns in the societies in which they occur. It is not always the case that the most attractive aspects of a subject under investigation are the most consequential; but in these cases it would seem that the intrinsic appeal of the material is matched by its significance (Guy and Glenn, 1982)

Social anthropologists and sociologists can look at the myths, beliefs, customs, festivals and ceremonies as ways of learning about the social system of a particular society or community, since certain components of social life become clearer at the time of ceremonial performances. Specific performances of the community are treated here as the focus of social action, the source of social, cultural and religious structures and therefore an important institution of Bangladeshi society.

9.3 The Social and Cultural Significance of Rituals, Beliefs, Myths, Customs, Festivals and Legends of Bangladeshi Rural Society: An Overview

The ritual, beliefs, myths, customs, festivals and legends of Bangladeshi rural society combine the characteristics of Hindu, Muslim and secular Bengali cultures. Bangladeshi society has retained the traditions of 'prehistoric and contemporary cultures' as they were an integral part or even more of ancient ritual and beliefs. As Bengal (both East and West) has been ruled by Buddhist, Hindu and Muslim rulers, Bengali history shows the assimilation and integration of the traditions, values and ritual of all these different cultures. However, the East Bengalis (now Bangladeshis) also share with the West Bengalis an independent cultural identity in the form of a common language, traditions and value systems which make-up the 'Bengali culture'. This culture has influenced and been strongly influenced by Hinduism. Even at the turn of the nineteenth century, during the period of 'Bengali Renaissance', the Bengali

language and culture were linked to the Brahmanic heritage of Hinduism. The Bengali language was heavily influenced by the Sanskrit language and by Hindu mythologies and symbols. Although an attempt was made to purify the Bengali language and culture from 'Hindu accretions' by some hard core Muslim leaders, such an effort was clearly caught between the two opposite poles of an extra-territorial Pan-Islamic ideology and of a local geographical Bengali culture (Rozario, 1992). Bengali history, therefore, shows the signs of an identity quest as the Bengali culture has fluctuated between Hindu, Muslim and secular influences within the region, loosely called Bengal.

However, the present study is particularly focused on the religious, social and cultural values of trees, rather than the other elements of our culture. In practice, trees feature in all aspects of our culture: language, religion, politics, art, medicine, and even the wider social structure itself. Trees and tree products provide the venue for religious, social and cultural practices. Tree products such as fruit, flowers and juices are used in many ceremonies. Some trees are treated as the abode of ancestors. Sometimes trees are viewed in a negative way too, i.e. as a source of evil. Ritual and ceremonies which draw on tree symbols often serve to link us with aspects of our cultural heritage. Trees also feature in many myths and tales. For example, in Hindu legends, the tree stands between heaven and earth, and is associated with creation as well as with 'three' conceptual planes of existence (heaven, earth and the 'under world') existence. The tree is a maternal symbol: a protector and provider who gives fruit, other foods and medicines, provider of a reservoir of water and a protector against the bad and evil spirits. The tree often symbolises human fecundity in both Hindu and Muslim cultures. Finally, trees play a role in all facets and phases of our lives.

As ritual, customs, ceremonies, myths and beliefs related to trees have many elements, they vary within our cultures. For example, there are many uses of natural and supernatural elements involving trees among Hindus and Muslims which differ from one another, although they are both an integral part of composite Bengali culture. Despite many similarities in the way these elements are used there are some

variations too. This is because different segments of the same religious groups may have different social, cultural and religious identities which give rise to the variations in their practices. For example, the Brahmins and non-Brahmin Hindus may follow different rituals and customs in some cases. There are differences in the practices of the upper and lower economic classes. On the other hand, there are many customs and ceremonies related to trees which are common to both the Hindus and the Muslims, a blend which reflects the culture of the rural folk in general. However, in this study, we do not differentiate these practices on the basis of religion, caste, class or region. The purpose here is to examine the common aspects of these traditions as they apply to the rural people.

9.4 The Symbolic and Sacred Significance of Trees

Various forms of religious worship are practised to fulfil the spiritual aspirations of Hindu families and communities. These include the worship of trees, of deities such as the *Siva*, *Parvati* and others, and natural objects like the Sun, the Moon and various planets. We will examine below the importance of trees as an object of worship for family welfare. This examination is based both on observations of village life and on the findings of the field survey.

It was reported by almost all Hindu respondents and priests of the survey villages that many kinds of trees, shrubs, leaves, grass, plants and fruit are objects of worship. Among these, *tulsi*, *peepal*, *neem*, *bel* and mango leaves, the banyan tree, coconut, banana and nut are quite common and important fruit. Tulsi is the basil plant and is personified in the Puranas as a wife of Vishnu and therefore sacred. Its leaves are used as offerings in the worship of Vishnu and other goddesses. The tulsi plant is an object of daily worship by women of all castes and it is grown in all Hindu houses for ceremonial use.

Worship of the banyan tree by women also occurs in the survey villages. The object of this worship is to seek the welfare of husbands and children. In general, women worship this tree either in the weaning phase of the lunar cycle or in conjunction with

certain rituals involving fasting. The worship is said to be in honour of *Savitri*, of a Purana-character, who won back her husband's life from the hands of *Yama*, the god of death. The legend is that Savitri's husband Satyavan took ill and died under a banyan tree. She left his body under that tree to follow his spirit to the land of death. The tree protected the body until life was restored and is, therefore, regarded as sacred. It was reported by the villagers that there were a number of banyan trees in their villages 30-40 years ago. Many of the trees are no longer there because of increased population pressure and changing land and tree tenure systems. Only one or two banyan trees were noticed in survey villages and some villagers reported that the worship of the banyan tree was becoming difficult because of its rapid disappearance.

Another sacred tree is the *peepal*. The *peepal* is a species of fig tree, allied to the banyan tree and often identified with it. Although this tree was found everywhere in rural areas during the Pakistani period (1947-1971), very few trees exist at present. The sacredness of this tree is variously accounted for. One of these is that its root provides a milky-white sap which is in the nature of caoutchouc, and which has associations with fertility and sex. This endows the tree with special character revered particularly by women of child bearing age. Some women who are unable to have children or whose children fail to survive take to worshipping the cobra snakes. This is done by installing stones carved with the images of the cobras at the foot of the *peepal* tree. It is also a very common custom among such women to pour milk over any ant-hills around a *peepal* tree in the belief that the milk will reach the serpents living beneath them. This aspect of the cobra worship is clearly related to *peepal* worship, and is regarded as a fertility rite. Vogel (1926:19) observes, "there exists a wide spread belief that the cobra has power to impart fecundity and remove barrenness" and "it is the sacred *peepal* tree where the cobra deities are embedded" (Vogel, cited by Srinivas, 1952:14).

The *aswatta* is another tree which grows to a huge size and is a symbol of worship. It is one of the more beautiful trees but has also become rarer. Only one or two trees were found to exist in the survey villages or nearby localities. Hindus believe that the

god Vishnu was born under this tree and they therefore treat it with great respect. No one is allowed to cut it down, lop off its branches, or even pull off its leaves unless they are to be used in acts of worship. To fell this tree would be an awful sacrilege, and quite unpardonable. According to Hindu mythology, this tree is consecrated to Vishnu, or rather it is Vishnu himself in the form of a tree¹.

Although Hindu religious practices encourage Hindu people feel their sacred sensibilities toward trees, Muslim people also have their view of such sacredness. According to Muslim religious mysticism, trees such as the banyan, *peepal* and *aswatta* are often seem as links to the Almighty. When a Muslim male passes beneath these trees, he utters *bismillah* (in the name of Almighty) and the Muslim female covers her head. Even sleeping under a tree is often dangerous because of the possible visitation of spirits. But there is a difference in the Hindu and Muslim mystical beliefs relating to trees. According to Hindu mysticism, certain trees are the abode of gods whereas in Muslim mysticism, these trees are the links to the Almighty. But in both religions, these trees are symbols of divinity because they acquire some special power (*sakti*) from both god and the Almighty and those saintly persons who live beneath these trees possess some special power from them. Therefore, the trees are treated as a connection to these special powers which are passed to the devotees of such saintly persons. As, with the Hindu religious mysticism, Muslims also consider some trees as sacred symbols of power and they try to protect these trees from any kind of destruction.

Despite these similarities, there are some differences too. According to Muslim religious mysticism, some trees such as tamarind, *hijal*, *mandar* and banyan are often treated as the abode of good and evil spirits such as *jin*, *pori* and or as ghosts. These spirits may be found resting, sitting or travelling around these particular trees at a particular time of day and night. Although these trees are sometimes feared due to their evil spirits, Muslim mystics do not encourage people to destroy these tree because there are also some good spirits who may sit and travel around these trees at other times. Muslim people try to maintain some sort of distance from these trees

at the particular times of day and night when the evil spirits may travel or sit around them.

There are some other fundamental differences as well. The Muslim religion is monotheistic whereas the Hindu religion is based on polytheistic beliefs (Zaehner, 1969). The Hindu religion unites the essence of all life such as human, animal and plant. Moreover, the Hindu religion is a 'sanaton Dharma' which incorporates 'the eternal essence' of life in the universe. The universe is surrounded with all natural ingredients: the moon, the stars, the rising sun, the winds, the sky, the vegetation, the animals, birds, rivers, trees and mountains. These together form the natural creation in its entirety. (Prime, 1992). Trees are one of the important ingredients of human life in Hindu religious mythology, which is one of the important dissimilarities with the Muslim religion. But Muslims also observed many rites, rituals, customs, beliefs and ceremonies related to trees as do the Hindus. Moreover, Bengali Muslims are influenced by Bengali Hindu rites, rituals, beliefs and customs because both of them have integrated the tradition of 'Bengali culture'. Therefore, it would be justified to say that despite differences in religious mythology of both Muslim and Hindu beliefs about trees they regard them as sacred and both sides treat them with great care.

In the Hindu tradition, there are seven different species of trees which the Brahmins consider sacred and as symbols of worship. Among these, *aswatta*, *peepal*, *vepu* and banyan are the most important. There are some particular manners and rituals in which these trees are worshipped. Sometimes these trees are invested, like the Brahmins, with the triple cord, the very same ceremonies being performed. And sometimes they are solemnly married. Marriage among trees is a legend in Hindu mythology and is practised in many Indian villages as noted by Dubois (1953) who reported that in his survey village there were *aswatta* and *vepu*² trees side by side. The inhabitants of the village informed him they had seen the two trees being planted together some fifty years previous. The villagers had also been present at the wedding ceremony of the trees, which lasted several days and were celebrated at the expense of a wealthy person of the neighbourhood at a cost of more than 1,500 rupees. There is one interesting example of a marriage between a tree and a woman

in India. This marriage was a symbol of welfare. As the parents of the women were unable to arrange a marriage for their daughter owing to their financial inability they took her to a priest. The priest arranged her marriage with a local tree. The significance of this marriage was that the tree as the symbol of welfare, would look after and protect the woman from insecurity (The Sangbad, 1992). There is a Hindi film entitled 'Satti' in which the marriage between a woman and a tree has been shown, and its social and religious significance highlighted in a critical fashion³.

The religious importance of tree worship is a kind of 'good works' which Hindus perform in order to obtain the pardon for their sins in this world and to ensure their happiness in the next world (Dubois, 1953). In fact, particular trees are the abode of particular gods who take up their residence for specific purposes. Therefore, in popular belief trees are identified as symbols of gods. The religious text the Gita says: "With roots above and branches below the imperishable fig-tree has been declared. Its leaves are the Vedic hymns. Who so knows it, knows the Veda. Below and above extend its branches nourished by the qualities (gunas) and the objects of sense are the sprouts. Below are extended the roots from which arise actions in the world of men"⁴.

Although Muslims do not worship trees, the trees like banyan, *aswatta* and *peepal* are treated as sacred by them too. The reason is that many Muslim *peer*, *fakir*, *sadhu* and *dorbesh* who are treated as saints have their *astana* under these trees. These saints are treated as the symbol of spiritual and religious power. As they live under the shade of the big trees, it is the belief of common people that there might be some connection between the Almighty, the saints and the trees. In other words, the trees are treated as the symbolic connection between the saints and the Almighty.

Apart from their mythological importance, trees like the banyan, the *vepu*, the *aswatta*, and the *peepal* also have ecological, social and cultural significance. For example, the thick foliage of these trees make not only a splendid shade - a priceless boon in the hot climate of India and Bangladesh - it also has aesthetic and artistic beauty which attracted many travellers, philosophers, and even invaders. As Dubois

(1953:652) noted about the banyan tree, "their large leaves, very soft to the touch, in colour bright green, are so light and thin that the slightest breeze sets them in motion; and as they produce an impression of most refreshing coolness, the trees are considered to possess health-giving properties. When stirred by a breeze the leaves make a pleasant rustle, which some Hindu authors have sometimes likened to the melodious sound of the *vina*". The Greek philosopher Theophrastus (370-c. 288 BC) duly described the external beauties of the banyan tree as follows: " The Indian land has its so-called 'fig-tree' which drops its roots from branches every year....and it drops them, not from the new branches, but from those of last year or even from older ones; these take hold of the earth and make, as it were, a fence about the tree so that it becomes like a tent in which men sometimes live. The roots as they grow are easily distinguished from branches, being whiter, hairy, crooked, and leafless. The foliage above is also abundant, and the whole tree is round and exceedingly large. The leaf is quite as large as a shield, but the fruit is very small, only as large as a chick-pea, and it resembles a fig". This is why the Greeks named this tree a 'fig-tree' (Theophrastus, 1916 cited by Desmond, (1992:3). Desmond further (1992:3) noted, "Hindus planted this sacred tree along the verges of roads and in villages, providing shelter for the people and a community of small mammals, birds, and insects". He further added that the tree was one of the attractions to travellers. The hanging columns of its aerial roots are reminiscent of the tenuous lines of Gothic tracery presenting a dynamic composition for European artists like William Hodges and the Daniells. Bishop Heber experienced an aura of sanctum within its canopy: 'what a noble place of worship', as he confirmed in his journal (Herber, quoted by Desmond, 1992:3).

9.5 The Importance of Forest and Forest Products as a Location for Social, Cultural and Religious Activities

Trees, plants, herbs, flowers, fruit and leaves often have a sacred role in many religious festivals and rituals in both Hindu and Muslim communities. For Hindus, the worship of Durga (a manifestation of Sakti or divine energy), Lakshmi (the goddess of prosperity), Saraswati (the goddess of learning), Ganesh and Kartik (the

two sons of Siva) as well as the festivals such as the *Holi*, the *Diwali* and the *Dassehra* involved the trees and tree products. All such festivals also involved the preparation and distribution of food including fruit which are consecrated by being first offered in worship. Some forms of worship have a mythological connection to certain fruit and leaves. For example, when Durga worship begins, a *kalash* (an earthen vessel) filled with water is placed in front of the goddess. The *kalash* has a coconut and some mango leaves placed over its mouth. The *kalash* along with the coconut and the mango leaves represents the life force of the deity who is believed to sit in penance to acquire weapons and the skill to use them in fighting demons. The goddess Saraswati is worshipped as the goddess of learning and music. As a symbolic gesture, students put the consecrated leaves and flowers of certain kinds inside their books for good luck and success.

9.5.1 *Hindu Maha-sankranti and Fruit Rituals*

A festival which takes place during winter is called *Maha-sankranti*. This occurs on the day of the vernal equinox which marks the beginning of the spring season in the Northern hemisphere. The festival lasts three days. On the third day a ritual of cow worship is practised. This involves preparing a liquid concoction made-up of water, saffron powder, some seeds and leaves of certain trees and plants. The cows and oxen are sprinkled with the liquid as a mark of worship and offering. Their horns are painted in various colours and around their necks are hung items of food, coconuts and other fruit. As these are shaken off by the animals, they are eagerly scrambled for and devoured as consecrated items by people. This kind of festival however is fast disappearing from the rural areas with the rapid depletion of the cattle population and scarcity of fruit trees.

9.5.2 *Sacrifice of Animals and Related Ritual*

The Sacrifice of animals is practised as part of a number of religious festivals of the Muslim community. During the festival of Idul-Azha, for example, animals, especially cows, goats and lambs are sacrificed (slaughtered) in the name of the

Almighty. Just before they are slaughtered, the animals are given leaves especially jackfruit, acacia and banana leaves, *atop* rice, *chaanadal* and water to eat. The significance is that as the animal is being scarified for the Almighty, it should not suffer from hunger and pain.

9.5.3 Fasting and Fruit Ritual

Another use of fruit related to the rituals of fasting is observed by the Hindu community. A common practise for many Hindus is to fast on the eleventh day of every lunar fortnight the *ekadashi*. The person fasting is allowed to eat certain fruit like bananas, papaws and coconuts. Milk is also taken but as a drink. The purpose of such fasting is religious, signifying self purification. The consumption of cooked food falls significantly at this time while that of fruit increases.

A complete dawn to dusk fasting is also observed by the Muslim community during the whole lunar month of Ramadan. The fast is broken after sun-set and varieties of fruit such as papaws, bananas and green coconut juice are consumed at this time. Although eating fruit is not a required ritual, it is an established tradition and is widely practised throughout the fasting month.

9.5.4 Herb Ritual and the Birth of a Baby

The birth of a new baby in a Hindu family is observed with certain rituals which involve the use of herbs and plants of certain kinds. A new birth means a *vridhhi sutak* (pollution of 'increase' or 'multiplication'), and accordingly, the 'outsiders' (those standing outside one's patrilineal descent group) are forbidden to eat at the home of the new born for twelve days. At the end of this period a ritual of sun worship is observed as a mark of purification of the new born and the mother. Friends and relatives are invited to share a meal which typically consists of consecrated fruit, herbs and other natural ingredients.

9.5.5 *New Born and Wood Fire Ritual*

The custom of lighting a fire after a new birth in a family is found common among both Hindus and Muslims. A wood fire is lit partly for the comfort of mother who is believed to need the warmth after giving birth. It also helps the uterus to retract and the mother to get back her normal shape, so it is believed.

9.5.6 *Death and Plant Rituals*

Trees, in the Muslim belief, provide protection for the dead body as a symbol of prayer to the almighty. Trees and plants are planted on graves with this object. In most cases the *pata-bahar* (colour leaf), rose plants, *mendi* trees, karai and date palms are used for this purpose. There is a belief that if the grave is shaded by a tree or a plant, the deceased will not be punished after death. So, a tree or plant is planted on the grave by close relatives whenever they visit the graveyard.

Although Hindus usually cremate their dead, saintly persons or those who are otherwise revered may be given a burial in their own yard or in a compound of a *math* (temple) where they lived. These spots are marked by a plant or a tree usually a *bel*-tree. The trees are then worshipped in the belief that the dead will protect the interests of the living. They also plant large trees that will provide shade, usually at a river side place.

There are some mythological explanations as to why trees are planted in graveyards. Muslim religious leaders such as the *Imams* (who lead the weekly prayer) and the *Mullahs* (who perform priestly activities) explain that the souls of the departed persons become parrots and other birds for whom the trees become nesting places. So it is an important task to plant a tree around the grave and to pour water at its root, to help it grow. Hindu priests, on the other hand, explain that on the *Amavasya* (new moon) night, the spirits of the dead swing on the tendrils of the banyan tree. A *Sraddha* for the dead is also performed under the banyan tree a few days after the death. An annual *Sraddha* which many Hindus perform, is also performed under a

banyan tree. The non-Brahmin Hindus believe that if a *bel* or a *peepal* grows spontaneously around a cremator site then it is an incarnation of the dead person⁵.

9.5.7 *Death and Leaf Ritual*

A special leaf ritual involving food served on a leaf-plate to the departed soul is observed by the Hindu community on the tenth day after the death of a family member. Death immediately brings a complete and total stoppage of eating and cooking activities in the affected family. However, on the tenth day, rice is cooked by washing it only once before the cooking. A griddle plate is used for serving the *kacha* (non-fry) bread. Besides, whole *urddal* (one kind of lentil), a vegetable, and the *bara* (one kind of snack) are also prepared for a meal which symbolises austerity. The first serving of these items is made on a leaf-plate which is hidden around the cooking area so that no one can see or touch it. All family members are served food by a single woman who must stay in the cooking area from the beginning to the end of the cooking and eating activities. At the end of the meal, the principal cremator, usually the eldest son of the dead person carries the hidden plate of food to an isolated area outside the home and leaves it for the departed soul.

Muslims also arrange a special feast in the memory of the departed soul, and invite to it relatives, friends and any local destitute person. On the 40th day after the death, a feast is arranged by the family of the deceased. Rice is cooked and cattle are killed for meat for the guests. Leaf plates (banana leaf) are used for serving the food. Usually, people sit under the shade of a big tree to share the meal with the family members. At the beginning of the meal, the *imam* prays for the departed soul. However, unlike the Hindus, eating on a leaf plate and sitting under the shade of tree is not obligatory, it is rather a custom or tradition.

9.5.8 *Diseases, Illnesses and Rituals*

Particular diseases have, according to Hindu belief, their governing deities. When some one is sick, a relative takes an earthen pot half-filled with water, covers it with

an earthen lid and places it on a bed of rice on the ground. Blades of *durba* grass are then put on the lid and on it an image of the deity associated with the particular illness is placed. The water from the pot is sprinkled (on the sick person) with the help of the grass.

For the cure of a fever or an illness of a family member, Muslim women often make a *manot*. At bed time, she packs some rice (at least one kilogram) and cash (five to ten *taka*) in a new *gamsha* (a cotton towel) kept at the bed side of the ill person. Before sunrise, she would take away the packet and tie it to a tree in the courtyard. The beggar who first visits her home in the morning would be informed by one of the elder female members that there was a *manot* packet which was hanging from the tree. The beggar would then take away the packet often praying to the Almighty for the immediate recovery of the ill person. The symbolic significance is that the illness is transferred to the tree through the *manot* packet and the beggar is the person responsible for carrying away the illness from the tree.

9.5.9 Rain and Tree Rituals

If the monsoon rains fail in the months of *Jastha*, *Ashar* and *Sravan* (Bengali months, equivalent to May, June and July), it creates a drought. Muslim males are gathered under a big tree (banyan tree) at mid-day and start praying to the Almighty for immediate relief from the drought. The tree is treated as the symbol of shade, and there is a belief that if the people pray in the shade, the Almighty might have mercy on them and their wishes would be granted. Hindus also worship in similar circumstances, but in a different way. They worship the *peepal* and banyan trees and pour water on their leaves and trunks as a symbolic gesture of bathing the trees. The legend is that the water used for bathing must be allowed time to reach the sea. The day it reaches the sea heavy rain will fall; water is also therefore poured into a river or *nullah*.

9.5.10 *Fertility and Fruit Rituals*

Fruit like coconuts are offered to the gods by infertile Hindu women in the hope that fertility may be granted in return. A portion of fruit offered to a god through a priest, is given to the woman as *prasad*. A bridal pair is also given coconuts by one of the priests at their marriage. Eating fruit, riding a fruit-tree at night and then eating its fruit, rolling under a fruit tree and then eating its fruit and stepping on a fruit are some of the rituals practised in the hope of obtaining it's fertility⁶.

In contrast, there is a taboo amongst Muslim women who are fertile that eating fruit at particular times may inhibit their fertility. Muslim women, particularly the unmarried ones are advised by elder women not to take any fruit especially coconut and banana immediately after a shower or a bath. The reason is that as these trees are believed to be treated as the dwelling of 'evil' that may inhibit fertility.

9.5.11 *Women, Trees and Taboo*

There are restrictions on pregnant Muslim women not to walk under certain trees. They are advised by the elder women not to walk under trees like the betel, *hijal*, *mander* and banyan. Walking through a bamboo bush is also believed to be harmful for them. There are some particular times of the day, such as the evening, mid-night and the early morning when the bad *jin* (one kind of imagined human like animal which is invisible), *pori*, ghosts and other evil spirits, may be found resting, sitting or travelling around these particular trees and the bamboo bush. Their 'evil-eyes' may have an evil influence on pregnant mothers and their unborn children who may be born crippled, physically and/or intellectually.

In contrast, most trees are treated as sacred in Hindu myths, and the power of a tree is sensitive to impure contacts. For example, a menstruating woman may only use plantain leaves as plates, but not the leaves of other trees. If an infertile women bathes in the shade of a tree she dies or may continue to be infertile, it is believed. If a girl attaining puberty touches a tree, the tree withers it was believed. However,

these are all legends or superstitions and very few people observe these kinds of restrictions any more.

9.5.12 *Betrothal, Marriages and Tree Ritual*

Amongst the Hindus, betrothal is a social contract and is, as a ritual, an indispensable preliminary to the marriages of a girl. There is a fruit ritual as a part of the religious rites involved in the Hindu betrothal. Amongst a number of rituals, the fruit ritual is one kind of religious rite where the marriage initiative is almost invariably taken by the girl's parents and is to send some fruit along with money and clothes to the prospective groom's house. The girl's father sends some fruit such as coconuts and ripe bananas, one or more *taka* and some clothes as a conventional gift to the boy. These are made over to him by a priest and a barber at his parent's house and in return he also sends the girl a conventional gift.

There are number of rites in a Hindu marriage, and many rites involve flowers, fruit, leaves, herbs and trees as important aspects of the marriage festival. One such important involvement of trees and leaves is related to the construction of a *bedi* (altar) where the marriage is performed by a priest. All marriages take place under canopies made of leaves and branches of trees which are erected in the courtyard or in front of the principal entrance door to the house. The pandal is usually supported by twelve wooden posts or pillars, and covered with foliage and branches of trees where the priest ignites the sacred fire and pours into it with due *mantras* a libation of clarified butter. Then the father of the bride welcomes the bridegroom in the prescribed form by offering water to wash his feet and by the well-known obligation called *arghya* (offerings). He then gives his daughter's hand to the boy thrice, reciting the holy *mantor*. The bride and the groom then walk around the nuptial fire, the wife holding the husband's garments, to call to witness that effulgent light which pervades every quarter of the globe, that neither in thought, deed or word will either swerve from the path of duty.

Muslims, in contrast, have some customary uses of flowers, leaves, fruit and trees which have a social significance. For example, the uses of trees and leaves are noticed on the occasion of decoration of the houses of the bride and the bridegroom. The marriage ceremony is performed in the bride's house, in an open space. A pandal is made and a canopy is hung over it. Gates are constructed by planting banana plants, and wreaths of flowers and festoons of leaves adorn the gates and platforms as well as the route between the two. This kind of tradition has a social significance because many joyous and humorous customs and related traditions are associated with it. Women, young children and even the older folk amongst the villagers, the neighbours and relatives all assemble in joyful celebration and contribute verbal wit and humour.

Table 9.5.1 summarises the role of tree, plant, herb and shrub-based rites, ritual, customs, traditions and other activities which are practised by Bangladeshi Hindus and Muslims.

Table 9.5.1

Trees and Their Social, Cultural and Religious Uses by Bangladeshi Rural Hindus and Muslims: A Summary

Names of trees, plants, herbs, shrubs and other similar objects.	Tree, plant, herb-based rites, ritual, customs, and other activities.	Symbolic and other significance.
1. <i>Aswatta, peepal, vepu</i> and banyan trees.	a) Worshipped by Hindu women.	a) A symbol of welfare of husbands and children.
do	b) Used in fertility rites by the Hindu women.	b) Hope of pregnancy.
do	c) Worshipped by the Hindu villages.	c) Considered sacred as the abode of Vishnu and other gods.
do	d) Given in marriages to unmarried Hindu girls.	d) Symbol of welfare and security.
do	e) Ecological roles	e) Shelter for the village folk, mammals, birds and insects.
do	f) Sacred for Muslim villagers.	f) Acts as a go-between connecting between the Almighty and the saintly men.
2. Coconut, banana trees, fruit, leaves, seeds and <i>safran</i> powder.	Hindu Maha-Sankranti.	Ritual for worldly and spiritual welfare during the day of vernal equinox.
3. Leaves of jackfruit trees, acacia and banana; rice, lentils and water.	Muslim ritual related to the sacrifice of animals.	Prevent the animals suffering any hunger and pain prior to and during slaughter.
4. Ripe bananas, papaws and other fruit.	Fasting rituals among Hindus and Muslims .	For Hindus , a symbol of self purification; for Muslims , a matter of traditional practice.
5. Banana leaf.	Social ceremony and leaf ritual among Hindus and Muslims .	For Hindus , serving food on leaf is a symbol of austerity whereas for Muslims it is a customary tradition.
6. <i>Dalim</i> trees.	Illness and <i>manot</i> ritual among Muslims	Illnesses are carried away by trees.

7. Wood fire	Fire rituals for new born babies and mothers among Hindus and Muslims .	Comforts for new born baby; heat helps to retract the mother's uterus.
8. <i>Pata bahar</i> & rose plants; <i>mendi</i> , <i>karai</i> and date palm trees.	Deaths and plant ritual among Muslims in the burial ground.	Plants and trees are treated as the symbolic nests of for the departed souls.
9. <i>Bel</i> and banyan trees.	Deaths and tree ritual among Hindus in the <i>sasanghat</i> and burial ground.	A symbol of incarnation of the deceased; trees are treated as the carrier of spirits of the deceased.
10. Banyan and <i>peepal</i> trees	Ritual of Hindus for rainfall, and of Muslims for use as a 'connector' to god.	For Muslims , trees are treated as the connector between the Almighty and human beings; for Hindus , bathing of the trees may cause rainfall.
11. Coconut and banana fruit.	Fertility and fruit ritual among Hindu and Muslim women.	Eating fruit at certain times of the day is a taboo among Muslim women in fear that the trees are the dwelling of evil which may cause the women to become infertile. In contrast, Hindu women eat the fruit in the belief that fertility will be granted.
12. <i>Hijal</i> , <i>mandar</i> , banyan trees and bamboo bushes.	Taboo among Muslims , particularly women.	Walking under trees during certain times are restricted in a fear that these trees are the carrier of <i>jins</i> , <i>poris</i> and ghosts which might abort pregnancy.
13. <i>Debdaru</i> leaves, tulsi leaves, flowers, coconut, banana, <i>durba</i> grass and fire.	Marriage ritual and tradition among Hindus and Muslims .	Hindu marriages involve the rites of trees, fruit, flowers, leaves and fire with a view to securing the bond between the bride and the groom. On the other hand, Muslims use trees and leaves for customary decoration.
14. <i>Durba</i> grasses.	Illness and <i>durba</i> ritual among Hindus	Pleasing the governing deities.

Source: Field Survey, 1992.

9.6 The Importance of Homestead Trees, Fruit and Fruit Products in the Bengali Festival Calendar

Every culture imposes a structure upon time, dividing the flow into comprehensible and culturally meaningful units. The calendar of a people incorporates and reflects principles of their cosmology on an ideational plane. In the various seasons, time loses its homogeneity, and individual moments are defined as qualitatively distinct. Points in time have inherently auspicious or malevolent characteristics, related to the relative positions of the sun, moon, planets and stars (Welbon & Glenn, 1982). The Bengali calendar is no exception.

Like most calendars, there are twelve months in the Bengali calendar. However, the old Bengali year is different from the Western calendar. The older version of the Bengali calendar comes from the Vedic calendar which includes a lunar cycle of 360 phases and a cycle of months. However, the modern Bengali calendar corresponds to its Western counterpart. The Bengali calendar prescribes the timing of the ritual, ceremonies and festivals of the Bengali for both Hindu and Muslim communities. Moreover, the observed rituals and festivals reflect the qualities of the times in which they occur. As our main object is to examine the importance of homestead forests and forest products as the symbol of rituals, ceremonies and festivals around the Bengali calendar, our discussion is, therefore, confined to the activities related to homestead forests.

9.6.1 *Vaisakh: The Month of New Year*

Vaisakh, which starts around mid April, is the first month of the Bengali calendar. This is a month of heat, storms, thunder and occasional rain. One of the festive activities associated with the new year is *halkhata* (new book for accounts for business). Most businesses celebrate the month by opening a new book (*halkhata*) for their customers. They clean their shops and decorate them with leafs and colourful papers. A gate is also made with banana plants and *debdaru* leaves in front of their shops. Customers who visit the shop are entertained with sweets and pan⁷.

Another activity of this month is associated with green mangoes. During the occasional storms many mangoes fall from the trees and are collected by young children. It is an exciting event for them as they look forward to collecting the fallen mangoes ahead of their friends who are also doing the same. Sometimes such competition for collecting green mangoes causes conflict among the children. However, this is only temporary. Children eat green mangoes in a festive way. They sit under the shade of a big tree, cut the mangoes into pieces, put in mustard oil, chili powder and salt, blend together and enjoy the special preparation called *amchur*. *Mourabba*, chatny and *achar* are also made from green mangoes but it is the exclusive domain of women and girls.

9.6.2 *Jyaistha: The Month of Seasonal Fruit*

Jyaistha starts around the middle of May and is an extremely hot month. During this month the mangoes ripen as do the litchi, banana, *jamrul*, black berries and other fruit of the season. Green jackfruit are also available in this month. This is a month of food scarcity for many villagers as the *aus* (one kind of paddy) harvest is still few weeks away. In former times there would presumably be a relative abundance of fruit available from the continuous harvests, but for the landless poor of today it could be a time of starvation and unemployment. In the survey villages, many poor people reported that mango, banana and green jackfruit helped to keep them from starvation. However, *Jyaistha* is also a festive month for village children as they collect ripe, fallen mangoes from the trees. Many children gather under mango trees for them. When the wind blows or a storm hits the mango trees, the mangoes fall and the children collect them in a joyous but competitive mood. Sometimes they gather in a group to play under mango trees waiting for any mangoes that might drop. The atmosphere created by these is not only one of enjoyment but also one of harmony and friendship. In this month many women make *am-shotto* and *mourabba* from ripe mangoes. Sometimes family members sit together and enjoy mango with *kasundi* - a tasty dessert. This is also a month of family re-union called *nyare* as members of the family especially married daughters and sons with their children

return to their parent's home to enjoy the mangoes and other fruit. As academic institutions are closed for summer, children also enjoy the vacation and relax.

9.6.3 *Asharh: The Month of Jackfruit*

Asharh which starts around the last week of June, is the start of the rainy season. Traditionally the monsoon breaks in this month. It is very difficult for poor people to find work because sometimes the rain continues for several days. This is the month of ripe jackfruit. One medium size jackfruit is enough to feed a poor family. When there is a heavy downpour, family members sit idle at home and enjoy the *kathal-muri* - a customary food. During the time of heavy downpours women roast the dry seeds of jackfruit and eat them with other family members as a symbol of celebration. Sometimes big jackfruit are distributed among the villagers who gather in the village mosques for the Friday prayer.

There is a ritual among the Muslims that the first mature fruit of a particular tree (like mango, coconut, banana, jackfruit and guava) is to be distributed among the *namajee* (those who pray in the mosque) in the name of the Almighty. The significance is that the *namajee* people would enjoy the fruit and pray to the Almighty so the particular tree would produce more and more fruit in the years to come. *Asharh* is also the month of the green palms. The palm fruit grows in a large cluster at the crown. The inner layers of green palms are a delicacy sweet and cool for hot climate. Sometimes some owners of palm trees voluntarily allow young villagers to have a cluster of green palm fruit from their trees. The young team collect green palm fruit and distribute them among the members in a celebratory way. The palm trees are also tapped for juice in this month. The juice is a sweet drink and many villagers drink it early in the morning in a festive way. Sometimes *tari* (local wine) is made by fermenting palm juice and is enjoyed by adult male villagers in the company of friends. This juice is heated and dried to make molasses, which is a food both for human and animal consumption.

9.6.4 *Sravan: The Month of Womens' Activity*

Sravan starts around the last week of July and is also a month of rain. Jackfruit are still available in this month. Among other kinds of fruit *jambura*, *amra* and guava are grown in this month. Village children are very fond of guava and *amra* and sometimes they pick guava from their own homestead trees to eat with their friends in a celebratory way. Many women make jelly from the guavas and preserve it for use later in the year.

Sometimes boys play with green *jambura* as a substitute for a football, which gives them immense pleasure. This is the month when women and men make fish traps, baskets, *dhama*, *katha*, *dol*, *kula* and mats and the raw materials are very often come from homestead forests. In the course of making these items many village women and men gather together to help each other in making them. They also share the problems of their daily lives and exchange their sympathies when necessary. Suggestions and advice regarding probable solutions to these problems are also exchanged in these meetings.

9.6.5 *Bhadra: The Month of Fruit Cakes*

Bhadra, which starts around the last week of August, is a month of heat and humidity. The palm fruit ripens in this month. Like the mango, ripe palm fruit are also collected by young children. The difference is that the children do not wait and play under the palm trees as ripe palms are heavy and large in size, and are best avoided until they are on the ground. Children keep close vigil near the trees waiting for the palm fruit to drop. During the season at least two to four ripe fruit would drop daily. Although there is competition among children to collect ripe palm fruit, it is also a source of excitement to them. *Tal-peetah* (palm fruit's cake) is a delicacy and is made by women in this month. Most families enjoy *tal-peetah*. Sometimes neighbours and kin exchange *tal-peetah* and often entertain villagers and relations with it. The making of *tal peetah* is one kind of festival and village women often gather in small groups and engage in this activity. Although *peetah* making activities

have decreased over the years due to the decline of palm trees, *tal-peetah* was still found to be a delicacy in all survey villages.

9.6.6 Ashhin: The Month of Hindu Festival

Ashhin, which starts around the last week of September, is another hot but relatively dry month. This is the month of the Hindu *puja* festival and the Hindus are busy celebrating it. Homestead fruit, leaves and flowers are important elements of the *puja*, and every Hindu family pays *argha* (offerings) to *Vogoban* (God) through their *Thakur* (priest). Different kinds of fruit such as coconut, banana, *jambura* are given to the goddesses and often to the priest and other *puja* participants. *Narkeler-naru* (confectionary items made of coconut pulp and sugar) are also offered to the goddess. Different kinds of shrubs, leaves and flowers are used by the *thakur* as sacred elements of *puja*. After performing the *puja*, the *thakur* distributes *prasad* amongst the villagers. Homestead fruit and fruit products are important items of this *prasad*. The *puja* is a great celebration, and most villagers, regardless of their religion, participate together in the festivities. Distribution of the *prasad* is another festival and most villagers share in this joyous ritual.

9.6.7 Kartik: The Month of Hindu Worship

Kartik, which starts around the last week of October, is still hot but less humid and the days are shorter. This is another *puja* month for the Hindu community and the goddess *Kali* is worshipped with pomp and splendour. Homestead fruit, leaves and flowers are again important elements of this festival. A special feature of the *Kali-puja* involves the lighting of earthen lamp to decorate people's hymns as a gesture of the conquest of darkness.

9.6.8 Agrahayan: The Month of Harvesting

Agrahayan, starting around the last week of November, is a month of the harvest, and the villagers get busy with the *amon* paddy crop (late planted paddy growing in low

lying areas). Varieties of *peetahs* are made by village women as new rice is harvested. Although there are no special activities related to homestead trees and tree products in this month, *peetah* is made of coconut pulp with rice flour, a part of festive life.

In the past, a festival celebrating the harvesting of the new crop used to be a prominent feature of the Bengali calendar. This involved 'thanks giving' with grains, fruit, milk and sweets which were offered to the Almighty and then shared amongst friends and neighbours. The reduction of the income of a large number of landless people in the villages has diminished the status of this festival.

9.6.9 Poush and Magh: The Months of Date Palm

Poush (starts around the last week of December) and *Magh* (starts around the last week of January) are the two coldest months of the year and the *amon* paddy harvesting continues. These are the special months for date palm juice. The tappers tap date palm juice and sell it in the nearby villages. Sweets and desserts are also made from date palm juice and these are delicacies the villagers eagerly waiting for. *Gur* (unrefined cane sugar) is also made from the juice in many kinds of *peetahs* are made out of this *gur*. Families distribute these *gur-peetahs* amongst their relatives, neighbours and friends. These are the months of family reunion. Family members visit their parents and enjoy the *gur-peetahs* along with the other delicious food. As these are cold months, children often wake-up early in the morning to collect dry leaves and branches of trees. They then light a fire to enjoy the warmth while singing various popular folk songs. Many adult villagers also participate in such gatherings and enjoy the fire. When there are sharp falls in the night temperature, many villagers gather at the court yard of the *mattabar* (village leader) to sit around a fire place made with dry leaves and tree branches enjoying *vatiali-gan*, *kabi-gan*, *puthi-para* and *boul-gan* - all different varieties of songs, and other entertainments.

9.6.10 *Phalgun: The Month of Fuel Collection*

Phalgun, which starts around the third week of February, is a cool and pleasant month. This is the special month for collecting fuels. As the wind blows, dry leaves and dead branches fall from the trees and are collected by women and children for immediate use as well as storage. Although the collection of fuel is a year round activity, hard working women and children find it easy in this month because of favourable weather. They are able to talk and socialise as they go about collecting the fuel. This is the month also of house building and repairs, specially for the poor who have to live in huts. Homestead trees, bamboo, tree branches and leaves are used as repair materials. Some handicrafts are also practised in this month.

9.6.11 *Chaitro: The Month of Planting Trees*

Chaitro, which starts around the third week of March, is a hot and dry month. As there is some rain too around this time, trees are planted in this month. Certain crops are also planted in this month. As this is a very hot month, cultivators who plough their lands during this sunny hot days, need a break from time to time. They do so under the shade of trees around their lands. Sometimes they have a smoke under the shade of tree, exchanging their stories and problems with fellow cultivators and friends. They also exchange their opinions and views on social and political matters of the country as well as of their local areas. This is the month when women are involved in making fans with palm leaves which they can sell more easily in the hot season⁸.

9.7 Social Gatherings and Homestead Trees

Apart from the regular activities and gatherings through the year, villagers also make use of the space and the shade under big trees on many other occasions. For example, when the Local Government elections are held, the candidates and their supporters often meet under the shade of big trees. Similar kinds of meetings are also arranged during Parliamentary and Presidential elections. Trees are sometimes

used as symbols of political parties. The banana mango, palm, date palm, jackfruit and black berry trees are some of the more popular symbols of various parties. On the eve of the elections many live trees are displayed at important places and corners of *hatts*, bazaars and shopping complexes. Trees are also used in erecting pandals, stages and gates in and around the venues of political meetings.

Another popular occasion is when children organize *churui-bhati* (picnic) under the shade of homestead trees. They would normally bring rice, fish and vegetables from their homes, collect dead leaves and branches of trees from the homestead gardens to make a temporary oven under the shade of a tree to cook *khichuri* (gruel) and other food. They enjoy it in the company of friends. This kind of gathering makes for an exciting change in the daily routine of the village children who do not have other facilities for relaxation and enjoyment. It also has a social significance as children participate equally regardless of family status or hierarchy. This helps generate social harmony and cohesion.

9.8 Summary

In this part we have analyzed the ritual, beliefs, myths, customs and many other aspects of village life involving trees, plants, herbs and their products in the culture of both Hindu and Muslim Bengali. These forest centred rituals, customs, ceremonies and activities are not just of a social nature but have an important element of personal involvement. They, therefore, help to maintain and enrich the individuals, the groups, as well as the society's culture and heritage. Many of these activities also help bring the two diverse religious groups - the Hindus and the Muslims together. Each community participates in the festivals of the others on 'common ground', as it were, under trees or in wooded areas which they regard as their common heritage. The symbolic significance of the homestead forest is thus quite enormous. The forests therefore are not just a ceremonial asset, they are very much a part of society's religious, cultural and communal heritage. It is doubtful whether larger state controlled or private forests could perform these roles as effectively as the homestead forests.

PART TWO

9.9 Homestead Forests: The Protector of the Physical and Residential Environment

Homestead forests are of great significance both for the physical and the residential environments. The homestead forests perform an extremely valuable role in regulating the natural environment in which people live and earn a livelihood. Section ten explores a general overview on the sociological and anthropological importance of certain natural ingredients including forests on the physical and residential environment of human civilization. Section eleven briefly examines the influence of forest and forest ingredients on the ecology and environment of the Indian Sub-continent up until the independence of 1947. Section twelve shows how homestead forests play an important role in protecting the physical and residential environment of rural Bangladesh. The final section presents a summary of Part Two.

9.10 The Sociological and Anthropological Importance of Natural Ingredients in Protecting the Physical and Residential Environment: An Overview

There are certain natural (non social) conditions which influence human society in important ways. Since the dawn of human civilization "it has been known that the characteristics, behaviour, social organization, social process and historical destinies of a society depend upon the geographical environment" (Sorokin, 1964:99). What food we eat, what climate we live in, what work we do and what medicines we take all involve the effect of the physical environment in direct and significant ways on people's physical and mental behaviour and thus on the social institutions in which they interact with nature in the broad sense, including with other people, as observed by Watson and Watson (1969).

As there is a close relationship between the physical environment and human society, sociologists and anthropologists along with many other individual thinkers, have reflected on this relationship. They have indicated in some form the various effects

of geographical factors on human society. The thinkers of ancient India and Persia; the priests and the physicians of ancient Egypt; the astrologers of different countries; Hippocrates, Plato, Aristotle and other ancient philosophers; historians, poets and writers of ancient Greece and Rome, many of the church Fathers like St. Augustine; many medieval thinkers like St. Thomas Aquinas, Machiavelli, Ibn-Khaldun and Jean Bodin. All these and many others have discussed the conditioning role of various geographical factors. Later on, the effects of geographical agencies were stressed by many social thinkers like Vico, Turgot, Herder, and Montesquieu. In the nineteenth and the twentieth centuries, a great multitude of historians, philosophers, economists, geographers, anthropologists, sociologists and political scientists made many contributions in this field. The names of H.T.Buckle, August Comte, E.Huntington, E.Ch Semple, H.L.Moore, Herbert Spencer, L.H.Morgan, P A Sorokin and Fergum are a few representatives of a great multitude of people who have tried to emphasize the various effects of geographical conditions on human society as a whole.

In order to analyze the influence of geographical environments, most scholars have focused on the role and effect of various geographical factors and agencies i.e. the natural climate, temperature, soil, distribution of water and water courses, forests and fauna, storms, earthquakes and cyclones on human society. For example, Hippocrates, whose work 'Air, Water and Places', which mainly focused on the interaction between natural environment and human society is regarded as a guide book for geographers. The book has influenced sociologists, anthropologists and psychologists as well. He contrasts the easy-going Asiatics with over-active Europeans and relates this contrast in human nature and activities with the physical environments. Asian people had a generally comfortable environment whereas the Europeans faced a harsh and hostile one. Huntington (1928) considered the role of forests on human societies. He found that the very nature of desert environments seems to suggest a single, omnipotent god. To forest people, such a concept has no real meaning and in the enclosed environments of forests it is much easier to conceive of many spirits, each of whom rules his or her own realm. Following Thai logic, animistic beliefs are more likely to be found in the religions of forest people, for the existence of one great god who rules all is difficult to comprehend. Toynbee

(1934) like Huntington, had some related but distinctive ideas. He believed that civilized societies arise as a result of a response of certain factors among which the physical environment is the most important. He further stated that human civilization is an inevitable function of geographical circumstances. The great French sociologist Emile Durkheim, in his classic work 'Suicide' (1951) thoroughly examined the role of geographic, social and psychological factors in the incidence of suicide and came to the conclusion that like other factors, geographic factors have an important effect on suicide. August Comte, the founder of sociologists, though critical of the social environmentalism of Montesquieu, was none the less prone to consider important the influence of physical environment on human society. Although Fergum stated that the physical environment is a challenge for human society, he agreed that it is only the physical environment (land, water, mountains and forests) that facilitated the growth of human civilization. Morgan, the great nineteenth century anthropologist held the view that the cultural differences of people at the same level are to be explained environmentally (Burnham, 1979). Sorokin, (1964) the eminent sociologist, thoroughly discussed the conditioning role of geographic agencies on human societies. He, however, stated that the influence of geographic agencies is not equally rigid and direct in regard to different categories of social phenomena (Sorokin, cited by Burnham, 1979).

Although most of these scholars are concerned about the influence of different agencies of the natural environment on human society, our focus is, however, on one of the important natural agencies, namely forests. How forests and forest environments have influenced our society in respect of different physical and social phenomena is discussed in the following paragraphs.

First, we focus briefly on the natural ecology of the Indian sub-continent since before the colonial era.

9.11 The Natural Ecology and Environment of the Indian Subcontinent: A Brief Historical Overview

Prior to the British colonial rule in the Indian subcontinent, it is estimated that between one-third to one half of the total area of Bengal alone was covered in natural forests (Shiva, 1991). Apart from these natural forests, the existence and propagation of communal forests was also prevalent in all parts of Bengal and most of the rest of India. Indian civilization was therefore distinctive because it evolved in the forest environment.

Ecologically, the communal and natural forests and vegetations provided essential life support for both humans and animals, and they were treated as an integral part of the forest ecosystem. Societies of forest-dwellers were organised on the principle of the sustainability of the natural resources on which they depended for their livelihoods. So, there was a unique ecological harmony between nature and human society in those days. The interaction of nature and human society was a reciprocal process and the local people's involvement in the forests, the fields and the rivers created sustenance in quiet but essential ways. As Shiva (1988) has observed, community members worked together to provide the stuff of life to nature and their own community. There was a collective effort that linked nature and human need, which conserved nature through maintaining ecological cycles, and conserved human and animal life through satisfying the basic needs of food, nutrition and water. Sustenance, therefore, was built on the continued capacity of nature to renew its forests, fields and rivers. These resource systems were intrinsically linked in life producing and life conserving cultures, and it was in managing the integrity of ecological cycles in forestry and agriculture that a community's productivity was developed and evolved. This interaction between human society and nature would therefore ensure the sustainability of the sustenance generated by local ecology and environment.

The objective of alien colonies, however, was not based on an assessment of the ecological and biological productivity of forests, rather it was a revenue generating

one. The forest lands of Bengal, especially the forest district of Chittagong and the vast tracts of forest land near the southern delta known as the Sunderbans, were taken over by the British colonisers, and most of them were leased commercially to turn them into revenue generating lands. In all the deltaic regions of Bengal, the communal forests were allotted to the *zamindars*. Prior to this allotment, the communal forests usually maintained a stable ecosystem which was made possible by the rules and conventions of existing social organization that involved checks and controls on the use of forest resources. But, under the new ownership, most of the communal forests were privatised and exploited commercially. For example, the supply of raw material required for pulp, paper, ply wood and the production of charcoal for industrial and urban use needed forestry resources. As a consequence, there was a breakdown of existing practices which triggered off the degradation of communal forests (Shiva, 1991). Therefore, an ecological imbalance became inevitable in the relationship between the villages and their natural environment.

However, the situation has been changed during the post independent era (after 1947). With the abolition of Zamindari system in 1950, some rural people got ownership rights on both cultivable and homestead lands. This helped them, as private owners, to have access to homestead forests and forest products. Under private ownership they started using their resources better which helped improve the ecological aspects in rural areas. The wider implications of these changes are outlined in the following paragraphs.

9.12 Homestead Forests and Environment: Survey Findings

Homestead forests protect the physical as well as the residential environment by absorbing, deflecting, radiating and precipitating the wind. These ultimately protect the environment against drought, cold, wind and radiation. They also conserve humidity and carbon dioxide in the atmosphere and conserve soil and water. They absorb, store and release respectively carbon dioxide, oxygen and other mineral elements which improve the quality of the atmosphere of residential areas. They absorb sounds, noise, smells and fumes which improves the physical environment.

They further absorb, store and release water which ultimately improves the biospheric value and amenity of local landscapes.

Homestead forests are largely responsible for protecting the surface soil of the locality. The part of the tree and plant which mostly enriches the soil is the root. This is the part which keeps the surface soil intact. Tree roots, therefore, work as soil-binders and thus prevent erosion by air, water and other natural agents. Fallen leaves of the trees and plants also form an excellent soil for many purposes. The roots, fallen leaves and the grasses (grown under trees) add to the soil a great amount of humus which makes the soil very rich in nitrogenous products. These, together with potash and phosphorus, are the valuable chemical essentials in a good soil. Tree leaves also prevent direct contact of rain drops with the soil and thus reduce erosive impacts.

9.12.1 *Homestead Forests and a Habitable Climate*

There is an important relationship between forests and climatic conditions. Where the forest covers a region there is some protection to the environment and the climate. As the homestead forests consist of trees, shrubs, herbs and grasses, their first impact is the formation of the climate of the region which in turn makes human habitation possible.

Carbon dioxide is generated out of living organisms. Homestead trees and plants absorb carbon dioxide out of the atmosphere and release oxygen through respiration and photosynthesis and thereby balance the climate for living organisms. An average tree produces about one ton of oxygen every year. One hectare of forest produces about 600-650 kilograms of oxygen and absorbs about 900 kilograms of carbon dioxide annually (Bangladesh Agricultural Research Council (BARC) and Winrock International, 1993).

9.12.2 *Homestead Forests and Energy*

Homestead forests are a component of the biotic (living) community that are often called energy producers. The biotic community consists of plants, trees, animals and microorganisms. Among these only the trees and plants use sunlight as a source of energy to produce sugars from water obtained from the soil and absorb carbon dioxide from the atmosphere. Plants and trees, therefore, are often called producers. In contrast, because animals and most microorganisms cannot utilize solar energy directly, they consume other organisms to obtain their energy. Animals and most microorganisms are therefore called consumers (Morgan *et al.* 1993).

The homestead forests also share energy in the usable form of phyto and zoon which supply a wide array of raw materials to meet local people's growing demand for food, fodder, fuel and housing materials (see chapter four of this study for details). But this utilization of homestead forests has led to an overall shortage of homestead forest resources in the rural areas. In general, the scarcity of homestead forests has meant a scarcity of energy for the biotic community because trees and plants are the only components of the ecosystem which produce energy and absorb carbon dioxide from the atmosphere. This has already created an imbalance within the local ecology and environment. Any further reduction of homestead forests would pose serious problems for local biotic communities and further upset the balance.

9.12.3 *Homestead Forests and the Human Benefits*

One of the important contributions of the homestead forest is its control of wind erosion. As most of the trees are planted at fairly close intervals, the leaves and the branches of adjacent tree become sufficiently interwoven to form an adequate barrier against winds. This is not only helpful in controlling the loss of surface soil from the action of strong wind, it also protects the residential houses from storms. This is why homestead forests are called the wind breakers and, sometimes, the shelter belts for rural people.

Another important household use of homestead forests is their shade. The shade that forests provide round the homestead allows households to work and live under conditions that would otherwise prove intolerable. Forests also give shade to small children while mothers are involved in household activities.

Homestead forests are treated as living fences in rural areas. Both hedges and live fences protect home gardens and vegetables from livestock and people. They also define borders, provide privacy and work as small wind breaks. Living fence plants are planted around the boundary by individual households. Generally, bamboo, *mandar*, *jhiga* and *hijal* trees are planted as live fence posts around many homesteads in Bangladesh. Hedges of *Duranta plumeiri* (*kanta mendi*) around homesteads and other institutions (mosque, temple, school etc.) are seen normally in rural areas. Hedges and live fences require frequent trimming to keep them in form (height, weight and shape) to encourage secondary branching and to make them useful for fuelwood, fodder material, mulch material and green manure⁹.

A number of ditches and ponds are found in rural areas including those around homestead boundaries. Stumps, thick branches and other parts of homestead trees are used in fish farming in these ponds and ditches. The stumps and branches serve as shelter and harbour fish. Homestead forests, therefore, form an ideal habitat for fish farming.

Apiculture is bee-keeping for honey. Most of the honey in Bangladesh comes from the Sundarbans, an area of natural forest and mangroves in the southern part of Bangladesh. Homestead forests also produce small amounts of honey in different seasons. Mainly acacia, lemon, sesame, sunflower and mustard flowers produce honey and the bees prefer to stay around homestead trees for the collection of it.

9.12.4 Homestead Forests and Biotic Environment

Homestead forests shelter and provide the required conditions not only for domestic animals but also for wild animals, birds and insects who are the natural inhabitants

of the forests. Many kinds of birds such as *ghughu*, *doel*, *masranga*, sparrow, *babui*, crow, owl and *kokil* make their nests and lay their eggs in forests. They also take shelter in forests to protect themselves from heavy rainfall and strong wind. Wild animals like jackals, wild cats, *sojaru*, *nail*, *begi* and others live in the forest environment. Mammals like bats and monkeys are also part of this environment. Snakes and snake families (*guisaps*) also thrive in the forests. Many kinds of insects also live in the forest environment. All these habitats have created a unique harmony and interaction between nature and human beings.

9.12.5 Homestead Forests and the Character of Human Habitation

The character of human habitations, or houses are dependent on the availability of raw materials such as wood, bamboo, stone and brick. In the areas where there are trees and bamboo, wooden and bamboo houses predominate. Where wood and bamboo are scarce, other materials are used. It was found in the survey villages that most of the houses (structures and walls) were made of bamboo, wood, coconut leaves, date palm leaves, betel nut leaves, banana leaves and other forest items (see chapter four for details). So, most of the human dwellings in survey villages used materials from homestead trees and tree products.

9.12.6 Forest Conditions, Food and Drinks

There is, naturally, an inter dependence between the flora of a geographic environment and the consumption of food and drink used by society. Homestead forests in the survey villages contribute fruit items for most of the households throughout the year. As most of the households own different kinds of fruit trees including banana, mango, jackfruit, coconut, date palm and guava, the villagers use their fruit, roots, tubers, vegetables as prepared salads, sauces, honey and drinks. However, there is a regional variation in food culture due to varied forest conditions. For example, village three has the palm and palm juice culture along with nuts whereas village four has an abundance of jackfruit and date palm (see chapter four for details).

9.12.7 *Forest Conditions and Local Economy*

There is a symbiotic relationship between human beings and their environment particularly in rural societies. This has helped to sustain human existence and development through the ages. The rural economy of Bangladesh is largely a subsistence one and is characterised by the fact that daily items of consumption like food, fuel, fodder and building materials come from homestead forests.

The nature of the relationship between the livelihood of rural people and the homestead forests has been discussed in chapter five of this study. From these discussions it was evident that the rural economy is heavily dependent on homestead forest resources just as they are on other gifts of nature.

9.13 Summary

It is evident that homestead forestry is the most sustainable form of resource management and conserves the physical and residential environment of rural Bangladesh better than any alternative forestry systems. However, the pressure on homestead forests is enormous as a result of the changing social and economic conditions of the rural people. Over the last 20 to 30 years, many of the rural poor have lost their earnings from cultivable lands which they either owned or share-cropped. With the increased landlessness and the changing land tenure system, many poor people have lost their significant sources of income that used to come from the agricultural sector. Moreover, frequent social and natural disasters make them more vulnerable during emergencies. Another problem is the high and rising price of daily essentials including rice, the main staple food. Moreover, greater fragmentation of land, including homestead land, which has occurred due to complex laws of inheritance and increasing population has made them more vulnerable. The rural people also lose other valuable assets such as cattle, jewellery and furniture in trying to cope with contingency needs. These situations increase the need for homestead trees and tree products in the daily lives of the rural poor. Other needs, such as those for cooking fuel, fodder and house building material have made the homestead forests

even more valuable to the rural poor. As a consequence, there have been substantial reductions in homestead forests in the rural areas.

Many poor people have lost a significant proportion of trees, including many valuable species of homestead forests, because of this changing situation. For example, trees such as tamarind, neem, *bel*, *karai*, *nayna*, *simul*, *kadam*, *jhiga*, coconut and date palm trees are some of the important indigenous species which have been grown in homestead lands over the centuries by local habitants. After a brief gestation period, most of these trees yield annual harvests of edible biomass, cooking fuel, fodder and other products on a sustainable basis. Neem, for example, would provide annual harvests of seeds which yield valuable non-edible medicinal and pesticidal oils. Moreover, this tree is an important and useful source of shade, antiseptic and anti pyretic for both the human and animal populations. The coconut tree, for example, provides fruit, oils, thatching and walling material for the local people. More significantly, leaves, fruit, and branches are harvested from these trees leaving the living trees standing to perform their essential ecological and environmental functions in regard to soil and water conservation; and for protection from winds and provision of shade. Similarly, trees such as *kadam*, *jhiga*, *simul* provide cooking fuel and other useful products on a sustainable and renewable basis. With the increased economic and social needs of the poor people, many of these sustainable and renewable species have disappeared from the homestead forests of rural people. As a consequence, the popular fruit trees such as mango, jackfruit and palm which are grown mainly for their fruit have now become sources of fuel, fodder and building materials. As a result, these trees are also disappearing very fast in order to meet the growing needs of the local people. All in all, there has been a significant reduction in homestead forests which is putting an enormous pressure on the local environment and the ecological systems of human, animal, bird and insect communities.

In this part, the focus has been on the ecological and environmental aspects of rural life, and the conclusion is that the inter relationship is deep and pervasive. Thus, any reduction in homestead forests will adversely affect the ecological balance and the way of life of the rural people and other biotic communities. Homestead forests, therefore, are not just an economic asset but an environmental and social one as well.

ENDNOTES

1. The *aswatta*, having roots hanging from above and branches bent downwards, is allegorical. Each tree springing from an unperceived root is an emblem of the body, which really springs from, and is one with the Godhead. In the Bhagavat-gita it is said to typify the universe. It is said to be the mate of the *vata* or banyan (*Fiscus indica*) (Dubois, 1953).
2. This is another sacred tree, which is dedicated to Siva, the *Melia Azadirachta*.
3. For details see Frazer, 1994.
4. BG., 15.1-2. Cf. also Sankara's Viveeka-cudamani, 145: 'Of the tree of samsara (phenomenal existence) darkness is the seed, mistaking the body for one's self the sprout, attachment the tender leaf, action its water, the body the trunk, the vital functions the branches, the senses its twigs, sense -objects its flowers, pain its fruits'. Cf. also Mahabharata, xii, chapter 254 cited by Zaehner (1969).
5. For details see Abbott, 1984.
6. For details see Abbott, 1984.
7. Pan is a plant leaf and is used for entertainment for guests after meals. Pan is chewed by putting crushed betel nut, lime and spices inside. It has a slightly stimulating effect, as is found when drinking tea and coffee. Entertainment with pan is a custom in both urban and rural areas.
8. For details refer to Sattar, 1975.
9. For details see Chowdhury and Taj, 1993.

CHAPTER TEN

Summary, Conclusion and Policy Recommendations

10.1 Introduction

For a developing country like Bangladesh, the role of forests in the lives and livelihoods of rural people, especially the poor is very important. Since the dawn of Indian civilization, forests have remained central to the economic, social, cultural and ecological aspects of peoples' lives. But, due to the changes in political, economic and social conditions over the centuries, the role of forests has also changed substantially, as documented in this study. Prior to the European rule in the Indian sub-continent, which began in the late eighteenth century, the rural people by and large were able to enjoy the benefits of communal and natural forests in their day-to-day lives. With the introduction of a new land tenure system, the British colonial power effectively refused to recognise the traditional nature of communal ownership of forests. Moreover, with the introduction of commercial forestry, the colonial power transformed the natural forests to 'reserved forests' under a new Forest Act passed in 1878. This arrangement imposed restrictions on the access to forests traditionally enjoyed by people. The effects of these restrictions were felt by the rural people, especially the poor, in respect of their needs for fuel, food, fodder and building materials which they used to gather from forests. No doubt this led to a major change in the village economy and environment and the villagers became much more dependent on homestead forest resources to satisfy such needs as much as possible.

Over the years, there have been substantial changes to the economic and social conditions of rural Bangladesh. The rural economy and the social structure of Bangladesh are based on the complex interrelations among the economic, social and cultural institutions, including the distribution of resources and their benefits; the power structure and its relation to the different social classes; and the interactions of

local people with land, crops, animals, trees, fruit and other products, productive resources and technologies.

It has been observed both from the village survey data and other related literature detailed in the study, that the majority of the rural people remain unemployed at least for some months of the year and more than half of the rural people are nearly or completely landless in terms of cultivable land. As a result, about three-fourths of the rural households are totally or partially dependent on other non-agricultural activities for their lives and livelihoods. In considering alternative assets for meeting rural peoples' basic needs, it has been noted frequently in this study, that forestry, especially homestead forestry plays an important role. Our village survey, for example, confirms that homestead forests provide a large variety of the basic necessities such as fuel, food, fodder, building materials, medicinal ingredients and so on to the rural people. Homestead forests also generate different types of income and employment opportunities for the poor. In addition, they provide significant social, cultural and ecological support to all rural residents.

However, government policies relating to the development and improvement of homestead forests have been conspicuous by their virtual absence. Although the government has made poverty alleviation one of its primary goals, the policies employed covered almost exclusively health and other social sectors during the early 1970s. At a later stage (1975 to 1980), the policies were extended to the agricultural sector, with forestry coming in later still. The emphasis was then on the development of the state forests and the much publicised community forests. These two types of forests are not able to have much of an impact on the extensive rural poverty in Bangladesh. There is little appreciation of poor people's needs which is apparent in the way policies have been formulated. The interests of the better-off have been much better served by the development of the state forests and the community forests, as this study has shown.

The rapid exploitation of natural forests for commercial utilization, and the inefficient management and utilization of forest resources have all contributed to the growing

economic, social and ecological imbalances in the country as a whole. By contrast, the homestead forests have continued to provide many of the resources needed by the rural people, although often in rather inadequate quantities because of the magnitude of the needs existing in rural Bangladesh. The role of the homestead forests requires serious rethinking regarding the appropriate approaches to forestry policies in the context of rural development in Bangladesh. The survey findings of this study have helped to pinpoint the multifarious roles the homestead forests play in the daily lives of the rural people. It is clear, that findings such as these are important in policy making.

As we noted, government policies in the area of forestry in general have continued the emphasis on reserved forests and the village oriented community forests, while the homestead forests have had to rely on the efforts of their owners, who are the individual householders scattered all over the country. The problems of large scale forestry, arising from deforestation and other such pressures, are understood well enough by policy makers but the problems of the decentralised homestead forests are largely the problems of their owners. In recent years, however, some policy initiatives at the government level seem to indicate a degree of recognition of the importance of homestead forests. For example, certain non governmental organisations (NGOs) have been given resources such as seeds, saplings, fertilizers and so on to support homestead forests and their owners. One such NGO is the 'Proshika', which has been initiating pilot projects in some parts of Bangladesh to develop homestead forests and to involve local women in them. Such efforts, while well-conceived and much needed, are however too little and, probably too late.

10.2 Summary of Findings

The first chapter of this study has presented a broad picture of the forestry scene in Bangladesh. It concluded that the homestead forests are a neglected area as far as government policies are concerned. This chapter also notes that information was lacking as to the true extent of forests and forest cover, and how they are changing in Bangladesh.

The second chapter reviews the theoretical literature in the area of development, with reference to its various aspects. The chapter notes that the theories are largely inappropriate to poor, densely populated countries such as Bangladesh. This chapter underscores the need to develop policies which would assist the aim of poverty alleviation. The development of homestead forestry, this chapter argues, can go a long way towards improving the situation of the poor. Indeed, the poor themselves continue to treat the homestead forests as a very valuable resource.

The details of the research methods used and the propositions put forward for testing are outlined in chapter three, which also presents brief profiles of the villages surveyed. The summary findings point to the need for new policies to help the rural poor.

The broad proposition of this study involves an assessment of the contribution of homestead forests in rural Bangladesh. The specific hypotheses tested by different propositions include the contribution of homestead forests in terms of supplying fuel, food, fodder, building and other useful materials to the rural people; the economic contribution of homestead forests in income and employment generation for rural households, especially the poor; the useful support of homestead forests to the poor households in contingencies and emergency; the contribution of homestead forests to rural women and children by involving them in various household economy related to forestry activities; the important contribution of homestead forests with herbal medicines in primary health care for the rural poor, and the important role of homestead forests in the social, cultural and environmental spheres of rural people in Bangladesh.

In operationalising the propositions and hypotheses, this study uses the labels 'poor', 'middle' and 'rich' in categorising the rural households. This was done on the basis of resources owned by the households which ultimately helped to assess the important contributions that homestead forests make to the rural households, especially the poor, whose access to resources such as agricultural land and cattle is very limited. Finally, this chapter presents the economic, social and demographic characteristics of

the survey populations in a comparative way so that the differences between the poor, the middle and the rich, including the existing regional disparities can be identified and the role of homestead forests can be assessed in the light of these factors.

10.2.1 *Survey Findings*

The survey findings are reported in detail in chapters four to nine. The types of resources generated by the homestead forests are taken up for thorough analysis in these chapters. For example, chapter four looks at the patterns of household consumption of homestead forest products such as fuel, food, fodder and house building materials among different income categories and in different villages. The findings confirm the unique role that homestead forests continue to play in the economics of the rural households, regardless of their incomes and location.

However, it is found that the poor and the middle income households depend more on homestead forest products for their cooking fuel than the rich, who had alternative options such as crop and other agricultural products as fuel items. The survey also found how the poor households of village two, with the lowest number of homestead trees, suffered from inadequate fuel resources. They were forced to adopt several measures including the cutting back of cooking times and changing normal eating habits to subsist on unusual food or to make do with inferior fuel items and so on. This had an overall negative impact on the health and nutrition of family members, especially the females, who ate the least because it is customary for them to feed their male members first and eat whatever is left, which is often very little.

In addition to fuel items, homestead forests provide food, animal fodder and building materials for the rural households in a significant way and, again, it is the poor households who rely much more on these products as they have very limited access to other resources such as forests in common land. They are usually landless and their traditional reliance on rich land owners in a patron-client relationship has significantly eroded in recent decades, thus leaving them very little to fall back on.

The findings in chapter five concern the income and employment generated by homestead forests especially for the rural poor. The importance of such supports in the low-income, high-unemployment economies of developing countries cannot be over-emphasised. Homestead forests provide support to the poor households in the form of income and employment from the sale and trading of fruit, timber and bamboo, employment for wood and bamboo cutters as well as carpenters, and employment for processors, both male and female, involved in activities which use products from the homestead forests.

Apart from the involvement of local villagers, there are others who are directly or indirectly reliant on homestead forests for their incomes and employment. These include the middle men and wholesalers engaged in the business of fruit, fuel, timber and building materials in the urban areas and local *hatts* and bazaars. Other kinds of involvement by middle men and suppliers of homestead forest products concern such activities as bricklaying, furniture making, saw milling, as well as bakery, confectionary, paddy boiling, pottery and the selling of logs in urban areas. Once again, it is revealed that many regular off-farm incomes and employment opportunities are related to homestead forests, and it is the poor people who rely upon the availability of these opportunities.

A further finding of this chapter is that, despite the numerous contributions homestead forests make to the rural poor in terms of income and employment, many small scale enterprises based on homestead forests face a number of shortcomings. These include the lack of adequate land and resources for better cultivation and preservation of homestead forests; a lack of marketing and credit facilities and, the absence of training facilities for workers (especially females) to upgrade their skills. The need for appropriate policies for poverty alleviation by using the resources of the forestry sector is once again highlighted by these findings.

Life in rural Bangladesh is harsh at the best of times. But, in natural disasters or family contingencies, the situations become quite desperate. Chapter six reports on the nature of such emergencies and contingencies and the way rural people, especially

the poor, cope with them using their very limited resources. The major role of the homestead forests in such situations is, once again, underlined by the findings.

The chapter explores how the majority of the rural people rely on homestead forests for their extraordinary needs such as the costs involved with the payment of dowry and other wedding expenses; the expenses related to sickness, social and religious ceremonies and festivals, and the occasional purchase of land as well as the cost of litigation, and so on. This chapter also reveals that most of the rural poor are reliant on homestead forests for their needs in the event of floods, droughts, cyclones, tidal waves, famines, epidemics, war and so on. The survey findings confirm the heavy reliance of the poor on homestead forest resources in times of emergency and in meeting their contingency needs. The reasons for this are the lack of access to other assets and the poor peoples inability to save money out of their very low regular incomes.

Women have a major role in the rural household economy. Yet, women are often neglected in the households, and ignored by the policy makers. Chapter seven examines the role of women in the context of both the households and the wider rural economies of Bangladesh. The survey findings reveal just how significant the role of homestead forests is in terms of womens' involvement in the planting and management of trees, and in the collection of fuel, food and fodder. The survey also reveals that it is the women of poor households who spend much more time and energy in forestry activities than do their counterparts amongst the middle income households. Women in the rich households spend even less time in these activities. The extent of these differences is detailed in section four of chapter seven.

The contributions of the female enable the male members of their families to devote their time and energy to other activities on or off the farm. The opportunities females have to earn an income from forestry activities give them some recognition both at the family and the village level which enhances their security within the family and their standing in society. But these economic and social roles are often overlooked by policy makers and development planners because of the perception

commonly held about these women that they are no more than 'reproductive agents' who, in general perform numerous household activities which are unpaid and therefore not recognised as valuable. Even in the forestry sector, the very considerable role of women is usually regarded as insignificant.

There is a long tradition in the Indian subcontinent, including Bangladesh, of using herbal medicines and prophylactics. Chapter eight explains these aspects with the help of the survey findings and the literature in the area. It is revealed that the majority of the rural poor are heavily dependent on herbal medicines for the treatment of diseases such as diarrhoea, jaundice, dysentery, coughs, stomach aches, tooth aches, skin diseases, fever, sexual diseases, arthritis, diabetes, piles, ulcers, cuts, injuries, fractures, paralyses, constipation, asthma and other diseases. As detailed in chapter eight, the survey also explores why a large number of rural people, especially the poor, are still reliant on herbal types of treatment. This chapter concludes that, with improved planning and management, these resources can be utilised in a more efficient manner.

The social, cultural and religious significance of trees and tree products is particularly important in Bangladesh. Chapter nine confirms that some homestead forest products play a special role in the religious, aesthetic, social and cultural processes of Bangladeshi society. The village survey confirms that in Bangladeshi rural society it is common for people to use various forest products in their rituals and festivals due to their beliefs, myths, customs, and legends. These include the use of trees, flowers, fruit and leaves in many religious and social ceremonies, both in Hindu and Muslim cultures.

Hindus use many trees and tree products for the worship of their gods. Similarly, they use these products for many other social and cultural events such as *maha-sankranti*, ritual fasting, birth and death rituals and practices related to illness, fertility and marriage. Muslims also use trees and tree products in many social and cultural events. The significant observation is that the usefulness of trees and their products is not confined just to practical or commercial purposes. People everywhere,

especially in rural areas, enjoy the benefits of trees in their daily lives and livelihoods such as, in the celebration of new year and the festivals related to seasonal fruit and in the celebration of harvesting. Homestead forests and forest products are also used in political and social events and occurrences in both natural and symbolic ways. The chapter shows that even the poor people use their very scarce resources in this way. Hence, the cultural practices (i.e. religious and spiritual concerns) must, in many cases, take precedence over other needs. The satisfaction of such needs contributes to the dignity of the individual and integrity of the rural society.

Finally the early part of chapter nine argues that homestead forests hold a central place in the rural people's social, cultural and religious practices, values and activities which, together, help to achieve and maintain an overall social and communal harmony amongst villagers. But with increasing demand for, and use of, these resources, rural people are already facing problems in regard to continuing their traditional activities which involve the use of products from the forests. Any further reduction of these resources will increase the level of deprivation rural people and especially the poor, are already facing. These losses are not easily recognised by outsiders but their effect on the general well-being of the sufferers is no less serious than that of massive starvation, for example.

The rural ecology is highly dependent on the way the forests, including homestead forests, are used and protected. It must also be noted that sacred prohibitions on the cutting of some valued trees have been pushed aside by the combination of populations, pressure and commercial exploitation. Such degradation of the forest is therefore an attack on the cultural traditions that sustained them as well as an attack on the forest ecosystem. Almost everywhere in the world, the natural environment has deteriorated as a result of increasing pressures on the natural resources. The second part of chapter nine has addressed this issue with respect to Bangladeshi data.

The survey findings confirm that homestead forests absorb wind, conserve humidity, neutralise carbon dioxide and preserve and protect the quality of soil and water. They also minimise pollution generated by noise, smell and fumes, thereby improving

the quality of the physical and residential environment. Homestead forests provide shade and shelter for human, animal and other biotic communities in a manner that is easily accessible and conveniently located around people's homes, farm lands and animal grazing grounds. The daily lives and activities of rural people and their homes and farms are influenced by the presence of homestead forests. These environmental influences are both economic and emotional. This chapter thus confirms the deep and pervasive inter-relationship between forest ecology, environment and the rural inhabitants.

The continual environmental degradation in Bangladesh resulting from the fast disappearance of native species of trees such as *neem*, *karai*, *tamarind*, *bel*, *nayna*, *simul*, *kadam*, *jhiga*, coconut and date palm is generally recognised in the Bangladeshi rural society. No systematic study has been undertaken, to the best of our knowledge, to document this phenomenon and propose policies for its reversal. The survey findings and the extensive study in this chapter are a step in this direction. It is demonstrated that official forestry policies in Bangladesh have contributed to the degradation and resulting problems of ecological imbalance. Homestead forests, despite their low profile in public policies, have contributed in a major way to minimising the adverse effects of deforestation and the commercial orientation of forestry in Bangladesh. Detailed statistical information on this is lacking, but even casual observation around rural Bangladesh help substantiate the fact that fruit trees and medicinal plants and herbs are to be found in larger numbers and in better shape in people's homesteads than in other locations.

10.3 Policy Recommendations

The foregoing analysis explores the contribution of homestead forests in the economic, social, cultural and environmental spheres of rural people in Bangladesh. This analysis also critically examines the place homestead forests should have in the programmes for forestry and rural development in Bangladesh. On the basis of survey findings, this study identifies the following issues and problems which need to be addressed by academic and other researchers, government research analysts,

educators, information professionals, policy makers, politicians and the general public:

- i) 'Modern approaches' to development, this study argues, should not be pursued in respect of forestry development policies and programmes. The emphasis of such approaches has been to seek to enhance commercial productivity and total output by the application of modern technology and methods of production. For example, the use of high yielding seeds, chemical fertilizers, pesticides and capital intensive production methods in agriculture may have contributed to an increase in output in the short run. But the longer term effects on the soil, and the prospects of long term availability of such methods and implements to the poor peasants are issues which the modern approaches ignored. In labour surplus economies, development programmes must consider the use of labour as a major aim of development. This study has shown how homestead forests provide opportunities to the rural poor in a whole range of areas such as income and employment generation, the 'empowerment' of women, and the provision of resources in situations of emergency and contingency. The message of this study therefore is to encourage further development of these types of approaches which, while they may be conventional, and less spectacular in their effects, are better suited to the needs of the rural poor.

In a wider context, the question of rural poverty and the lack of economic opportunities are related to landlessness of the majority of the rural people. Equally, their reliance on intermediaries for marketing whatever products and services the poor may have for sale takes away from them a part of the benefits of their labour or resources. Land reforms involving allocation of more *khash* (state owned and controlled) lands as well as privately held land to the landless appears, on the face of it, one way of improving the situation. However, given the scarcity of land in relation to the population, care must be taken to ensure that excessive fragmentation of land, including homestead forests does not take place. The patterns of inheritance as practised in

Bangladesh have contributed in a major way to such fragmentation, and the resulting deterioration in the quality of land management (uneconomic size of land) creating inefficiencies in the use of land. This is a difficult problem. One solution could be to promote 'collectivised' or 'cooperativised' use of land with individual ownership. Cooperative movements in Bangladesh (and in many other developing countries) however have tended to be dominated by the elite, and therefore cater mainly to the needs and interests of the elite. Planners and policy makers might change the situation by involving the poor and the landless in a reformed cooperative movement which would confer the benefits more evenly. However, there are serious legal and property rights issues involved in devising such a system. Given the power structure in Bangladeshi society, such a transformation, it is conceded, would be extremely difficult.

- ii) Forestry development programmes should be formulated to answer first and foremost some basic socio-economic needs of the rural people. This study has conducted extensive discussions of the role of homestead forests in generating income and employment, as well as satisfying many social, cultural and religious needs of the rural people rather than forestry for other commercial and/or export purposes. Forestry development plans therefore should further emphasise the need to generate such opportunities, and formulate policies to achieve them.
- iii) The planting aspects of homestead forests suffer from a number of shortcomings, such as the selection of proper species, seeds and saplings, for example. Promotion of a greater awareness and motivation among rural householders is needed in order to overcome the problem. Action needs to be taken to encourage the planting of some high value native species of trees by the rural poor. This might necessitate an adequate supply of cheap seedlings and saplings and for the training of people to handle them properly.

- iv) The provision of supplementary ingredients such as manure, irrigation facilities and fences must be improved to ensure protection and better growth of saplings. For example, grants or credits on 'easy' terms as well as training and technical know how might improve the availability and use of these essential ingredients for the poorer peasants.
- v) Low lying, flood-prone areas need special treatment if their observed low productivity in forests is to be altered. Projects to raise platforms around homesteads would make it possible to protect valuable homestead trees and plants from floods. The expenditure on these facilities must be viewed as an investment which would yield both social and economic return after a period of time.
- vi) Different agro-ecological zones require different species of trees and plants. These must be identified in a scientific manner and be promoted as part of rural development. The knowledge, experience and the expertise of the local households must be utilized in identifying the appropriate species and promoting their growth. This is another area where the 'bottom-up' approach would be required if policies are to succeed.
- vii) Many processing activities are dependent on the products of homestead forests. Such value-adding activities generate much needed employment opportunities and additional incomes for the rural people. Investment in such small scale activities in the rural areas would help alleviate rural poverty directly. They should also involve the rural women, who are a neglected group in Bangladeshi society and economy. As many women of the poor households are actively involved in processing activities, this would also help them in achieving economic and social security at the household level and an increased standing at the village level. Chapter five and seven have detailed the nature of these activities in the light of the findings of the village surveys. Fruit processing, making mats, fans and other handicrafts, and oil seed

processing are examples of such activities. These are programmes which could, therefore, employ many of the landless people still living in rural areas.

- viii) Better coordination of rural production and marketing in urban areas would promote the growth of cottage type manufacturing activities based on forestry products. The role of the middle men acting as the main link between the producers in the villages and the retailers in urban areas results in poor returns to the producers themselves. Promotion of a system whereby the villagers themselves arrange the marketing of their products in centres away from home would help avoid the share being taken away by the middle men. Planners can impart training and knowledge about these possibilities, but organization must be done by villagers themselves.
- ix) Opportunities to train in existing and new activities using forestry resources should be extended to the rural areas. This would ensure more efficient utilization of resources and better market prospects.
- x) Using highly valued timber as cooking fuel results in substantial wastage of a valuable resource. Alternative sources of fuel such as fast growing and cheaper wood fuel can be supplied from native forests, provided such forests are planted and managed in a way that their resource is sustained for continuous use. Other alternative sources of fuel, such as a combination of wind and solar power, could be explored in a systematic manner. While both of these resources are renewable, it is expensive to generate and transmit power from them. Using forestry resources in a planned manner is a short term solution which is urgently needed if the resources are to be maintained for future use and, to do this, certain fast growing species of native trees such as *mandar*, *jhiga*, *hijal*, *kadam* and *simul* could be planted to alleviate the problem of fuel shortage, thereby reducing the continuing use of other, more valuable, timber and trees.

- xi) Draught animals, a valuable resource to the rural farmer, use up valuable forestry resources as fodder. This should be minimised by promoting fodder from agricultural sources which are among the animals' 'natural fodder'. Certain types of plants and trees such as leaves and fruit, acacia, banana and jackfruit trees; zizira plants and the herbs like small grasses (usually grown under the shade of big trees) serve well as animal fodder. These should be promoted so as to reduce the use of other forestry products which have more efficient uses.
- xii) Given the importance of herbs and plants as medicinal products, better protection should be extended to the relevant species. More research is also needed to further improve the benefits of such products and the way they are used by traditional herbalists. The development of cooperative or joint enterprises involving locally based herbalists and perhaps university based botanists and chemists could have valuable economic, social and health benefits.
- xiii) Likewise, plants, trees and herbs which (e.g. banyan and *peepal* trees) have a special role in the social, cultural, religious and aesthetic areas of rural life should be protected so that their survival is not endangered by the pressures of other demand on them.
- xiv) Careful planning must ensure that excessive commercialisation does not choke off these important but non-commercial uses of homestead forestry products, since the health and general well-being of rural people is partially dependent on the maintenance of their social and cultural practices.

10.4 Conclusion

The foregoing policy recommendations are made in the light of our findings in rural Bangladesh, and an extensive review of forestry related research around the world. The Bangladeshi poor are not used to getting much help from government

development policies. These policies are almost always urban and industry-centred. Their benefits are therefore confined largely to the urban people. Many of the poor are landless, and are therefore unable to get into agricultural farming for survival. Opportunities for working on other people's land are not plentiful. These opportunities may decline further in the near future due to increasing numbers of the landless poor and a surfeit of unemployed people lowering the value of labour. The land around the homesteads of the poor, however small, provide many of the basic necessities of life. Hence, the importance of homestead forests, and the need to maintain, if not expand their domain, while encouraging their continued sustainable use by rural villagers.

Large scale community forestry projects which are favoured by policy makers in most developing countries are seldom able to help the poor, who usually lack direct access to forestry resources, or the skills to use them in an efficient manner. Our recommendations are meant to provide ideas which would begin to address these problems. It is appreciated that these recommendations, like any others, do not come cost-free. But their implementation would generate additional benefits too. Hence, the allocation of resources within the framework of development planning would make resource transfers in favour of the rural poor more feasible. Whether the political will which would make such decisions acceptable is there or not, is the crucial question. The conviction of this researcher is that the potential of homestead forestry in Bangladesh is enormous and that it could play a larger, more sustainable role in the daily lives of rural people. But the current forestry development policy almost exclusively emphasises the area of natural forests and community oriented social forests, the use of which is inefficient and often inequitable. Given this, the need for alternative policies along the lines suggested in this study is urgent. Failure to resolve the problem of widespread rural poverty in developing countries such as Bangladesh would threaten the social and political stability of the countries themselves and the world as a whole.

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Glossary of Bengali**Words and Terms Used in the Study**

<i>Achar</i>	Pickle made out of Le Aain fruits such as mango, amra, boroï and jolpai.
<i>Akand</i>	A sect of a patrilineal kin who were once landlords.
<i>Ali</i>	A sect of a patrilineal kin who can claim to have descended from the fourth caliph of Islam.
<i>Alna</i>	Wooden stand for clothes.
<i>Aman</i>	The variety of paddy harvested in the winter season.
<i>Am-bhat</i>	Rice with mango juice or pulp.
<i>Amchur</i>	Mango-pulp, dried and preserved as slices, eaten as relish.
<i>Am-satto</i>	The dried pulp made of mango flesh eaten as a snack.
<i>Annaprason</i>	Ceremony observed by both Hindu and Muslim families to mark the day of first rice taking by an infant.
<i>Anaj-kala</i>	A variety of green banana eaten as vegetables for cooking.
<i>Arot</i>	The wholesale depot/warehouse for storing forest and agricultural products.
<i>Arotdar</i>	The wholesale trader who buys and sells forest and agricultural products in bulk.
<i>Ashani-sanket</i>	The flash of bright light produced during a natural thunder, a symbol of an imminent danger/trouble.
<i>Astana</i>	The dwelling place of saintly persons.
<i>Aus</i>	The variety of paddy harvested in the rainy season.
<i>Atop chal</i>	Sun dried rice.
<i>Ayurvedic</i>	The Indian system of herbal medicine originating from the Hindu Scripture, the Athanva Veda.

Glossary cont.

<i>Babshaee</i>	Trader
<i>Babui</i>	The small weaver bird of Bangladesh.
<i>Baparee</i>	A patrilineal kin who were once the traders.
<i>Bala</i>	The title of a patrilineal kin who are craftsmen.
<i>Bana</i>	Long bamboo fence for holding fish in streams, rivers or other water ways.
<i>Begi/bengi</i>	The mongoose.
<i>Bhuyian</i>	A patrilineal kin who claim their forebears were one of the twelve feudal princes governing Bengal during the late Mughal period in the seventeenth century.
<i>Bichi kala</i>	A banana with seeds eaten as a vegetable when green, and as a fruit when ripe.
<i>Bidi/biri</i>	A kind of slender cigarette made out of tobacco with tree-leaf as wrapping material.
<i>Bonna</i>	Floods resulting from heavy rains which cause river and other waterways to overflow.
<i>Borsah</i>	Rainfall, or the rainy season, usually the months of June to September.
<i>Boul gan</i>	Devotional Bengali songs sang for spiritual uplift.
<i>Chalun</i>	A sieve, made of bamboo and netting, used for separating smaller particles/dust or wastes from whole or ground grains.
<i>Channa dal</i>	The chick-pea, one kind of pulse.
<i>Charu</i>	Fish trap, made out of bamboo sticks of medium/small thickness, used specifically for catching shrimps.
<i>Chutny/chutney</i>	Any of the various kinds of cooked and spices preparation fruit eaten as relish with a main dish.
<i>Chatu/Chhatu</i>	Ground powder, made out of grains and seeds, such as barley, or grams or pulses.

Glossary cont.

<i>Chipko-andolon</i>	A Movement by women of the Uttar Pradesh state of India resisting the government's tree felling programme affecting hill forests of the state.
<i>Chotpoti</i>	Bean cooked with tamarind and spices.
<i>Chira</i>	Flattened rice, prepared by frying and then thrashing wet paddy.
<i>Choki/chouki</i>	A four legged bedstead, made out of average quality wood.
<i>Chon</i>	A kind of tall grass suitable for thatching and walling material.
<i>Chouchala</i>	The four-roofed thatched and/or corrugated iron hut.
<i>Chowdhury</i>	The sect of a patrilineal kin whose forebears were feudal lords.
<i>Dai</i>	The mid wife.
<i>Dhama</i>	Container, made out of bamboo/cane for carrying paddy/rice/wheat and other food grain.
<i>Dhanicha</i>	The jute-like fibrous plant grown in the low-lying watery areas.
<i>Dochala</i>	The twin roofed thatched hut.
<i>Diwali</i>	The festival observed with illumination on the day of the new moon in the Bengali month of Aswin and Kartik (October-November).
<i>Doel</i>	A small singing bird, the magpie robin of Bangladesh.
<i>Dol</i>	Large container made out of bamboo strips used for storing grain.
<i>Dorbesh</i>	Dervish, a member of Muslim religious order claiming spiritual connection with the Almighty.
<i>Durba</i>	A species of grass, used as an auspicious article, in Hindu religious rites.

Glossary cont.

<i>Ekadoshi</i>	The eleventh day of the lunar fortnight, observed as a auspicious by Hindus.
<i>Fakir</i>	A Muslim ascetic who provides spiritual guidance to followers.
<i>Faria</i>	Middleman/vendor/hawker who purchases agricultural and forest products from growers to sell them to wholesalers.
<i>Fotwa/fatwa</i>	Decrees especially religious judgements, issued by religious/spiritual leaders.
<i>Fuska</i>	A wheat based snack eaten with tamarind juice.
<i>Gayeholud</i>	Ritual ceremony, held before a marriage in traditional weddings, in which both the bride and the groom are smeared with tumeric paste for purification.
<i>Ghoghhu/ghughu</i>	The dove, a familiar wild bird of the pigeon family.
<i>Ghorjamai</i>	Person who resides in the family of his in-law`s.
<i>Ghugny</i>	Bean cooked with tamarind and other spices.
<i>Goshthi</i>	A lineage consisting of a whole body of kinsfolk.
<i>Gui sap</i>	A kind of serpent larger than a snake.
<i>Gur</i>	Molasses, made from the juice of sugar-cane, dates, palm etc.
<i>Hakim</i>	The traditional herbal physician who follows the Unani system of medicine.
<i>Hakimi</i>	A system of treatment based on the Unani tradition.
<i>Haldar</i>	The sect of a patrilineal kin who were fishermen.
<i>Hata</i>	A long-handled spoon made out of wood for serving stew, rice etc.
<i>Hatt/haat</i>	Weekly/biweekly rural market where villagers sell/buy their daily necessities including agricultural and forest products.

Glossary cont.

<i>Hawladar</i>	The title of a patrilineal kin who were once the village aristocrat and landlord.
<i>Holi</i>	The Hindu spring festival observed at the approach of the vernal equinox.
<i>Hookah</i>	An implement for smoking tobacco, made out of wood, coconut shell and bits of metal.
<i>Idd</i>	An important Muslim religious ceremony, celebrated twice a year.
<i>Idul-Azha</i>	One of the important Muslim festivals in which animals are sacrificed to the almighty.
<i>Jhaka/jhanka</i>	Large basket made out of bamboo for carrying (on head) goods and/or food grain.
<i>Jola/jala</i>	Low lying marsh land in a rural area.
<i>Kabi-gan</i>	The Bengali country song in which two parties led by their respective chiefs who alternate in singing songs and verses on debatable themes in the form of questions and answers composed, in the main, extemporaneously.
<i>Kacha kola</i>	Green bananas eaten as vegetables.
<i>Kachu/kachusak</i>	The esculent roots and leaves.
<i>Kala babshaee</i>	Petty traders of green and ripe banana.
<i>Kalbaishaki</i>	Nor`westers, the severe storms, accompanied by thunder showers, which occur in the summer month of Baishakh, in Bangladesh.
<i>Kalmi</i>	The aquatic plant whose leaves and stems are eaten as vegetables.
<i>Kancha</i>	Unripened, green fruit or vegetable.
<i>Karat</i>	One kind of manual hack saw.
<i>Katha</i>	A small container, made out of cane and bamboo.
<i>Kathal babshaee</i>	Petty traders of green and ripe jackfruit.

Glossary cont.

<i>Kathal-muri</i>	Mixture of jack fruit and puffed rice.
<i>Kasundi</i>	A sort of pickle made out of slices of green mango, with mustard, salt and spices.
<i>Kaviraj</i>	The traditional herbalist who provides herbal treatment following the <i>Ayurvedic</i> system of medicine.
<i>Kaviraji</i>	A system of treatment based on <i>Ayurvedic</i> tradition.
<i>Kazi</i>	The title of a patrilineal kin whose forebears were the dispenser of justice during Muslim rule in India.
<i>Khadum</i>	Fish trap, made out of bamboo sticks of medium thickness, for catching medium size fish.
<i>Khaja</i>	The title of a patrilineal kin who were once aristocratic landlords.
<i>Khan</i>	The title of a patrilineal kin whose forebears were members of pathan tribes.
<i>Khandani</i>	The aristocratic family.
<i>Khashland</i>	Lands owned by the government.
<i>Khat</i>	A decorated bedstead, made of average quality wood.
<i>Khejur tree</i>	The date-palm tree.
<i>Kher</i>	Dried stalk of paddy, pulse etc. used as cooking fuel and/or animal fodder.
<i>Khondoker</i>	The title of a patrilineal kin whose forebears were religious/spiritual leaders.
<i>Kokil</i>	The cuckoo, famous for its melodious call.
<i>Kula</i>	Winnowing fan, made out of bamboo, used for separating small particles of dust or waste from grain.
<i>Kura</i>	The red powdery coating of rice under the husk, used as food or fodder.
<i>Kutchakacca bari</i>	The hut made of non-permanent materials such as leaves, thatch, straw and clay.

Glossary cont.

<i>Lungi</i>	The traditional dress, worn mainly by Muslim men, in the Indian sub-continent.
<i>Majumdar</i>	The sect of a patrilineal kin whose forebears were revenue collectors.
<i>Manot</i>	The promise of a sacrifice of some articles made with the wish of relieving the illness of a sick family member.
<i>Mantar/mantra</i>	The sacred Vedic hymn/incantation recited by the guru invoking the Almighty. Also a esoteric word given privately to disciples.
<i>Masranga</i>	The kingfisher.
<i>Mendi/mehendi</i>	The paste of leaves used for colourful decoration of finger nails and palms.
<i>Mian</i>	The title of a patrilineal kin whose forebears were land lords.
<i>Mocha</i>	The flower of the banana tree, conical in shape and purple in colour.
<i>Moha-sankranti</i>	The Hindu religious festival which occurs on the day of the vernal equinox, marking the beginning of the spring season in the northern hemisphere.
<i>Mohor</i>	The customary financial obligation of the groom's family paying cash to the bride's family at the time of wedding.
<i>Mond/Maund</i>	The unit of measurement of weight. One maund is equivalent to 38 kilogram (approx.)
<i>Motka</i>	Large storehouse for grain, made of bamboo.
<i>Mouraba/morraba</i>	Green mango pieces in crystal form, preserved in sugar syrup and eaten as relish.
<i>Munshi</i>	A patrilineal kin whose forebears were once teachers/writers/clerks.

Glossary cont.

<i>Mullah</i>	A patrilineal kin whose forebears were religious priests/spiritual leaders.
<i>Muri</i>	Puffed rice prepared by dry roasting of grains.
<i>Nala/nol</i>	The dry tubular stem of a shrub, used for roofing and walling of huts.
<i>Nail/neul</i>	Mongoose.
<i>Nara</i>	The dry long hollow tubular stalk of paddy, wheat, barley etc. used as cooking fuel.
<i>Narkel pitha</i>	Fried snacks made out of wheat/rice flour and coconut pulp.
<i>Navanna</i>	The ritual ceremony observed on the first eating of new rice in the Bengali month of <i>Agrahayan</i> (November).
<i>Nullah/nalla</i>	Canal.
<i>Nyare</i>	Family re-union during the summer/winter fruit seasons of the Bengali calendar.
<i>Paka</i>	Ripe.
<i>Pantha-bhat</i>	Boiled rice soaked in fresh water, preserved for use as a main meal in the future.
<i>Patari/patali</i>	Rectangular or round solid block of molasses made from sugar-cane, date or palm juice.
<i>Peer</i>	A leader of Muslim religion providing guidance to followers.
<i>Polo</i>	Hand held fish trap, made out bamboo sticks of medium thickness, for catching medium size fish.
<i>Pori</i>	Fairy; one kind of imagined female creature, which is invisible, but imagined to be beautiful.
<i>Potol/patol</i>	One kind of green vegetable cooked as curry.
<i>Pramaneek</i>	The title of a patrilineal kin whose forebears were authoritarians and powerful landlords.

Glossary cont.

<i>Prasad</i>	The offering of consecrated food by the priest to the followers in a temple.
<i>Puja</i>	The important ceremony of Hindu religious worship.
<i>Pukka/pucca bari</i>	A brick house.
<i>Purdah</i>	A kind of veil worn by Muslim women to maintain privacy/modesty.
<i>Puthi para</i>	The reciting of old Bengali verse.
<i>Rabani</i>	Fish trap, made out of thin bamboo sticks and used for catching small fish.
<i>Raja</i>	The monarch (ruler) in India during medieval times and also during British rule.
<i>Ramadan</i>	The dawn-to-dusk fasting month of the Arabic lunar calendar observed by the Muslim community.
<i>Sadhu</i>	A saintly person of both Muslim and Hindu cults who offer spiritual blessings to followers.
<i>Safran/saffron</i>	The orange and yellow colouring and flavouring powder obtained from the flowers of the crocus plant.
<i>Sajina sticks</i>	The edible fruits of the <i>sajina</i> tree, used as a vegetable.
<i>Saluk</i>	The aquatic plant whose seeds and roots are eaten as food by the poor especially during crises, involving severe food shortage.
<i>Sapuray</i>	A snake-charmer.
<i>Sardar</i>	A patrilineal kin who once were landlords and village chiefs.
<i>Saree</i>	The traditional dress worn by women on the Indian sub-continent. It is a single piece of material, about five metres in length.
<i>Sarker</i>	The title of a patrilineal kin whose forebears were revenue collectors/clerks.

Glossary cont.

<i>Shasanghat</i>	The elevated river-side place used by Hindus for the cremation of dead bodies.
<i>Sheikh</i>	The title of a patrilineal kin who once were wealthy farmers and land owners.
<i>Shikdar</i>	A patrilineal kin who were once landlords.
<i>Siddah</i>	A traditional system of treatment, combining herbal medication and religious rites or performances.
<i>Sojaru</i>	A porcupine
<i>Sraddha</i>	The Hindu religious rite and ceremony offering honour to a deceased person.
<i>Syod/said</i>	The title of a patrilineal kin who claim to be descendents of the holy prophet and his family in Mecca.
<i>Taka</i>	Unit of money in Bangladesh. Currently, one US dollar is equal to 40 taka (approx).
<i>Tal pitha</i>	Fried snacks made out of wheat/rice flour and palm syrup.
<i>Thakur</i>	The Hindu priest who conducts worship and presides over other religious rites.
<i>Thana</i>	An administrative unit of local government.
<i>Tin</i>	An inferior kind of corrugated iron sheet.
<i>Tukri</i>	Container, made out of bamboo, for carrying goods on the head.
<i>Uddin</i>	The title of a patrilineal kin whose forebears were ordinary cultivators.
<i>Unani</i>	The Muslim system of herbal medicine supposedly originating from ancient Greece.
<i>Uron</i>	A long-handled spoon with a deep bowl made out of wood/bamboo and or nut shell for serving lentil soup, stew and so on.

Glossary cont.

<i>Vadal</i>	The inner part of the main trunk of the banana tree, used as food or fodder.
<i>Vaidya/bede</i>	One of the gypsy tribes of the Indian-subcontinent.
<i>Van</i>	A four wheeled, rickshaw-like carrier used for carrying goods.
<i>Vatiali</i>	Bengali folk music.
<i>Veena/vina</i>	Lyre, the stringed musical instrument.
<i>Zamindar</i>	Landlords who leased out land and collected revenue under an arrangement put in place by early British rulers in Bengal.

Appendix 1

Scientific Names of Homestead Forest Species and Their Relative Importance in Different Uses.

Local species	Scientific name	1	2	3	4	5	6	7	8	9	10
Mango	<i>Mangifera indica</i>	** **	**	** **	** *	*	*	**	** **	**	**
Jack-fruit	<i>Artocarpus hetero- phyllus</i>	** **	*	** **	** **	*	*	***	** *	**	*
Coconut	<i>Cocos nucifera</i>	**	**	** **	0	**	*	0	** *	**	**
Date palm	<i>Phoenix sylvestris</i>	**	**	**	*	**	0	*	** *	** *	** *
Nut (betel-nut)	<i>Areca catechu</i>	**	*	0	0	**	**	0	**	**	** *
Banana	<i>Mussa spp.</i>	0	0	** **	0	**	**	**	**	0	**
Palmyra-palm	<i>Borassus flabellifer</i>	**	**	** **	0	**	**	0	**	*	**
Lemon	<i>Citrus limon</i>	*	*	** **	0	*	0	0	*	0	*
Papaya	<i>Carica papaya</i>	0	0	** **	0	0	0	0	*	0	**
Guava	<i>Psidium guajava</i>	*	*	** **	*	*	*	0	**	*	**
Tamarind	<i>Tamarindus indica</i>	**	***	** *	** *	**	**	0	**	**	**
Black-berry	<i>Eugenia jambolana</i>	** *	*	** *	** **	*	**	0	**	**	0
Badam	<i>Citrus grendis</i>	**	*	** *	**	*	*	0	**	*	0
Boroi	<i>Zizyphus mauritiana</i>	*	**	** **	*	**	0	***	**	0	**
Bel	<i>Aegle marmelos</i>	**	**	** *	** *	*	**	*	**	**	*
Ata	<i>Anona squamosa</i>	*	*	** *	*	*	0	0	*	0	0
Gab	<i>Diospyros ambryop-teris</i>	*	**	**	**	*	**	0	**	**	**

Appendix 1 *cont.*

Sajina	Moringa oleifera	0	*	0	0	**	0	*	*	0	**
Jolpai	Elaocarpus floribundus	**	*	**	**	*	*	0	**	*	**
Litchi	Litchi chinensis	**	**	**	**	*	*	0	**	*	**
Kadam	Anthocephalus cadamba	**	**	0	*	**	**	0	**	**	0
Raintree	Samanea saman	**	***	0	**	**	*	0	**	*	0
Koroi	Albizia procera	**	**	0	**	**	**	0	**	**	**
Banyan	Fiscus bengalensis	*	***	0	*	**	**	0	**	*	**
Fig	Fiscus glomerata	*	***	0	*	**	**	0	**	*	**
Mandar	Erythrina variegta	0	***	0	0	**	0	0	**	0	**
Jiga/jhiga	Odina woodier	**	**	0	**	**	**	0	**	*	**
Debdaru	Polyalthia longifolia	**	**	0	**	**	*	0	**	*	**
Acacia	Acacia nilotica	**	**	0	**	**	**	***	**	**	**
Neem	Azadirachta indica	**	**	0	**	0	**	**	**	*	**
Mahogany	Swietenia mahogany	**	**	0	**	**	**	0	**	**	**
Sisso	Dalbergia sissoo	**	***	0	**	**	**	0	**	**	**
Jamrul	Eugenia javanica	0	**	**	*	**	0	0	**	0	**
Hijal	Barringtonia acutangula	**	***	0	**	**	*	0	**	*	**
Sal	Shorea robusta	**	**	0	**	**	**	0	**	**	**
Pitraj	Amoora rohituca	**	**	0	**	**	*	0	**	*	**
Khair	Achacia catechu	**	*	0	**	*	**	**	**	**	**
Krishno-chura	Delonix regia	0	**	0	0	*	0	0	**	0	**

Appendix 1 cont.

<i>Kadbel/ katbel</i>	<i>Feronia limonia</i>	**	**	**	**	**	*	0	**	*	**
				**							
<i>Semul</i>	<i>Bombax malabaricum</i>	0	***	0	0	**	0	0	**	0	**
									*		*
<i>Jarul</i>	<i>Lagerstr-oemia</i>	**	**	0	**	**	0	0	**	0	**
		*			*						*
Bamboo clump	<i>Bambusa spp.</i>	**	0	0	0	**	**	**	**	**	**
		**				**	*		**	*	*
<i>Bon kanthal</i>	<i>Artocarpus lakoocha</i>	0	**	**	*	*	0	0	**	0	0
				**							
<i>Pituli</i>	<i>Trewia nudiflora</i>	0	**	0	**	**	0	0	**	0	**
					*						
<i>Garjan</i>	N.A	**	**	0	**	**	*	0	**	**	**
		*			**						
<i>Gamar</i>	<i>Gmelina arborea</i>	**	**	0	**	**	0	0	**	0	**
		*			**						
<i>Gazari</i>	<i>Shorea robusta</i>	**	**	0	**	**	0	0	**	0	**
		*			**						
<i>Daleem</i>	<i>Punica granatum</i>	0	**	**	0	0	0	0	**	0	**
				**							
<i>Amra</i>	<i>Spondias pinnata</i>	0	**	**	0	**	0	0	**	0	**
				**							
<i>Peepal</i>	N.A	0	**	0	**	**	**	0	**	0	**
											**
<i>Nishinda</i>	<i>Vitex negundo</i>	**	***	0	**	**	*	0	**	*	**
					*						

Source: Field Survey, 1992.

Relative Uses of different species:

**** = Most important; *** = Moderately important; ** = Important

* = Little importance and 0 = Nil. N.A = Not Available.

Used For:

1. House building
2. Fuel wood
3. Fruit
4. Timber
5. Walling and Fencing
6. Agricultural Implements
7. Leaves and stems as animal fodder
8. Branches and leaves as cooking fuel
9. Household implements.
10. Others Uses include:

Appendix 1 cont.

- a) Edible preparations as snack, pickle, *chatny*, relish, *achar*, *kasundi* etc. made out of mango, guava, lemon, tamarind, *kadbel*, *amra*, *bel* and *boroi*.
- b) Juice, molasses, *gur*, *patari* and *peetah* from date palm and palmyra palm.
- c) Condiments from fruits of betelnut and *khair*.
- d) Drinking juice, oil and snacks made out of coconut.
- e) *Krishnochura*, *semul*, *debdaru* and *daleem* for flower and beauty products.
- f) Cotton from *mandar* and *semul*.
- g) Vegetables from green banana, banana flower, green jackfruit, *sajina* stick and papaya.
- h) Ecological and cultural support from banyan, fig, *peepal* and tamarind.
- i) Oils, medicine and contraceptive from neem.
- j) *Koroi*, acacia, *sisso*, mahogany, *hijal*, *pituli*, *nishinda*, *sal*, litchi, mango, *kadam*, *raintree*, *jamrul*, jackfruit, banyan, *peepal* and fig trees break winds and provide shade.
- k) Rattan from *jiga* and colouring material from *gab*.

Appendix 2

Some Important Medicinal Trees, Herbs and Plants with Their Actions and Uses*

Vernacular Name	Scientific Name	Major parts used	Action and use
Akanda	<i>Calotropis gigantea Br.</i>	Latex; root; bark; leaf	Antipyretic; rubefacients; diaphoretic.
Am	<i>Mangifera indica</i>	Bark	Antimenorrhagia; anticough.
Amloki	<i>Embelica officinalis</i>	Flower	Cholelithiasis.
Amrul	<i>Oxalis corniculata linn</i>	Whole herb	Antiscorbutic; antifever; antidyentery & antigastritis.
Anaros	<i>Ananas satvus</i>	Leaf and juice	Antihelminthiasis
Arjun	<i>Terminalia arjuna</i>	Bark	Antiparalysis.
Bakul	<i>Mimusops elengi</i>	Fruit	Antihelminthiasis
Basak	<i>Adhatoda vasica</i>	Leaf	Do
Bel	<i>Aegle marmelos</i>	Fruit and leaf	Astringent; tonic; digestive; laxative.
Bhat	<i>Clerodendrum viscosum</i>	Dried leaf and stem	Tonic; vermifuge; antipyretic; febrifuge.
Bhui kumra	<i>Ipomoea mauritiana</i>	Leaf	Cholelithiasis.
Bisi kala	<i>Musa sapientum</i>	Root	Antihelminthiasis
Bon-kachu	<i>Abrus precatorius</i>	Juice	Styptics for cut and wounds.
Boroi	<i>Zizyphus mauritina</i>	Leaf	Antituberculosis.
Dab	<i>Cocos nucifera</i>	Water	Antidiabetes.
Daleem	<i>Punica granatum</i>	Leaf	Antiflatulence; antidiarrhoeal
Dumur	<i>Fiscus semicordata</i>	Fruit	Contraceptive.
Durba	<i>Cynodon dactylon</i>	Whole shurb	Antiacidity
Gab	<i>Diospyros peregrina</i>	Fruit	Antimenorrhagia
Ganda-baduli	<i>Paederia foetida</i>	Whole plant	Antipuerperal sepsis.
Ghrita- kumari	<i>Aloe barbadensis</i>	Leaf and stem	Antiheadache.
Hara haritaki	<i>Terminalia chebula</i>	Whole herb	Laxative; tonic and alterative.
Hing	<i>Fesula asafoetida</i>	Latex	Abortive.
Jaba	<i>Hibiscus rosa sinensis</i>	Flower	Antimenorrhagia.
Jam	<i>Syzygium cumini</i>	Bark	Antidyentery; antidiabetes.

Appendix 2 cont

<i>Jat neem</i>	<i>Azadirachta indica</i>	Leaf	Antigonorrheal; antipuerperial sepsis.
<i>Jiga</i>	<i>Lannea coromandelica</i>	Bark	Antidysentery.
<i>Kadam</i>	<i>Anthocephalus indica</i>	Bark and leaf	Febrifuge & tonic.
<i>Kalka- sunde</i>	<i>Cassia sophera linn</i>	Bark and leaf	Cathartic: specific for ring worm.
<i>Kapila</i>	<i>Garuga pinnata</i>	Fruit	Antihelminthiasis
<i>Khair</i>	<i>Achacia catechu</i>	Juice and bark	Peppermint & condiment
<i>Khejur</i>	<i>Phoenix sylvestris</i>	Root	Antihelminthiasis
<i>Lajj- abati</i>	<i>Mimosa pudica linn</i>	Plant juice	Resolvent; alterative in fistulous sore; antidiarrhoea and anticholera.
<i>Lanyanune</i>	<i>Portulaca oleraceal linn</i>	Seeds	In skin diseases & rheumatism.
<i>Lebu</i>	<i>Citrus aurantifolia</i>	Juice	Antigonorrhea; antipuerperial sepsis.
<i>Mandar</i>	<i>Calotropis gigantea</i>	Bark and root	Ipecacuanha.
<i>Mehendi</i>	<i>Lawsonia inermis</i>	Bark	Antiarthritis.
<i>Narical</i>	<i>Coscos nucifera</i>	Oil	Emollient.
<i>Neem</i>	<i>Azadirachta indica A.Juss</i>	Bark and leaf	Antibacterial; antipyretic; antihepatitis; antihelminthiasis
<i>Pan marich</i>	<i>Polygonum orientale linn</i>	Whole plant	Tonic & used for healing wounds.
<i>Papaw</i>	<i>Carica papaya linn</i>	Latex and milk	Vegetable pepsin; digestive; stomachic.
<i>Pathorchuna</i>	<i>Bryophyllum calycinum</i>	Juice and leaf	Digestive and antidiarrhoeal.
<i>Pipul</i>	<i>Piper longum</i>	Fruit	Antifeveric; antiscabies; antimalarial; antiwhooping cough and antidiarrhoeal.
<i>Pitraj</i>	<i>Aphanamixis polystachya</i>	Seed	Antiasthmatic.
<i>Pudina</i>	<i>Mentha arvensis linn</i>	Juice of leaf	Digestive and anticonstipation.
<i>Sada akand</i>	<i>Calotropis procera</i>	Leaf	Antihemorrhoids.
<i>Sajina</i>	<i>Moringa oleifera lamk</i>	Bark & leaf	Snake & dog bites.
<i>Satammli</i>	<i>Asparagus racemosus wild</i>	Root	Demulcent.
<i>Semul/simul</i>	<i>Salmalia insignis</i>	Root	Antigonorrheal; antipuerperial sepsis.

Appendix 2 cont

<i>Shefali</i>	<i>Nyctanthes arbortrisite</i>	Leaf	Antifever; antiscabies; antimalaria and antiwhooping cough.
<i>Supari</i>	<i>Areca catechu</i>	Solution of whole nut	Demulcent.
<i>Tela-kucha</i>	<i>Coccines cordifolia</i>	Juice	Antidiabetes.
<i>Tetul</i>	<i>Tamarindus indicus linn</i>	Fruit pulp	Refrigerant; carminative and laxative.
<i>Thankuni</i>	<i>Centella asiatica</i>	Leaf & stem	Alterative; tonic; diuretic.
<i>Tulshi</i>	<i>Ocimum sancium</i>	leaf	Antifeveric; antiscabies; antimalarial and antiwhooping cough.
<i>Ulatchandal</i>	<i>Gloriosa superba linn</i>	Tuber	Abortifacient; alterative; anodyne.
<i>Ulotkambal</i>	<i>Abroma auguata</i>	Bark	Anticonstipation.

Source: Field Survey, 1992.

- * In most cases, these medicinal ingredients were derived from homestead forests by the local herbalists, traditional healers, older villagers, family members and midwives. The list of medicinal trees, plants and herbs has been made on the basis of information provided by these people in addition to the survey respondents. We had to rely much more on the herbalists and other related people rather than our respondents. The reason for such heavy reliance was that in most cases these people were more able to correctly identify the name and uses of these medicinal ingredients than the survey respondents because of the greater familiarity of such ingredients to them. Moreover, an important observation was that many of these medicinal trees, herbs and plants were commonly found in all survey villages. Therefore, we neither looked at regional differences, nor did we identify the differences at household level. However, from the survey information and observation, it was found that village two had a relatively lower number of medicinal trees, plants and herbs than other villages. It was also found that the rich household had the highest number of medicinal plants followed by the middle and the poor. The reasons for such differences have frequently been discussed in our study.

APPENDIX 3

TABLE 3.5.1

Bangladesh: Basic Indicators (1992)

POPULATION (million)	Area (000 sq.km)	GNP per capita (U.S. Dollar)	Adult illiteracy (1990) (%)	Life expectancy at birth
114.4	144	220	65	55

Average Annual Growth Rate (Percent)

GDP		GDP in agriculture		GDP in industry		GDP in manufacturing		GDP in services	
1970- 1980	1980- 1990	1970- 1980	1980- 1992	1970- 1980	1980- 1992	1970- 1980	1980- 1992	1970- 1980	1980- 1992
2.3	4.2	0.6	2.7	5.2	5.1	5.1	3.1	3.8	5.5

Distribution of Gross Domestic Product (Percent)

GDP (MILLION US\$)		AGRICULTURE		INDUSTRY		MANUFACTURING		SERVICES	
1970	1992	1970	1992	1970	1992	1970	1992	1970	1992
6664	23783	55	34	9	17	6	9	37	49

Source: World Development Report, 1994. World Bank, Oxford University Press, 1994.

TABLE 3.5.2

GDP At Current Prices (Million Taka)

SECTOR	1985-1986	1986-1987	1987-1988	1988-1989	1989-1990
AGRICULTURE (CROPS)	29.91	30.59	28.07	26.75	26.32
FORESTRY	4.07	3.81	4.25	3.67	3.59

Source: Bangladesh Bureau of Statistics, 1991

TABLE 3.5.3

Land Utilization Statistics for Forest

Area (in 000 acres)

SECTOR	1984- 1985	1985- 1986	1986- 1987	1987- 1988	1988- 1989	1989- 1990	1990- 1991
FOREST	5297	5237	4910	4703	4703	4703	4693

Source: Bangladesh Bureau of Statistics, 1993

TABLE 3.5.4

Index of Agricultural and Forest Production and Their Components (Base: 1972-73=100)

SECTOR	1988-1989	1989-1990	1990-1991	1991-1992
AGRICULTURE				
a) cereals	162	183	188	196
b) paddy	153	174	174	180
c) wheat	1250	1091	1134	1200
d) jute	68	72	80	77
e) pulses	232	243	245	243
FORESTS				
a) forest products	172	175	167	170
b) fruits	86	91	91	92
LIVESTOCK & POULTRY	131	135	138	143
FISHERIES	89	91	96	103

Notes: Estimates are obtained by using mid-financial year i.e. 1st January estimates of population

Source: Bangladesh Bureau of Statistics, 1993.

TABLE 3.5.5**Land Use in Bangladesh**

LAND CLASSIFICATION	AREA (MILLION HA)	PERCENT
Land under cultivation	9.12	63.33
Land under national forests	1.37	9.51
Unclassed state forest	0.74	5.14
Khash forest land	0.03	0.21
Homestead forests	0.27	1.90
Land under tea garden	0.11	0.76
Uncultivable land	0.35	2.43
Land under rural and urban houses	0.63	4.38
Land under ponds	0.13	0.80
Land constantly under water	1.64	11.47
TOTAL	14.39	100.00

Source: Forest Resources of Bangladesh, Forest Department, 1982 Cited in Forest Statistics of Bangladesh, 1992

TABLE 3.5.6**Land Area, Population Density and Forestry Statistics of Some Asian and Pacific Countries***(Based Year 1978)*

COUNTRY	Land area	Population (per sq km)	Forest area (000 sq km)	Forest area (as % of land)	Forest per capita (ha)
Afghanistan	647.00	23.00	19.00	2.90	0.13
Bangladesh	144.00	625.00	23.70	16.30	0.03
Bhutan	47.00	26.00	20.70	44.00	1.67
Brunei	5.77	35.00	5.30	91.80	2.65
Burma	677.00	48.00	445.60	65.80	1.38
Fiji	18.30	34.00	12.00	65.60	1.98
India	2288.00	200.00	677.20	17.6	0.90
Indonesia	2027.00	66.00	1150.00	56.70	0.85
Malaysia	330.00	40.00	203.80	61.80	1.53
Philippines	300.00	151.00	104.00	34.70	0.23
Thailand	514.00	87.00	92.10	17.90	0.21
Srilanka	66.00	271.00	23.00	35.00	0.13
Vietnam	330.00	157.00	162.70	49.30	0.31
Papua New	462.00	6.00	155.00	33.70	0.03
Singapore	0.59	4020.00	0.03	5.00	0.01

Source: Forest Resources of Tropical Asia, Fao, 1981; Escap, 1979. cited in Forest Statistics of Bangladesh (1992).

TABLE 3.5.7**Tree Cover of Homestead Forests In Bangladesh (1973)**

HOMESTEAD LAND	ESTIMATED TOTAL AREA (000 HA)
With very light tree cover	19.00
With light tree cover	152.00
With medium tree cover	362.00
With dense tree cover	431.00
Total	964.00

Source: M.R. Chowdhury, A Study on Supply and Demand of Bamboos and Canes in Bangladesh, 1984 (Cited in Forest Statistics in Bangladesh, 1992).

TABLE 3.5.8**Population Distribution and Regional Disparities in Respect of Forest Resources of Bangladesh (1984)**

REGIONS*	POPULATION (%)	NATURAL FORESTS (%)	HOMESTEAD FORESTS (%)
REGION-1	25	1	24
REGION-2	24	7	18
REGION-3	13	0	15
REGION-4	14	6	4
REGION-5	5	42	7
REGION-6	12	3	23
REGION-7	6	16	9
REGION-8	1	25	0
Total	100.00	100.00	100.00

Source: Davidson, J. Bangladesh Field Document No.1, FAO/UNDP Project BGD/79/017, 1984.

- * Region-1: Rangpur, Dinajpur, Bogra, Rajshahi and Pabna;
 Region-2: Dhaka, Mymensingh and Tangail;
 Region-3: Kushtia, Jessore and Faridpur
 Region-4: Sylehet and Comilla;
 Region-5: Khulna;
 Region-6: Barisal, Patuakhali and noakhali;
 Region-7: Chittagong;
 Region-8: Chittagong Hill Tracts

TABLE 3.5.9**Estimated Current Employment Generation From Forestry, Bangladesh (1992)**

ITEMS	Employment	Percent
Traditional products from private forest land	345,200	43.1
Traditional items from reserved forest land	97,900	12.2
Secondary processing cottage industry	288,000	36.0
Forest industries	50,000	6.2
Professional, administration, plantations	19,300	2.5
TOTAL	800,400	100.0

Source: Forestry Master Plan, ADP (TA NO.1355-BAN), 1993:12

TABLE 3.5.10

Estimated Forestry Sector Value Added (Taka in Millions; 1992)

PRODUCTS	TAKA (IN MILLION)	PERCENT
Primary		
a) Sawlog	9,091	42.3
b) Fuelwood	5,804	27.0
c) Poles	614	2.9
d) Pulp wood	127	0.6
e) Bamboo	2,724	12.7
TOTAL	18,360	85.4
NON-WOOD	743	3.4
Secondary** and Tertiary		
a) Sawmilling/solid wood	1,174	5.8
b) Pulp and paper	1,008	4.7
c) Furniture	217	1.0
TOTAL	2,399	11.2
GRAND TOTAL	21,502	100.0

Source: *Forestry Master Plan, ADB, 1993:12*

* Bangladesh's forestry sector consists mainly of the primary production of forest products. Primary production of logs and bamboo, the main industrial products, comes mostly from private land i.e, from homestead forests and agro-forests.

** These are government controlled forests which serve the organised manufacturing section, especially nationalised pulp, paper and other manufacturing industries while private manufacturing depends heavily only on privately grown wood.