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**THE FARM AND VILLAGE FOREST AND
LAND USE PRACTICES: A CASE STUDY IN SRI LANKA**

REPORT NUMBER 9

By

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Contents

	Page
Chapter 1	
1. Introduction	1
Chapter 2. Background Information Regarding National, Sub-District and the Village Communities	3
2. Introduction	3
2.1. General Features Regarding the National Condition of Sri Lanka	3
2.1.1. The Ethnic and Religious Composition of the Population	3
2.1.2. The Settlement Pattern	6
2.1.3. The General Features in Migration	6
2.1.4. Employment and the Occupational Distribution	7
2.1.5. The Dependency Ratio	7
2.1.6. The Government Development Intervention	7
2.1.7. The External Support Systems	8
2.2. General Characteristics of the Sub-District Selected for Study	8
2.2.1. Ethnicity and Religion	8
2.2.2. The Pattern of Settlements	9
2.2.3. The Pattern of Migration	9
2.2.4. Employment and Occupational Distribution	9
2.2.5. Predominant Land Use Types in the Udadumbara Area	9
2.3. The General Situation of the Two Communities Selected for the Study	11
2.3.1. The Populations and its Settlements	11
2.3.2. Infrastructural Services	13
2.3.3. Major Types of Land Use in the Study Areas	14

	Page
2.3.4. Characteristics of the land and the Climatic Conditions	15
2.3.5. The Government Development Intervention	16
2.3.6. The Land use Tenure and Property Issues	18
2.3.7. Farm Size Categories	19
Chapter 3. Socio-Economic Conditions and Land Use Practices in the Communities Under Study	20
3. Introduction	20
3.1. Demographic Features of the Communities Under Study	20
3.2. Economic Status of the Households	20
3.2.1. Criteria Applied to Identify the Status of Wealth	21
3.2.2. Source of Income	23
3.2.3. Employment and Pattern of Labour Distrubution Among Other Activities	25
3.2.4. Livestock Farming	28
3.4. The Nature of Government Development Intervention	28
3.5. Land Use, Tenure and Property Issues	29
3.6. Access to Common Property	29
Chapter 4. Forest and Tree Use Practices of the Communities	32
4. Introduction	32
4.1. Livestock Farming	32
4.2. Forest Laws and Regulations	32
4.3. Forest Use Practices in the Study Communities	34
Chapter 5. Conclusion	47
Appendix	49

Chapter 1

1. Introduction

Within the context of traditional village structure, the forest, the farm and the community were interrelated features. Early tribal people lived in harmony with the forest for both its environmental and economic benefits. The village forests were sanctuaries for animals. Gathering tree produce was a major activity of the tribal communities. Therefore, the protection of village forests was of community concern and their responsibility in protecting and managing the forest was mainly meant for their survival. The over-exploitation of the forest was not the interest of the early tribes because their primary concern was their subsistence.

However, in association with agrarian changes and technological development the attitude of the community towards the forest changed tremendously. Instead of maintaining the forest as part of their survival system, the expansion of the farm up to the forests occurred to accommodate domesticated crops. With the threat of population pressure, the village forests become vulnerable and community interest in the forest was replaced with commercial interest. The introduction of plantation species to the agricultural systems, and scarcity of land for the peasantry sector of the economy are the milestones in agrarian changes which took place in Sri Lanka. Under such circumstances, the extension of paddy area stretches from the valley bottoms to terraced fields on slopes, and the replacement of traditionally grown grain and tubers by market oriented crops are noticeable. These major causes have brought an attitudinal change regarding village forests.

The agrarian changes reduced the dependency of the community on the forests. The transformation of tribal living to farming not only changed the vegetative cover, but also changed the community concern toward the forest, the attitudes and also the interest of maintaining village forests. In consequence, within the process agricultural development over the past centuries, a wide gap became established between farming and forestry. Forest in Sri Lanka has deviated from the community, while farming has accompanied it.

Although the forest and the farm have become tremendously apart, farmers' interest in familiar species has not diminished. Maintaining trees for shade, shelter and stability of the soil, timber and fuel is widespread not only in Sri Lanka, but also in many other nations. Trees which enable farmers to meet a variety of uses are prominent in the most widespread agro-forestry system which is in the homegarden.

However, disappearance of trees from the farmyard in Sri Lanka, is not due to the non-suitability of trees to meet the increasing food demand, but to a great extent it is associated with socio-economic and technological situations. For example, until recently, many of the technological innovations in agriculture were aimed at introducing improved, and short duration grain and legumes crops for farmers and not on improving production and characteristics of tree crops to meet the needs of the community. The immediate result of this was the employment of agricultural extensionists to popularize such crop varieties and management practices among farmers.

Farmers were attracted by the improved, high yielding and short duration crop varieties. The need for more production, increasing food demand for family consumption, and the desire for higher income became the major aims in farming. The reduction of trees from their farmland, and confining tree-based systems to their homegardens are the evidence of Sri Lankan farmers' response to the recent technological and agrarian changes.

However within Sri Lanka's context, farmland and homegardens are two examples which demonstrate traditional tree-based land use systems along with either total or partly commercialized seasonal/annual land use systems. In addition to these predominant types, the farming communities who lived in close proximity to the natural forests are highly experienced in maintaining tree species. Their knowledge and experience regarding tree species, tree phenology, physiographic arrangement, practical use, habitats and ecological niches are of great value for scientists and technologists who deal with tree species. Often members of traditional village communities are still the managers of tree species grown in their land and in the adjoining forests. Although farmers had to grow short durational food crops because of a variety of social and economic constraints, their interest and attitude towards tree crops has not been completely drawn away. Tree crops remain to some extent within their land use practices. The present study is conducted in two villages in Sri Lanka with the intention of examining the forest and land use practices.

Within the theme of this study an attempt is made to furnish background information regarding the national set-up, sub-district conditions and the two village communities. However, a greater part of this study is devoted to examine the socio-economic aspects relating to village community, the forest and the tree use practices prevalent among them and also the role of trees, and their products and uses in the livelihood of the villagers.

Chapter 2

Background Information Regarding National, Sub-District and the Village Communities

2. Introduction

This is part of a region-wide study on farm and village forestry. Data from 26 sites in 6 countries are being compared. In addition to the comparative data, background information is provided in reports such as this to put the study sites in their proper context. Examining the background situation regarding the socio-economic and agro-ecological condition at each hierarchical level of analysis at the national level and leading to the villages under concern, was a prerequisite of the study.

This study was initiated by examining the secondary information sources at the national level. At the subsequent stage, in examining the sub-district situation a slight expansion was added to the procedure. Here, the basic data source was the Assistant Government Agent's office records. At the next stage, again the procedure is expanded further because of the need for extracting information through areal photograph analysis and map analysis and also the necessity for discussing the context with the lowest level administrative in charge of the village, the Gramasevaka Niladari's and the villagers of the respective divisions. The next procedure was the selection of 50 households from each of the two communities for the subsequent phase of primary data collection. Initiating with published secondary information, leading to the detailed participatory and observatory level data gathering enabled the researcher to view the forest and tree use practices of the village communities quite closely and comparatively with its national, sub-district, village and household levels. This sequential approach is the leading theme followed in the subsequent section.

2.1. General Features Regarding the National Condition of Sri Lanka

2.1.1. The Ethnic and Religious Composition of the Population

Within the extent of 65,600 square kilometre area of the country, the total number of people, according to the population estimate given for 1986 in the Economic and Social Statistics of Sri Lanka is 16,117,000. This total number consists of rural and urban population which is 79 and 21 respectively. The 21 percent of the urban population is distributed quite unequally among the cities, with almost 38 percent of the total urban population in Colombo, the capital city.

In terms of its ethnic composition it is composed of 74 percent of Sinhalese, 18 percent Tamils, 7 percent Moors and 1 percent others. As the majority of Sinhalese are Buddhist, in its religious composition too 69 percent of the population is Buddhists while Hindu, Muslim and Christians are recorded as 16, 8 and 7 percent respectively. The spatial distribution of these ethnic and religious groups is a complex phenomena. Yet the most outstanding feature is the concentration of most of the Tamil population primarily to the north, in the Jaffna peninsular and its neighbouring areas and secondarily to the wet highlands of the country where they are heavily engaged as plantation workers. The majority, which are the Sinhalese Buddhists, are distributed unequally except in the northern part where Tamils are predominant. The general distribution which displays the heaviest concentration of certain ethnic categories into some specific administrative districts is given in Figure 1, while the proportionate share of the religious groups are shown in Figure 2.

Figure 1. The Administrative Districts Characterized with a Major Ethnic Groups

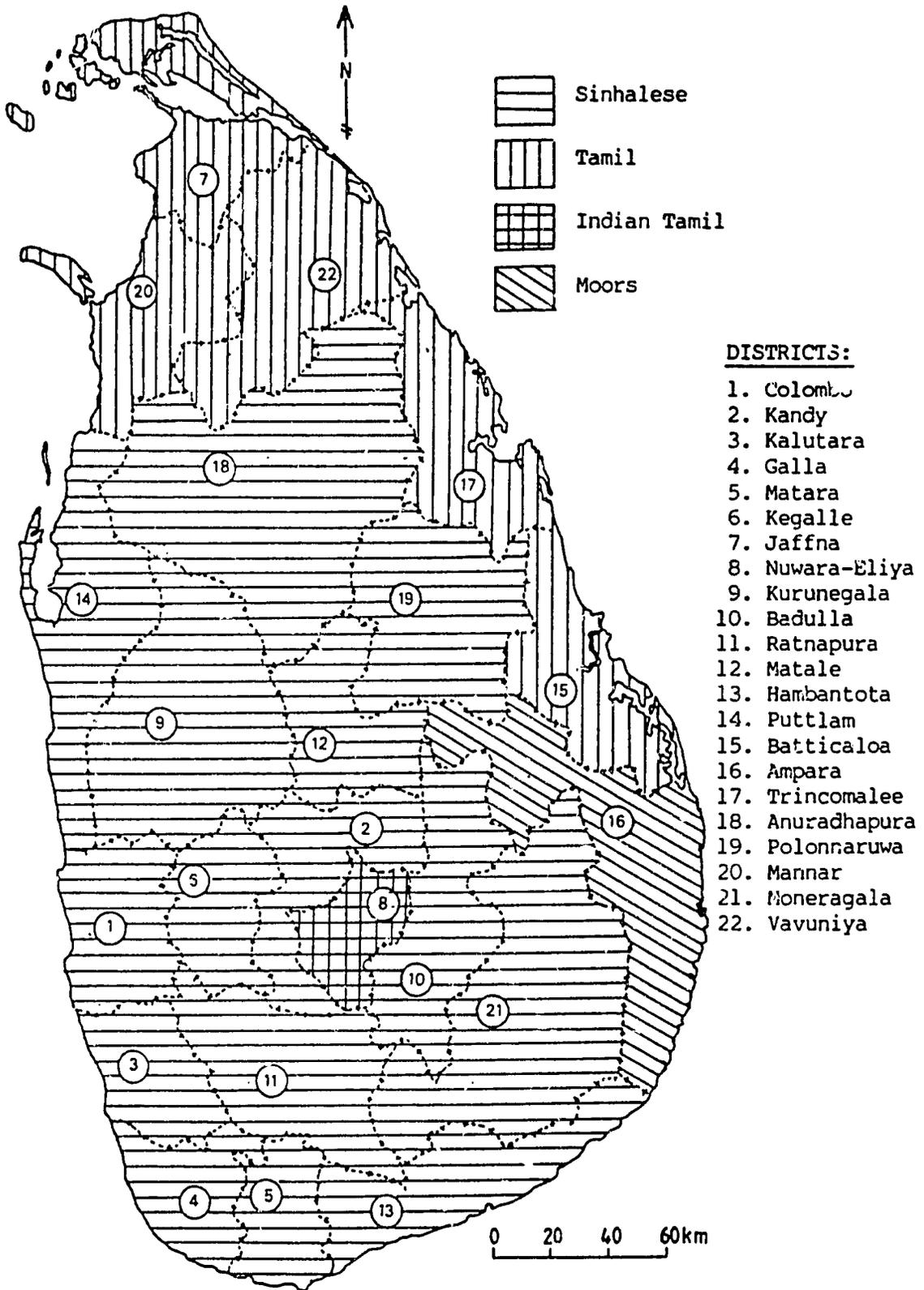
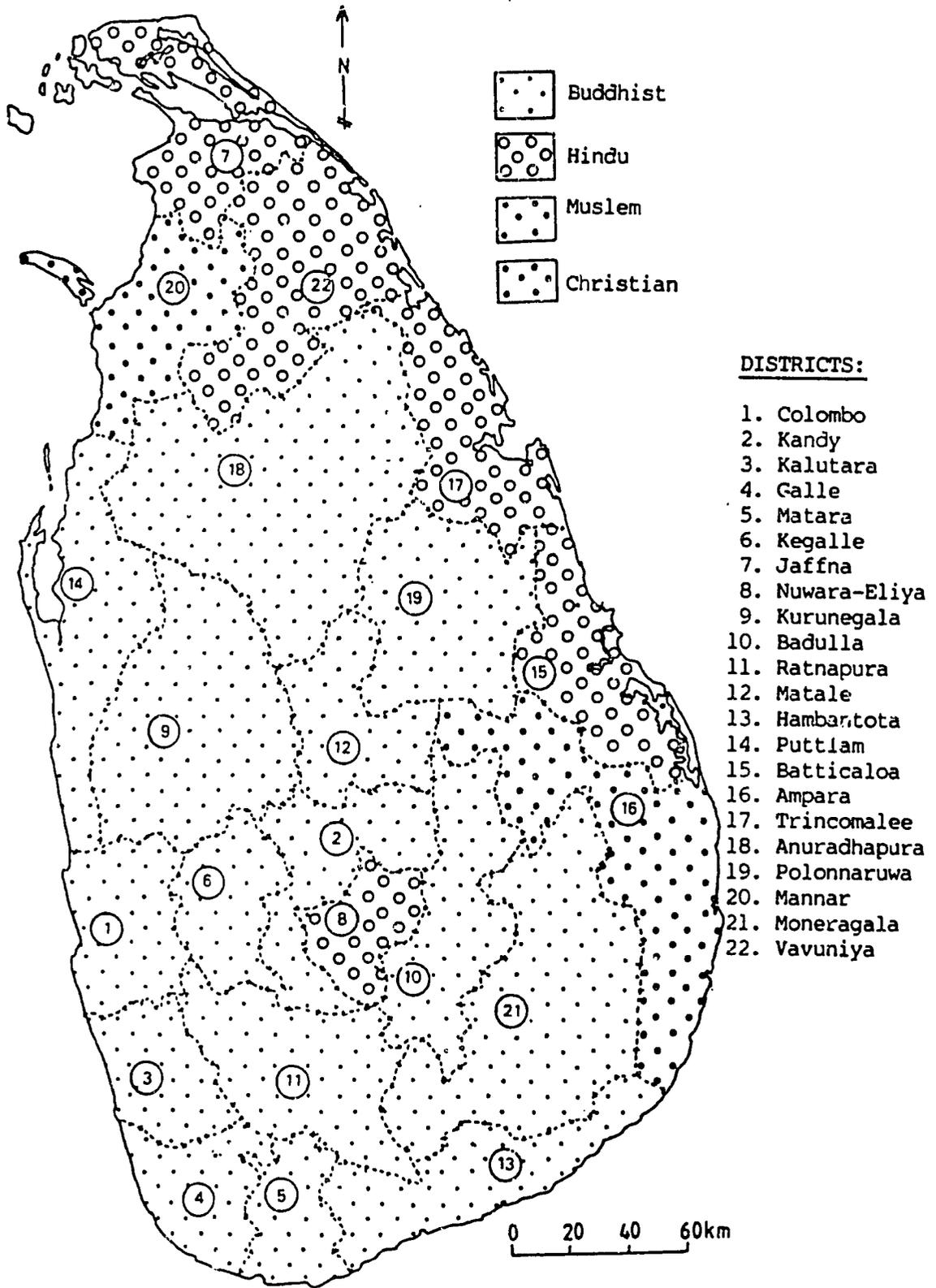


Figure 2. The Prominency of Religious Groups Within Some Specific Administrative Districts



2.1.2. The Settlement Pattern

The general settlement pattern of Sri Lanka includes a number of forms of arrangements, varying between clusters and dispersed settlement. Two most common cluster settlements in Sri Lanka are associated with urban centres and to a lesser extent with estates. The junction settlements, which do not cover an extensive area but are characterized with a limited number of dwellings and services, are noted at road junctions and at ferrie landings. Another type of settlement noted throughout the country is the linear settlement. Most of these are located linearly along the road sides, and to a lesser extent noted in the maritime areas and along canals. The settlements clusters noted in the rural areas are to be taken as secondary, because such village settlements are not prominent like urban clusters, and not comparable to them. These cluster settlement located in the villages are not uniform in nature. In the rural areas both clusters and dispersed settlements are intertwined. For example, in the dry zone, clusters are associated with irrigation tanks, and in the hill-country these are confined to the low lying valleys, where paddy is grown and water is available. The settlements in the newly initiated colonization schemes consist of many forms in which settlers are dispersed while the services are clustered. However, under the increasing population pressure and land scarcity, dispersed settlements are significantly increasing both in the hilly areas and the dry zone where access to primary resources is difficult.

2.1.3. The General Features in Migration

Migration in Sri Lanka can be described under two categories; internal and external. Internal migration is in two directions. The most prominent one is migration from rural to urban areas and this is spontaneous. With the expansion of commercial, administrative and service centres in the urban areas both unskilled persons and the professionals migrate into the urban areas both for work and facilities. In this context, Colombo and its suburbs are noted for a high rate of internal in-migration. Migration from the rural areas to the regionally located urban centres is also noticeable in the country to a lesser extent. Rural urban flow includes both temporary and permanent migrants, among whom temporary migration is prominent.

In terms of direction the rural to rural migration includes two types namely intra-regional and inter-regional. Inter-regional migration from other areas to dry zone areas, especially to the settlements initiated under the colonization schemes, is quite significant. This category includes evacuees, refugees and landless. The other type, the intra-regional type consists of rural to rural migration and is associated with the village extensional and settlement schemes. These are also organized by the government and are aimed at removing people from the densely populated village clusters, then settling them on hilly areas or in the government acquired land of the former plantation sector. This type of migration has become significant in recent years.

The migration of skilled and unskilled labour to countries in the Middle East and professionals and technical persons to the developed countries is noteworthy in external migration. A majority of the unskilled labourers are females who take jobs as housemaids, especially in the Middle East. In addition, a considerable number of men who are masons, carpenters and drivers migrate to the Middle East. Although both intra-regional and inter-regional migration are common features, the migration to the Middle East became prominent only during the last decade or so. In addition, the migration of professionals to developed countries has also increased tremendously during the last few years.

2.1.4. Employment and the Occupational Distribution

The total number of people in the labour force is about 6,621,000. Agriculture remains in its prominent place having 37 percent of the employed personnel. The second largest occupational category is industry, with 22 percent of the workforce. This consists of the employees in the garment industry which was initiated with the establishment of the Free Trade Zone. Among the others, 7 percent is engaged in trade, while 5 percent each are in the service sector and professional. The lowest percentage, which is one percent is in the administrative field. Among the remaining 24 percent, 11 percent are students and 13 percent are unemployed.

2.1.5. The Dependency Ratio

The dependency ratio of the population is considerably high and it is noted with a well-marked difference between rural and urban population. Among children the dependency ratio of Sri Lanka is 58 percent and it varies between 56 and 60 percent between urban and rural sectors. The low rate of dependency of children in the urban sector is mainly due to school leavers who seek employment in service and industrial sectors. If the ratio of the dependency of children combined with the elderly category is taken into consideration then it becomes 65 percent. Here again the dependency ratio is higher among the rural population at 67 percent, while it is 64 percent for the urban population. The high rate of dependency noted in this analysis is an indication that having a considerable standard of living is difficult. Even this proportion would become considerably higher, if one includes the 13 percent of the unemployed into this category.

2.1.6. The Government Development Intervention

During the recent decade or so the government promulgated a number of specific laws, regulations and policies for the efficient and effective management of forests. Some also affect the land use practices in Sri Lanka. In addition to the intensive and extensive forest protection measures taken by the government through the Forestry Department, it encourages private ownership of forests. However, the area under privately owned forests remains small and limited to small plots. Community control of the forest resources is largely prohibited by forest laws and regulations. In this context, community access to specific forest species or forest products is also not encouraged to avoid possible damage to the forests through such intervention. One of the protective measures followed by the Forestry Department is implementation of laws to punish forest offenders. The Forest Department works throughout the country to prevent illicit timber felling, which includes complete prohibition of felling of trees and also illegal transporting of timber, flanks and wood without permission, and to catch those found to commit these offenses.

Although the Forestry Department itself does not directly deal with promoting of homegardens, government support for homegarden development is noted in the subsidy schemes given through the Department of Minor Export Crops, the Department of Agriculture and the extension services. Such subsidy schemes are implemented throughout the country, but the type of species taken into consideration varies among agro-ecological zones and according to the interest of the farmers. Under these schemes planting materials and a limited subsidy is given to plant and maintain the species until they grow to a certain size.

Similar measures are taken by the government to promote and encourage farm forests. Here too, provision of planting materials freely or at a subsidized price and financial support to establish the seedlings are noteworthy. Among the important strategies of forest development which are adopted by the government are the social tree planting and

community forestry projects. Both of these are aimed at enlisting local communities to plant trees and forests. Although the social tree planting strategy is introduced as a national strategy, the Community Forestry Projects are restricted to certain Forestry Divisions and its management centre is located in Badulla. Its activities are established in 5 administrative districts, namely Badulla, Batticaloa, Matale, Nuwara-Eliya and Kandy. This is aimed at promoting forestry at village level through community participation, initially in association with the Forestry Extension Branch of the department.

As it was mentioned that restricted access to forest areas is strictly implemented throughout the country. Declaring natural forests like Sinharaja in the South-west of Sri Lanka and the Knuckles Range of forests in the hill country as National Reserves is a well-marked step taken to protect the forests. Most of the endangered species and the hardwood species are not allowed to be felled or transported. Even transporting of branch wood of such hardwood species is strictly controlled. For example, even the private land owners are not allowed to extract *Artocarpus heterophyllus*, Teak (*Tectona Grandis*), *Azadirachta Indica*, *Maduca longifolia*, or Mahogany species without obtaining a permit from the government.

Another strategy followed in protecting the forest is through restricting settlements in forests and near the boundaries.

2.1.7. The External Support Systems

The provision of extension services for the forestry and the agricultural sector is considered to be an important national policy. The effectiveness of this measure is limited to certain areas. The Government's intervention in agriculture and horticulture is mostly a nationwide strategy. Although a large number of Non-governmental and other organizations also deal with these aspects including animal husbandry, these sectors are not as spread throughout the country as government programs and therefore their activities are limited to specific regions. Although the level of government intervention is a nationwide process, in forestry and livestock sectors its activities are not equally spread-out over the country. This may be due to factors such as, the importance of such sectors within the particular area or among the communities concerned. For example, the government support system dealing with livestock is prominent in the dry zone where development of horticulture is well noticed. This is so in the hill country too. As the available financial and technological capacity is limited, NGO's activities too are limited to specific areas. Through government support systems, seedlings of fruit trees, food trees and minor export crops like nutmeg (*Myristica fragrans*), and cloves (*Syzygium aromaticum*) are given freely or at a subsidized rate to the small-scale growers. The Department of Agriculture and the Department of Minor Export Crops are the two divisions handling these aspects on a broader scale.

2.2. General Characteristics of the Sub-District Selected for Study

2.2.1. Ethnicity and Religion

The two villages selected for this study are located in the Kandy District. This district in Sri Lanka's context is a Government Agent Division (GA), the largest administrative division and it is again subdivided into a number of sub-districts designated as Assistant Government Agent Divisions (AGA). The lowest administrative division of the system is the Gramasevaka Niladari Division (GS) and all the AGA divisions are divided into a number of GS divisions. The important fact to be mentioned here is that Gramasevaka Niladari Divisions are not synonymous to villages but often a GS division consists of a number of traditional villages.

Following this order, when looking at the condition at the sub-district level, the Assistant Government Division (AGA), Udadumbara in which both villages, namely Bambarabedda and Madugalla are located is taken into consideration. It is one of the sub-districts of Kandy district (Figure 3). According to the data recorded at the AGA office, the total population in the area, in 1986, was 24,934 within its 290 square kilometre area. The AGA office records are the most accurate source of information prior to the next census.

Almost 100 percent of its population is rural and Udadumbara, the service centre of the area, is a junction settlement where the local market and administrative offices are located. In terms of ethnic composition the majority are Sinhalese accounting for 75 percent of the total population. The next largest ethnic group is Tamil, about 16 percent of the total. The Moors come next, at almost 7 percent of the total population. This ethnic composition is similar to the national picture mainly because Udadumbara mainly consists of traditional villages and, to a lesser extent, tea plantations where Tamils are settled.

In terms of its religious composition, a slight deviation is noted because a part of all these groups are Christians. Here, the percentage of Buddhists is 73, Hindu 15, Muslim 9 and Christians 3 percent.

2.2.2. The Pattern of Settlements

In Udadumbara the predominant type of settlement is a cluster. Within its hilly and mountainous terrain most of the traditional villages are located in the valleys. The tea estate settlements are also examples of clustered settlements. Although linear settlements can be found on either side of some roads, this type is not noticeable along all the roads. Linear settlements on roadsides are seen near junctions where two or three roads meet. Scattered or dispersed settlements are found on the hill slopes. Most of these are fairly new.

2.2.3. The Pattern of Migration

Daily migration from rural areas to market centres and junctions is common. In addition rural people bring their crop produce on head loads or by bull-drawn caravans to the weekly markets which are located at the junctions of the main road running through the area. Migration of people to the administrative centre, the Udadumbara A.G.A. office and other offices centers has occurred. From time to time a few more families have migrated to the irrigation settlements of the Mahaweli project.

Under the repatriation of Indian Tamil estate workers, external migration also has occurred, but such government organized migration has not caused any changes in the traditional village areas.

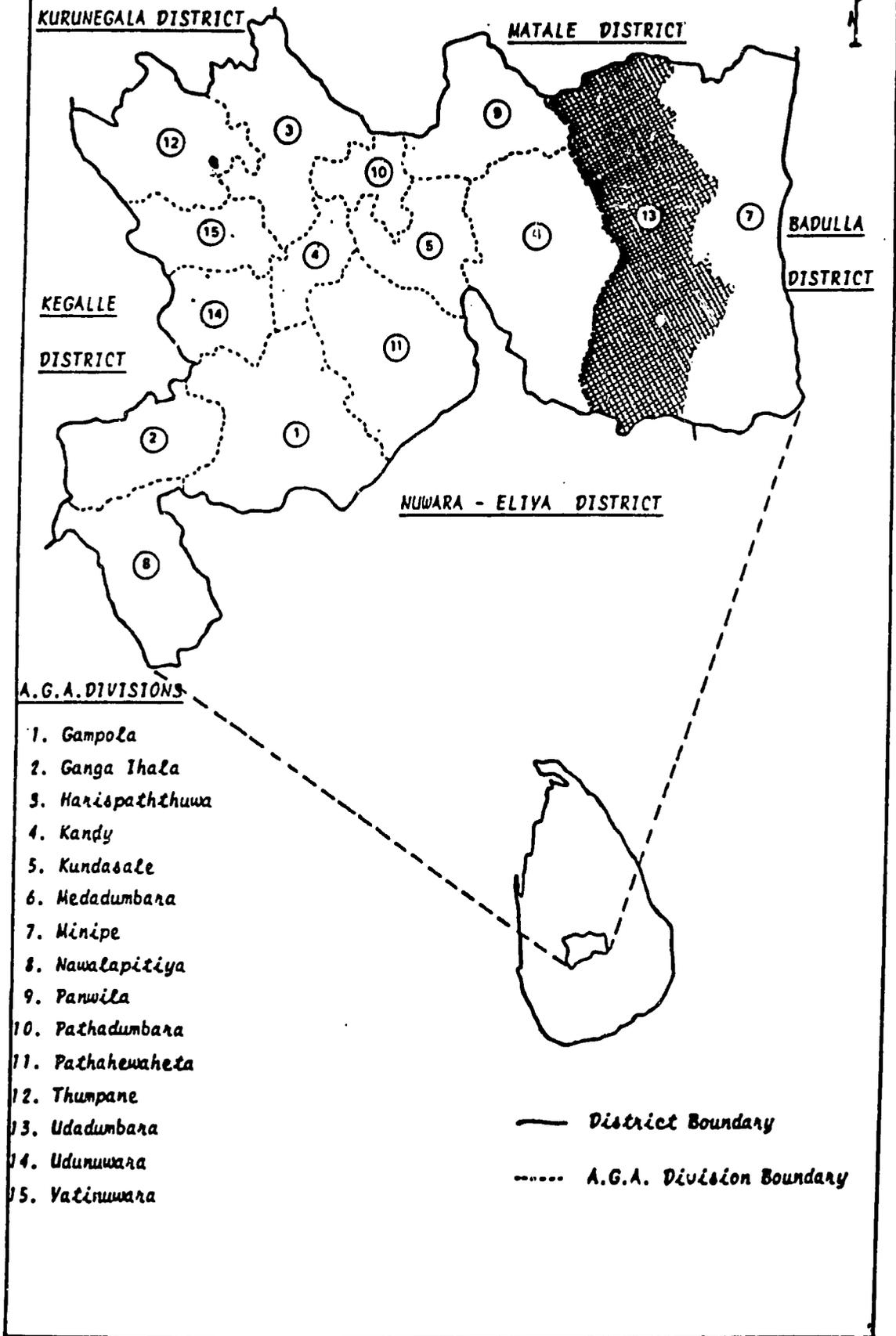
2.2.4. Employment and Occupational Distribution

Out of a total number of 9,699 people in the labour force, 69 percent is in agriculture, nearly double the percentage noted in national statistics. Although the industrial sector comes second in occupational distribution, the percentage engaged in this sector is low and limited to 5 percent. The service sector, is close to the national percentage of 5 percent, with 4 percent recorded in this sector in the study area. An equal percentage are noted in both trade and professional categories. However the rate of unemployment derived from the sub-district data is comparatively low, limited to 6 percent. This is mainly due to people being engaged in agricultural activities for their living, either on paid or unpaid basis.

2.2.5. Predominant Land Use Types in the Udadumbara Area

The distribution of the sub-districts land area under vegetal cover types displays a

**FIGURE 3. A.G.A. DIVISIONS OF THE KANDY DISTRICT
AND LOCATION OF UDADUMBARA**



surprisingly good well-balanced between forest and agriculture. The data were gathered by interpreting land use maps in combination with aerial photograph analysis, to help formulate a close view of the land use pattern. Accordingly, the area under forest, including both natural forests and plantations is almost 44 percent of the area, while 47 percent is under agriculture. The other types of land use noted are pastures, homegardens, wasteland and reservoirs, covering 4, 3, 1 and 1 percent of the area respectively.

The area under forest here is considerably high if compared with the 27 percent forest area of the country. This is mainly because the Northern part of Udadumbara includes the southern portion of the Knuckles Range of forest. In addition, isolated patches of forests are noted in extremely rugged steeply sloping lands. According to the present circumstances, a greater part of the forested area in the sub-district confined to the north while the agricultural land is mostly confined to the south. Another feature noted here regarding forest cover is that all the forest is restricted to government owned areas, there being no private ownership of forest. Nine percent of the total are consists of degraded forests, which covers 2,620 hectares.

The total area of 13,580 hectares, in agriculture is distributed unequally among a number of land use types. Among these, two systems based on annual crops are prominent. About 27 percent of the agricultural land is under rice and other annual crops with 7 percent in rice and 20 percent to vegetables, tobacco and cereals. Another outstanding feature noted in the sub-district land use is the considerably high percentage, almost 19 percent on fallow. Most of these include degraded tea lands and abandoned areas which are under dryland farming. The area under perennials is extremely low and limited to 390 hectares. This area is mostly under tea. Among the other land use types the share of permanent pastures is 1,160ha (4%), homesteads 960 (3%), wasteland 290 (1%) and 150 (1%) hectares under reservoirs.

As noted in the previous section, strictly speaking only 31 percent of the total area in the Udadumbara region is utilized directly by local communities to produce crops. Within this, the area available to produce rice, which is their major dietary constituent, is limited to the stretches of valleys covering only 1,980 hectares. Under this situation, the local communities are unable to produce enough rice for household consumption. The possibility for cultivating the highlands also is limited due to the seasonality of rainfall. Farming in this area is mainly meant for subsistence and production of tobacco for sale seems to be the major avenue for farmers to get a cash income.

2.3. The General Situation of the Two Communities Selected for the Study

The two communities selected for this study are located in the Ma Oya catchment area (see Figure 4) which drains off to the Mahaweli River. Both communities, Bambarabedda and Madugalla, are traditionally old villages, and to a great extent less exploited and exposed to the contemporary development strategies. Communities level information was collected from the community records, especially records available at the Gramasevaka Niladari, through discussions and personal observations.

2.3.1. The Populations and its Settlements

Although both communities live in close proximity to Ma Oya and are quite old, there are some variations in their characteristics. The variation in the number of households and population shown in Table 1 are significant. The average family size varies by 1.6, having

Figure 4. Location of the Two Villages

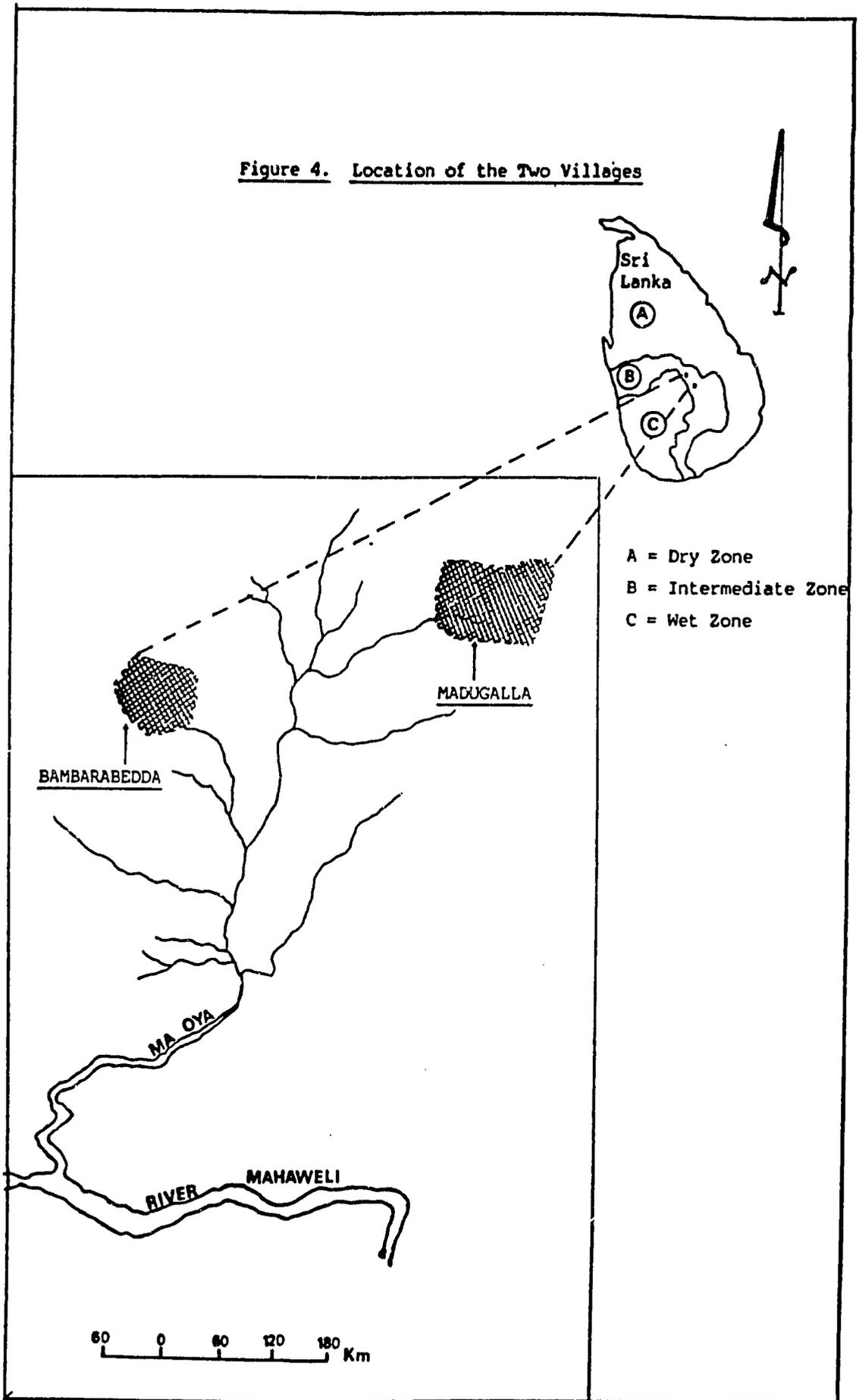


Table 1. General Characteristics of the Communities.

Aspects	Name of the Community	
	Bambarabedda	Madugalla
Number of Households	398	334
Total Population	1600	1874
Average Family Size	4.0	5.6
Number of Children aged between 6 - 11 years	282	296

Source: Field Information

an average of 4 persons in Bambarabedda and 5.6 in Madugalla. In terms of total number of households Bambarabedda community is bigger by 64 households. Yet, in terms of their population Madugalla community is larger by about 274 people.

According to primary school records, the number of children in the age range from 6 to 11 years old is 282 for Bambarabedda and 296 for Madugalla. However, this is to be taken as an approximate figure because it does not include the non-school-going children in this age group.

Due to the differences in the distribution of land and communication, quite a contrast is noted in the pattern of settlements. In Bambarabedda, the major settlement cluster is located on the mid-slopes of its mountainous terrain while the major settlement cluster in Madugalla is located in association with the stretches of paddy which are extended along the valleys. Although the village of Bambarabedda extends down from the steeply sloping area of the western ridge to the low lying fields located in the south-east, nearly 80 percent of the low lying area is not owned by the community. This difference in land distribution has a direct impact in determining the major settlement cluster. The next prominent settlement type is linear settlements which are located along the road. Dispersed settlements are noted on the upper slopes of the terrain, but such settlements are limited in number.

2.3.2. Infrastructural Services

In terms of infrastructural services, both communities are backward and without electricity. The most prominent transport links to the communities are all-weather roads and unpaved roads. Although an access is available to each of the areas, public transport is not extended to the center of the village. Both communities are located about 6 to 7 kilometres away from the daily and weekly markets. The farmers have to carry their farm produce to the major outlets either on head-loads or by bull-drawn caravans. Only a very few wealthy farmers transport their produce in bulk to the market places. For the purpose of purchasing farm inputs, people have to travel to the market places located at a

considerable distance, at least 8 kilometres, because such inputs are not available at the local daily markets, and even if they are available at the closer markets, the prices are much higher. Even purchase of goods needed for daily use is not easy, because the few stores located in the village interiors are able to sell only a few select number of items.

2.3.3. Major Types of Land Use in the Study Areas

The percentage of cultivated land is almost equal in both areas, although the actual land area available for the communities varies considerably. The total area in Madugalla is 1,466 hectares, while the extent of Bambarabedda covers only 346 hectares. The actual extent of the forest land in Madugalla and Bambarabedda are 490 and 99 hectares respectively, but in terms of percentage distribution nearly 33 percent of the total area of Madugalla and 28 percent of Bambarabedda are under forest. As all this forest land is government owned, the community has no legal access to the forest resources.

The percentage of land used for crop production is slightly smaller in Bambarabedda (51 percent) than in Madugalla (54 percent). The total area under agriculture in Madugalla is 795 hectares whereas it is only 177 hectares in Bambarabedda. Another well-marked difference noted in the two areas is the distribution of land between two annual crops. The two predominant annual crop based systems are paddy, which is cultivated in the lowlands, and highland crops, which consist of tobacco, vegetables and dryland cereals. There is a well-marked difference between these two villages, with 657 hectares of land given to annual crops in Madugalla and only 70 hectares of land in annual crops in Bambarabedda. The prominence of paddy, covering 34 percent of the land is notable feature in Madugalla, whereas paddy is limited to only 9 percent of the area in Bambarabedda. The percentage of land given to highland annuals is 11 percent in both places. About 2 percent of the area in Bambarabedda is to tea and it is categorized under perennials. Although the area covered by agro-forestry systems is almost equal in both areas, with 67 and 65 hectares in Bambarabedda and Madugalla respectively, in terms of percentage distribution it takes up 19 percent of the total land area in Bambarabedda and only 4 percent in Madugalla.

The fallow land in both areas consists of degraded both land and seasonal fallow. About 10 percent of the land in Bambarabedda is fallow, mainly degraded and abandoned tea land. In Madugalla fallow is limited to 5 percent of the land. Another prominent type of land use in these areas is homegardens. Homegardens cover nearly 18 percent of the land in Bambarabedda and 11 percent in Madugalla. The comparative data regarding land use is given in Table 2.

If one compares this data with the information regarding district level land use in Udumbara A.G.A. division, several facts can be highlighted. The first feature noted is that the extent of forest is lower in percentage in both villages than recorded for the sub-district. The second feature is the non-existence of private or common forests in these villages. In contrast the percentage area in agriculture is higher in the villages than the percentage noted for the sub-district of Udumbara. The area under rice is also higher in both villages than the 7 percent sub-district figure. In terms of other annual crops grown in the highlands, the 11 percent in both villages is much lower than the 20 percent area of sub-district. The other well-marked difference which appears between the sub-district and the village is the percentage under homegardens. Both villages have a high percentage of land under homegardens, while only 3 percent of the sub-district is given to homegardens. All these differences are largely due to the difference in the bio-physical environment and the population pressure.

Table 2. Data Regarding Land Use in the Study Areas.

Land Use Type	Bambarabedda		Madugalla	
	Area(ha)	Percentage	Area(ha)	Percentage
1. Forest (natural and plantation)	99	28	490	33
a. Government	99	28	490	33
b. Private	00	00	00	00
c. Common	00	00	00	00
2. Agriculture	177	51	795	54
a. Annual crops				
i. Rice	33	9	497	34
ii. Other annuals	37	11	160	11
b. Perennial crops	6	2	00	00
c. Agro-forestry system	67	19	65	4
d. Fallow	34	10	73	5
3. Permanent Pasture	10	3	15	01
4. Homegardens	63	18	166	11
Total	349	100	1,466	100

Source: Field Informations.

2.3.4. Characteristics of the land and the Climatic Conditions

The area under agriculture is not uniform in terms of its soil and morphology. The most well-marked difference in the soil condition is noted mainly between the steeply sloping highlands and the riverine valleys. As the percentage of area under these two land units is not equal in the villages, the area under specific soil types is also found to vary. However, in both areas the steeply sloping terrain is degraded to some extent, although the rate of degradation varies.

The most widespread soil type in Bambarabedda is sandy, and it covers approximately 41 - 60 percent of the area under agriculture. The next major soil type in this area is clay

and it covers 21 - 40 percent of the agricultural land. This area includes the areas of lowland paddy. The soil of the steeply sloping terrain is stony and shallow to a great extent. The absence of well developed soil, except in the homegardens, is a noteworthy feature. To some extent, the soils of Madugalla area are similar to the soils of Bambarabedda. About 1 - 20 percent of Madugalla has loamy-clay soil, and 41 - 60 percent has sandy loam soil.

Although both villages can be broadly categorized as mountainous, a range of topographic features is also noted at the micro-level. About 61 - 80 percent of the area in Bambarabedda is mountainous, while nearly 20 percent consists of rolling plains and located along the river terraces. The Madugalla area is again noted with its 41 - 60 percent of mountainous terrain and 21 - 40 percent of hilly area. The most outstanding feature associated with this morphological zones is the difference in slopes. The mountainous areas have 25 to 40 degrees of slope while it varies between 12 to 30 degrees in the rolling terrain and in the hilly areas.

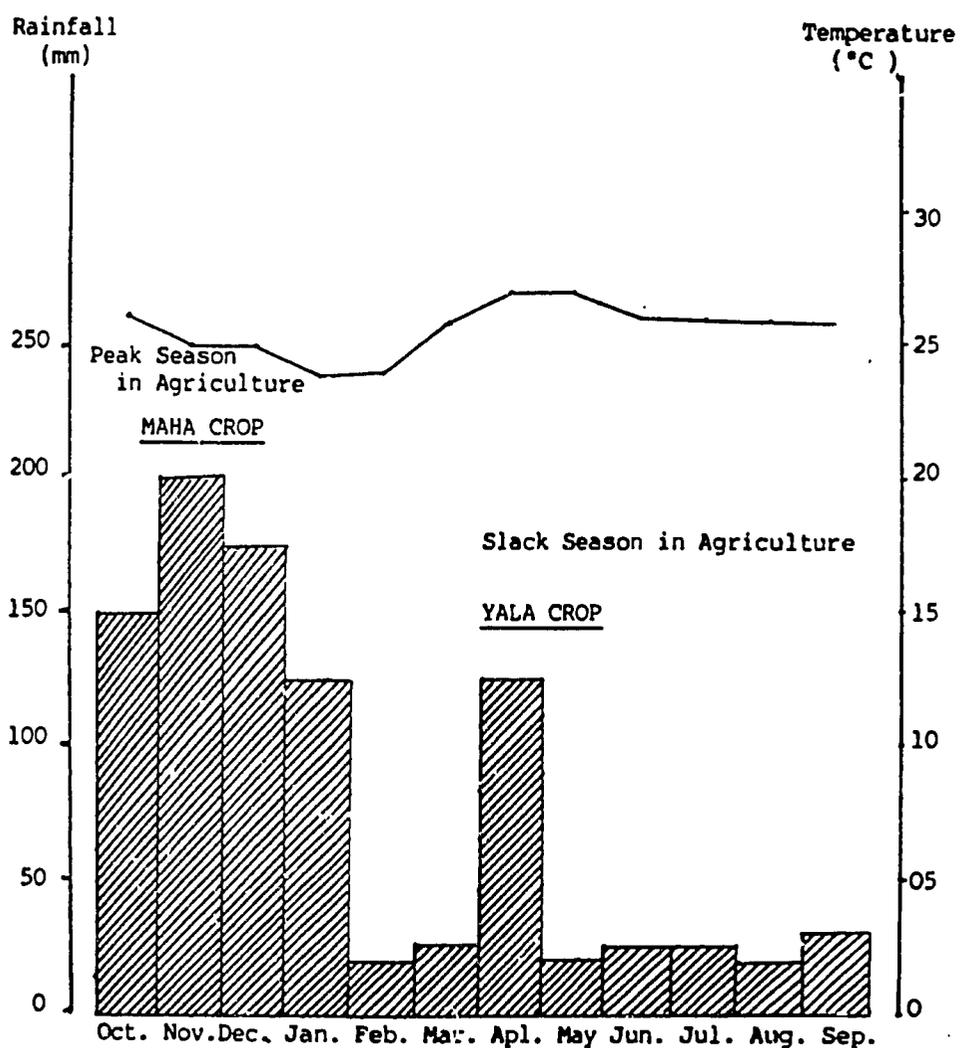
In both areas no irrigation is available for cultivation and therefore farmers completely depend on rainfall for agriculture. The difference in average monthly temperature varies between 24° and 27° centigrade. The lowest is recorded for January and February, while the highest monthly temperature is in April and May. The difference in the monthly maximum and minimum is greater than the monthly averages. The greatest range is in February, when the monthly average maximum is 31° centigrade while the minimum is 17° centigrade (Table 3).

The most outstanding climatic feature in the area is to its distribution of rainfall. As shown in Figure 5, there is one prominent season of highest rainfall which occurs between October and February. This is the period in which the North-east monsoonal rain occurs and the prominent Maha cop is cultivated. The next rainy season is between March and May but this is less reliable and follows the season of South-west monsoons. If an adequate amount of rain falls a second crop, the 'Yala' crop is cultivated. The area experiences dry spells between these two rainy seasons and so these become slack seasons in agriculture. As no irrigation is available, the annual cropping pattern depends on the seasonal distribution of rainfall as well.

2.3.5. The Government Development Intervention

The government development intervention is often associated with forestry, agriculture and livestock, but the extent to which such services are available for these communities is not clear. In both villages no livestock extension work has been provided by the supporting services of the government or private organizations. None of the Non-Governmental Organizations provides services in both these areas. Among the other two supporting systems the government and a private organization, the latter, namely the Ceylon Tobacco Company, works closely with the communities, although its services are provided only for the tobacco growers and tobacco barn owners. Its forestry supporting system is aimed at giving assistance to the owners of tobacco barns to plant trees, mainly to produce fuelwood. The nature of assistance is in two forms, i.e. planting material and financial assistance to establish seedlings. Within the context of agriculture, its effort is limited to tobacco cultivation and as a consequence all the tobacco growers in both communities maintain strong links with the company. Its material support includes provision of seeds, fertilizer and nursery materials. Its financial support includes credit, price support and marketing.

Figure 5. Distribution of Average Monthly Temperature and Rainfall in the Study Areas



**Table 3. The Distribution of Rainfall and the Monthly Temperature in the Area
(average of 1975 - 1985 period).**

Parameter	Jan	Feb	May	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature												
Average (°C)	24	24	26	27	27	26	26	26	26	26	25	25
Maximum	29	31	33	33	32	30	31	30	31	30	29	29
Minimum	19	17	20	21	22	23	23	23	23	23	21	21
Monthly												
Rainfall (mm)	125	20	25	125	20	25	25	20	30	150	200	175

Source: Weather Records, Land and Water Use Division, Department of Agriculture, Peradeniya, Sri Lanka.

The government support available for the communities for both forestry and agriculture is unsatisfactory. Even the agricultural extensionists visit the farmers only if the farmers make an official request. If farmers need physical support from the Forestry Station and the government nursery they have to travel at least 15 kilometres, even without a guarantee of obtaining the support. The only private organization which has close links with the farmers is the Tobacco Company because of its interest in growing tobacco continuously in this area. However, it is the only project in which tree components is taken as part of its effort, but its effectiveness is insignificant.

2.3.6. The Land use, Tenure and Property Issues

The major forms of tree tenure in the village communities is determined by traditional practices. Under certain circumstances, tree ownership is considered separately from land ownership. For example, in the areas where trees are especially located along hedges, particularly those next to the tracts of paddy, tree ownership is not considered as part of land ownership. The very common form of tree tenure is that trees are owned by the person who owns the land. Both these forms of tenure are prevalent, but which is relevant is determined by their location. Where tree tenure is different from land ownership the people who traditionally have the tenurial rights obtain the products.

Among three types of common property, namely the forests, fallow and the common land, at least a few patches of common lands are available in both communities. All these types, strictly speaking, are crown or government owned. In practice the use of such areas are strictly prohibited. However, the local community tends to use such land only for grazing and collecting fuelwood. In addition, the degraded tea lands which are in fallow

and the farmland which is not cultivated during the dry spells are commonly used by the community for grazing animals.

2.3.7. Farm Size Categories

The extent of farmland is one of the features which varies considerably among households. As it was revealed in the household survey the average farm size is found to vary between the two communities, with an average of nearly 3 hectares per family in Madugalla and 1 hectare in Bambarabedda. Both communities display a considerable range in farm size, with a few reaching up to 12 and 10 hectares or so.

The small-farm households in these areas are in the range between 2 - 1 hectares while the medium-farms are in a range between 1 to 4 hectares. As both communities are mainly dependent on agriculture, the small-farm households are unable to meet their basic needs through farming. Cultivating the hilly terrain and the confinement of farming to the rainy seasons are a greater cause of their low income. The medium-size households, produce an excess during the prominent cropping season.

Large-farm households in both areas produce a surplus and are able to meet all their basic needs. However, the number of households in this category is limited. Their land holdings often include both paddy plots and a considerable highlands area.

Chapter 3

Socio-Economic Conditions and Land Use Practices in the Communities Under Study

3. Introduction

At this stage of the study information was gathered from secondary sources, through discussions and observations and by collecting primary information. The information collected in this context is primarily based on a questionnaire survey, selecting 50 households per village from the two village communities, Bambarabedda and Madugalla. Further discussions held while conducting the household survey and visiting the area were used to understand conditions more fully. This chapter is primarily devoted to a summary and brief discussion of the information gathered at the household level.

3.1. Demographic Features of the Communities Under Study

Both communities under study are homogenous in terms of ethnic and religious composition. All the hundred households interviewed in this study are Sinhala Buddhists. Their families have lived in the area from the times of their ancestors. The population of the survey households in Bambarabedda and Madugalla totalled 269 and 298 respectively. Accordingly the average size of a household among the sample population in Bambarabedda is 5.4 while it is 6 in Madugalla. In terms of dependency ratio, Bambarabedda has a high dependency ratio, of 58 while it is 43 in Madugalla. The sex composition of the population shows a low sex ratio, which is calculated on the number of females per 100 males. It is 79 for Bambarabedda and 99 for Madugalla. The fact to be emphasized here is that although the total number of males in the two villages is equal, a well-marked difference is noted in the number of females. The number of females in Madugalla is almost the same as the number of males, while in Bambarabedda the number of females is much lower. It is a common feature for all age categories in Bambarabedda, as shown in Table 4, where a significant disparity is noted among the age categories in Madugalla.

The data regarding educational attainment for members of each household, shows some prominent features in the communities under study (Table 5). The most outstanding feature is the extremely high rate of illiteracy in Bambarabedda, at almost 35 percent, whereas in Madugalla it is negligible. Another feature noted here is that Bambarabedda is prominent in illiteracy even among the second generation, i.e. children, among whom nearly 23 percent are illiterate. The prominence of illiteracy among women is well-marked in Bambarabedda again, where it is well above 50 percent.

In terms of educational attainment 50 percent of the literate group have only a primary school education, while a greater disparity is noted between these two communities in secondary school attainment. Out of the total sample in Bambarabedda only 18 percent have a secondary education, while the percentage for Madugalla is about 45. This disparity again is an indication of the socio-economic differences between of the two communities.

3.2. Economic Status of the Households

Quantifying of economic status of the community is one of the most difficult tasks encountered in this study. In order to simplify this task, a selected number of combined indicators were taken into consideration.

Table 4. The Composition of Population of the Two Communities by Age Categories and Sex.

Community	Children		Adults		Elderly		Total		Total	Average
	15 yrs		15-65 yrs						population	family size
	Ma.	Fe.	Ma.	Fe.	Ma.	Fe.	Ma.	Fe.	Ma + fe	
Bambarabedda (sample size 50 households)	46	40	96	74	8	5	150	119	269	5.4
Madugalla sample size (50 households)	42	44	104	104	4	00	150	148	298	6.0

3.2.1. Criteria Applied to Identify the Status of Wealth.

The most desirable indicators for these communities were income, which is derived from wages or from household resources, the condition of housing, and household property. In evaluating the condition of housing, the floor area of a dwelling in combination with the nature of the walls, the floor and the roofs were taken into consideration. Another aspect looked into was household property and, this was again evaluated by examining the extent of household land which is owned by each household.

Subsequently, in this study the level of wealth is categorized under low, medium and high and the class intervals used here are given in Table 6.

Using this criteria and the class intervals given in Table 6, the data collection in the household survey was summarized. The number of households falling into the three pre-determined categories varies between the communities and the summarized information is given in Table 7.

The great disparity noted in the level of educational attainments, between the two communities of Bambarabedda and Madugalla is also significant in the status of wealth. In terms of wealth, in Bambarabedda a large portion of the households, almost 86 percent are in the low category while 12 are medium and 2 percent in the high category. If one compares this with the data regarding the wealth level of the households of Madugalla, a different situation can be noticed. Here, the percentage in the low category is less, limited to 54 percent, while the percentages for medium and high categories are comparatively high. Nearly 34 percent of the sampled households are in the medium wealth status group while 12 percent are in the high category. Accordingly, the socio-economic status of the

Table 5. Level of Educational Attainment of Selected Number of Households.

Household Member	BAMBARABEDDA								MADUGALLA					
	Illiterate	Literate no formal education	Primary school edu.	Secondary school education	Vocational	College and above	Total number of the member	Illiterate	Literate no forms 1 edu.	Primary school edu.	Second school edu.	Vocational	College and above	Total no. of member
Household member	16	00	25	6	00	00	47	1	00	30	15	00	00	46
Spouse	26	00	15	8	00	00	49	2	00	32	16	00	00	50
Eldest Adult Son	11	00	23	8	00	00	42	00	00	15	22	00	00	37
Eldest Adult Daughter	5	00	15	9	00	00	29	00	00	13	24	00	00	37
TOTAL	58	00	78	31	00	00	167	3	00	90	77	00	00	170

Source: Field Information

Table 6. The Criteria Applied in Ranking the Community on the Level of Wealth.

Category	Income Monthly in (\$)	Housing Floor Area in (\$)	Land extend in hectares
Low	Less than 40	Less than 50	Less than 03
Medium	41-80	51-100	03-10
High	Greater than 81	Greater than 100	Greater than 10

Source: Field Information

households determined on the basis of 3 indicators, collectively can be taken as an indication to their living standard.

Table 7. Number of Household, by Level of Wealth and Communities.

Wealth Category	Bambarabedda		Madugalla	
	No. of Household	Percentage	No. of Household	Percentage
Low	43	86	27	54
Medium	6	12	17	34
High	1	2	6	12
Total	50	100	50	100

Source: Field Information

3.2.2. Source of Income

The household income of the studies communities is derived from a large number of sources, including farm work, off-farm work and other sources. Among various sources the farm work is the most prominent one. This includes tree products, field crops and other products. As shown in the data summarized in Table 8, about 80 percent of the households in Bambarabedda use a considerable percentage of tree products to meet their needs.

In Madugalla about 90 percent of the households use tree products to meet family needs, although the percentage it contributes to their needs varies between communities.

Table 8. Pattern of Dividing Farm Products for Household Consumption and Sales by Percentage Category and Household.

% category source	For Households Needs (No. of Households by Category)										For Sale and Trade (No. of Households by Category)									
	01 - 25		26 - 50		51 - 75		76 - 100		Total No. of Hh.		01 - 25		26 - 50		51 - 75		76 - 100		Total No. of Hh.	
	BB	MD	BB	MD	BB	MD	BB	MD	BB	MD	BB	MD	BB	MD	BB	MD	BB	MD	BB	MD
Tree Products	29	32	11	13	00	00	00	00	40	45	00	00	00	00	00	00	00	00	00	00
Field Crops	5	19	18	11	11	00	3	00	37	30	00	00	4	1	2	6	25	32	31	39
Other	00	5	00	2	00	1	00	00	00	8	00	00	00	00	00	00	00	00	00	00

Source: Field Information

BB = Bambarabedda

MD = Madugalla

None of the households in these communities sell tree products.

Nearly 74 percent of the households in Bambarabedda produce field crops to meet their household needs, while in Madugalla only 60 percent do so. In Madugalla about 68 percent of the households tend to sell either a part of their food crops or the whole harvest of tobacco. This is somewhat less common in Bambarabedda, with 62 percent of the households selling at least part of their produce.

As shown in Table 9, 26 households each in both communities are engaged in off-farm work. The contribution made by these households to their families varies considerably. However, the number of households depending on off-farm work is comparatively higher in Bambarabedda than in Madugalla. Agriculturally based off-farm work is prominent due to their engagement in animal husbandry.

Table 9. The number of Households Engaged in Off-Farm work by Sectors and the Share of Income.

Activity/Category	Percentage of income received from activity								Total No.	
	01-25%		26-50%		51-75%		76-100%		of Hh	
	BB	MD	BB	MD	BB	MD	BB	MD	BB	MD
Agriculture	2	4	1	1	--	--	15	6	18	11
Industrial	2	1	1	1	--	--	--	1	3	3
Other	1	6	1	4	--	--	3	2	5	12
Total	5	11	3	6	--	--	18	9	26	26

3.2.3. Employment and Pattern of Labour Distribution Among Other Activities.

The prominence of agriculture, the non-availability of other opportunities and unskilled labour are some of the characteristics commonly noted in both communities. Even within the context of agriculture, producing market oriented crops is limited to two crops, tobacco and vegetables. Tobacco is cultivated mainly for sale while vegetables are grown partly for domestic consumption and partly for the market. Therefore using wage labour for agricultural activities is restricted to the households who produce a considerable surplus.

A well noted common feature is the concentration of agricultural activities of the household by the head of the household, other adult male and the female. Although a majority of the males are completely engaged in agriculture, some fluctuations are noticeable in terms of the time spent on agricultural activities. For example, about 60 percent of the male household heads in Bambarabedda and 78 percent in Madugalla are

Table 10. Employment and Its Distribution Among Activities by the Number of Households and Members.

Activity		Household Head				Spouse				Adult Male				Adult Female				Male Child				Female Child			
		100%	75-99	41-74	<40	100%	75-99	41-74	<40	100%	75-99	41-74	<40	100%	75-99	41-74	<40	100%	75-99	41-74	<40	100%	75-99	41-74	<40
Agriculture	BB	18	7	5	--	1	1	24	10	2	--	4	5	2	--	--	--	1	--	--	1	1	--	--	--
	MD	36	--	3	--	--	6	26	13	2	--	--	--	--	1	4	12	1	--	--	1	1	--	--	1
Agric. Wage Labour,	BB	6	4	--	--	--	--	3	5	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MD	--	--	--	--	--	--	--	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Industries Wage Labour	BB	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--
	MD	--	--	2	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trade,	BB	1	--	1	--	--	--	1	2	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MD	--	--	1	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Handicraft	BB	--	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	--	--	--	--	--	--	--	--
	MD	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--
Services	BB	--	--	--	--	--	--	--	--	--	--	1	1	1	--	--	--	--	--	--	--	--	--	--	--
	MD	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Professional		1	1	--	--	1	--	--	--	4	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	BB	--	--	--	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MD	1	1	--	--	1	--	--	--	4	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Source: Field Information

BB = Bambarabedda, MD = Madugalla

Table 10. (Continued)

Activity	Household Head				Spouse				Adult Male				Adult Female				Male Child				Female Child																											
	100% 75-41- <40								100% 75-41- <40								100% 75-41- <40								100% 75-41- <40								100% 75-41- <40								100% 75-41- <40							
	99 74								99 74								99 74								99 74								99 74								99 74							
Seasonal																																																
Migrant	BB	--	--	--	1	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--															
	MD	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--															
Student	BB	--	--	--	--	--	--	--	--	2	--	--	--	4	--	--	--	13	--	--	--	20	--	--	--	--	--	--	--	--	--	--	--															
	MD	--	--	--	--	--	--	--	--	4	--	--	--	13	--	--	--	22	--	--	--	19	1	--	--	--	--	--	--	--	--	--	--															
Unemployed	BB	1	--	--	10	--	1	1	11	11	1	3	--	15	--	--	--	12	--	1	--	8	--	--	--	--	--	--	--	--	--	--	--															
	MD	1	--	--	1	--	--	--	--	2	1	1	--	6	3	--	--	6	--	--	--	7	--	--	--	--	--	--	--	--	--	--	--															

Source: Field Information

BB = Bambarabedda

MD = Madugalla

agricultural self-employees, who do not spend an equal proportion of time on agriculture. The reason for this is the seasonality of agriculture which is associated with one prominent crop and another less reliable crop. This is also due to the socio-economic situation of individual households.

As shown in the data given in Table 10, the major employment of the spouse of the household head is agriculture, and is mostly engaged as a self-employee. Yet, the time they spend on productive work varies between 40 and 75 percent, because they devote much of time to domestic work. Agricultural wage labour is not noted in Madugalla but in Bambarabedda, 20 percent of the male household heads and 16 percent of their spouses work for wages. They tend to go for work in tea plantations from time to time. Seasonality of employment is prominent in agriculture and in consequence, it is mostly confined to the period between October and March. Engagement in other activities is limited to a few households. No major employment other than agriculture is noted.

3.2.4. Livestock Farming

Livestock in both villages is limited to four types, cattle, water buffalo, goats and chicken. Rearing animals is done in 34 households in Bambarabedda and in 18 in Madugalla. The biggest stock in both cases is cattle, 59 in Bambarabedda and 43 in Madugalla. As shown in Table 11, in terms of other types of livestock there are more in Bambarabedda than in Madugalla. Cattle are reared there to be used in caravans in transporting the produce to markets, and to be used for in agriculture. Water buffaloes are reared mainly for agricultural work. What is notable is the keeping of a few types of livestock mainly for agriculture and not to produce marketable commodities. However, this seems to be a part of their traditional production systems.

Table 11. The Information Regarding Livestock Keeping in the Studied Communities.

Type of Livestock	Bambarabedda		Madugalla	
	No. of Hh engaged	No. of Animals	No. of Hh engaged	No. of Animal
Cattle	18	59	13	43
Water Buffalo	8	27	1	2
Goats	1	3	-	-
Chicken	7	52	5	23

Source: Field Infirmination

3.4. The Nature of Government Development Intervention

In terms of government development intervention and the activities of the

non-governmental organizations, both communities are poorly served. This is so not only for the forestry sector but also for agriculture and livestock. The provision of extension services occurs only for tobacco, but in this respect about 27 households of the 50 households studied in Madugalla and 6 households in Bambarabedda are beneficiaries. In this situation external support for the farmers is limited to the Ceylon Tobacco Company, which is a private concern and is related to the planting of forest species for production of fuelwood.

The financial support obtained by the farmers is mainly for tobacco and it is obtained in the form of credit, subsidized inputs, price support and markets. Government-organized financial support obtained by the villagers is in the form of food aid, but this has no direct relevance to forestry programmes. About 86 percent of the dwellers in Bambarabedda are recipients of food aid while only 2 percent are recipients in Madugalla. No specific programmes dealing with trees or forestry have been initiated in either community. As a consequence, the only private organization which gives physical support to establish nurseries and seedling sources is the Ceylon Tobacco Company.

3.5. Land Use, Tenure and Property Issues

The total area cultivated by the two groups of 50 households is 61.6 and 149.3 hectares respectively for Bambarabedda and Madugalla. The total number of plots used by all the survey households is 113 for Bambarabedda and 126 for Madugalla. The number of households with a second plot is 23 in Bambarabedda and 43 in Madugalla, and it is mainly used to grow annual crops. As shown in the data given in Table 12, the number of households with a third plot is 17 in Bambarabedda and 21 in Madugalla. The households with a fourth plot is limited to 2 farm households in Bambarabedda and none are noted in Madugalla. Almost all these plots are used for annual crops, except in a few cases where tree crops are noted and the homegardens where trees are prominent.

Although land mortgaging is not practised in the communities, a considerable number of families in both areas have rented in plots. The number of households who have rented-in land in Bambarabedda is 25 while it is 21 in Madugalla.

As use of state property for agricultural crop production is not permitted the local community has not reported such cases.

3.6. Access to Common Property

Access to common property, i.e. commons, fallow, barren land, village forests and state forests is found to vary to a great extent. No common views are noticed among the 50 households interviewed regarding any of the types of common property. As shown in the information given in Table 13, the majority of dwellers in Bambarabedda are aware that they have no access to the village forest and state forest, while in Madugalla the majority are aware that they no access to state forest and common land. In their own view, 38 households in Bambarabedda and 39 in Madugalla accept that using fallow land is not restricted. Similarly, 31 households in Bambarabedda and 42 households in Madugalla accept that using barren land is not restricted. The variation in the views regarding common property is due to several reasons. In most cases these type of property are either not available to the farmers or located distantly. Therefore, to what extent they could use such property is not clearly known. The next reason is the extent to which the community practically uses the property. This is partly determined by how they have utilized such property in past.

However, farmers response over their ability to use common property was not certain.

In most cases, as noted in discussions with villagers, many of the respondents expressed their views without much consideration.

Table 12. Farm Plots and Their Primary Use.

Item	Bambarabedda	Madugalla
a. Total area cultivated	61.55 (ha)	149.3 (ha)
b. Total Number of farm plots	113	126
c. Number of households with 1st plot	50	50
size range	.05-1.2 (ha)	.02-02
primary use	Homegarden	Homegarden
d. Number of households with a 2nd plot	23	43
size range	.05-02 (ha)	.2 - 3.2
primary use	annual crops	annual crops
e. Number of households with a 3rd plot	17	21
size range	.4 - 02 (ha)	.8 - 4.8 (ha)
primary use	annual crops	annual crops
f. Number of households with 4th plot	2 (ha)	00
size range	.4 - 02 (ha)	00
primary use	agro-forestry	00

Source: Field Information

Table 13. The Community View Regarding Their Access to Common Property.

Common Property type	No. of Hh report no access		Unrestricted use		Controlled use		Seasonal use		Common pro. is not used	
	BB	MD	BB	MD	BB	MD	BB	MD	BB	MD
Common	1	42	25	5	24	2	--	--	--	1
Fallow	5	11	38	39	7	--	--	--	--	--
Barren Land	5	3	31	42	12	4	1	1	--	--
Village forest	41	9	1	38	6	3	2	--	--	--
State forest	43	43	1	4	6	3	--	--	--	--

Source: Field Information

BB = Bambarabedda

MD = Madugalla

Chapter 4

Forest and Tree Use Practices of the Communities

4. Introduction

The communities under study have no forests of their own to meet the multiple needs which are fulfilled by tree products. Their access to state forests and common property in reserve areas are in most cases strictly prohibited through law. In this situation, the households either had to depend on purchased commodities, which is not traditionally practised and was hard to afford, or on products that they get from trees which are grown on their own land. Obtaining adequate tree products from their own land is a problem to most of the dwellers, and usually not possible practically. According to the respondents views, inadequate land area to grow trees and the need to produce seasonal crops to meet domestic needs are the major constraints preventing them from tree farming. Although the local communities traditionally grow a range of tree species in their own land and manage them for their products and environmental benefits, most their farm land remains seasonal monoculture. In this situation it is important to examine how farmers obtain tree products, what are their primary sources for these products, what use they make of their tree products, and what their interests are in producing these goods.

Information regarding forests and tree use practices was obtained from a sample of 25 households. The field data collected in this manner is presented and discussed in the subsequent sections.

4.1. Livestock Farming

Livestock farming in the study areas is not widespread, but a few specific types are maintained by a limited number of households. As shown in the data given in Table 14, out of the 25 interviewed in Bambarabedda, 15 rear cattle as part of their productive system. In Madugalla only 8, or 32 percent of the sample households raise cattle.

However, it was difficult to indicate the types of feed and methods of feeding the stocks in these communities. In most cases, the method of feeding is very complex because the time in which farmers feed animals in stall, tethered or untethered is determined by the rhythm of cultivation. Commonly, the farmers feed all their live stock except chickens, some tree products, grass and other products. Placing these according to priority was difficult because during the season, when animals are tethered in the fields or in land or roaming untethered in fallow, their main feed is grass. During the periods in which farmers keep the animals in stalls they partly fed on tree products and partly on grass, depending on the season and the ability of farmers to get grass or tree products. Therefore, equal priority is given and grass because during the rainy season obtaining grass is possible and during the dry-spells tree products are used. In feeding goats farmers do not leave them untethered because of the difficulty involved in getting them back in the evenings.

4.2. Forest Laws and Regulations

To some extent, farmers perception regarding their use of forests and trees is limited by their knowledge of specific laws and regulations. In most cases farmers were not aware of government regulations intervention on farm forestry or common property. Therefore, the community perception about the legal aspects are also not clear, but only under some specific situations like family property situations do farmers have a clear understanding.

Table 14. Data/Information Regarding Livestock Farming in Bambarabedda and Madugalla

Livestock type	Bambarabedda				Madugalla			
	No.of households feed	Stock	Total Hh by type of method		No.of Hh feed	Stock	Hh by type of feeding methods	
			1	2 3 4			1	2 3 4
Cattle	15	40	14	14 - - - - 14 17	8	34	7	7 - - 3 3 4 4
Water-Buffalo	8	27	8	8 - - 1 1 7 7	-	-	- - - - - - - -	
Goats	2	6	2	2 - - - - 2 2	2	14	2 2 - - 1 1 2 -	
Chicken	5	40	-	2 4 4 - - 5 4	4	23	- - 4 1 - - 3 4	

Source: Field Information

Type of Feed:

1. Leaves, Flowers, other tree products.
2. Grass, other range products.
3. Crop & Grain residues.
4. Purchased feed.

Method of Feeding:

1. Stall feeding/cut & carry from own sources.
2. Stall feeding/cut & Carry from other sources.
3. Tethered.
4. Roam untethered.

The information gathered on forest laws and regulations from 25 households per community is given in Table 15.

Table 15. Information Regarding the Perception of the Community towards Laws and Regulation.

Specific situation	Bambarabedda		Madugalla	
	No.of Hh believed enforced	No. of Hh believed effective	No.of Hh believed enforced	No.of Hhs believed effective
1. Allow private ownership of trees/forest	25	00	25	00
2. Allow common property/ community control of forests	00	00	00	00
3. Encourage homegardens	00	25	00	25
4. Encourage farm forests	00	00	00	00
5. Encourage community forests	25	00	25	00
6. Restrict access to forests	25	00	25	00
7. Restrict use of trees for specific uses	00	00	00	00
8. Restrict use of specific trees	00	00	00	00
9. Restrict settlements in or near forests	25	00	25	00

Source: Field Information

As noted here, farmers' perceptions toward common property, farm and forests laws regarding specific trees or their specific uses were not well identified. Both the respondents have a common perception in all other aspects, as noted in Table 15.

4.3. Forest Use Practices in the Study Communities

Tree products are used to in meet multiple needs of farm families, although the level on which farmers depend on various sources to obtain specific types of products varies, to a great extent, on the availability and the access to the forest resources. In both the study communities, the use of forest and tree products is determined by their needs and traditional use practices. In most cases trees can be used to obtain fodder, fuelwood, fruit and food, timber, and materials for charcoal, construction, industries, handicrafts and other purposes. In these particular communities, residents do not produce charcoal or handicrafts from tree products nor do they engage in wood based industries. Sources of

forest products are limited to government forest, homegarden and farm land. The priority given to specific species for particular purposes is also a noteworthy feature. The field information collected regarding these aspects, in Bambarabedda are tabulated in Table 16.

Data regarding forest and tree use practices in Bambarabedda help to visualize the situation of the community more closely. Here, a large number of households obtain their fuelwood and construction materials from the government forest while, the main source of food is their own homestead and farmland. Obtaining of timber is almost insignificant because it is not a product that they need continuously, and using trees in obtaining fodder is also extremely limited because it is less practised. Tree products for construction purposes are obtained from forests and under special circumstances they tend to buy them from the market. The names of the species which are used by the community are given in Table 16. As seen in this table, in terms of multiple use, the species grown in homegardens are many and varied, whereas forest species are mostly used for fuelwood and to get construction materials.

As shown in Table 17, regarding tree and forest use practices in Madugalla, although the government forests remain the main source for a large number of families, a substantial number also depend on their homesteads and farms for such products. In obtaining food, all three sources - the forest, homegarden, and the farmyard - are equally important. As noted in Bambarabedda, here too, timber is one of the products that farmers are less concerned with. For construction purposes, the community's dependence on the government forest is greater, while purchased products are more important than homegardens and farmyards.

The species grown in homegardens are able to produce a range of products for household use. These include fruit, buds, and woody branches. The forests species are mostly used to obtain fuelwood, construction materials and fruits, leaves and buds to some extent. Trees in farmlands are mostly used to obtain fruit/food, but in addition some construction materials, fodder and fuelwood also are obtained.

The priority order of these sources, namely government forest, homegarden, farmyard, purchased tree products and non-tree products by households in Bambarabedda is given in Table 18. In this area the primary source in getting a range of forest products is the government forest. In terms of obtaining fruit and food, their homegarden is also important. In Madugalla in meeting the multiple needs of the community both government forest and the homegarden play an equal role as seen in Table 19. In both communities, the most commonly purchased products are fruit and construction materials. Purchased non-tree products are common for fodder, especially for cattle and chicken.

Quite commonly members of both communities use tree products for domestic consumption. Another common feature is their obtaining forest products throughout the year, using a large diversity of species. The seasonality of tree products obtained from homegarden and farmyards is also a noteworthy feature.

Women in both communities play a prominent role in collecting fuelwood, while the role of the adult male is more prominent in collecting fodder, fruit and construction materials. In all these aspects in both communities children play a less significant role. (Tables 18 and 19).

A considerable number of households in Bambarabedda, as shown in Table 18, travel more than 3 kilometres to get forest products. This so for 18 households in getting fuelwood, 6 in getting fodder, 10 in getting fruit and food, and 13 in getting construction materials. This is mainly because government forest resources are distant from the village.

Table 16. Forest and Tree Use Practices in Bambarabedda.

Uses sources location	Foder		Fuelwood		Fruit & Food		Timber		Construction	
	Species (*)	No. of Hh used								
Govt. forest	ARECCA	1	MUSAAC	11	PHYLEM	4	ARTOIN	1	MACICA	1
	ARTOHE	5	CANAZE	1	ARTOIN	1		MUSAAC	4	
	EXACIR	10	EXACTR	6	MANGIN	3		COCONU	2	
			GREWTI	4	PSIDGU	10		MICHCH	3	
			CAREAR	7	PHYLEM	2		CHLOSW	1	
			ALSTMA	3	ARTOHE	4		ALSTMA	2	
			TERMBE	1	EUGEFA	1		GREWTI	4	
			THESPO	1	MUSAAC	2		ARTCHE	10	
			ACACCA	1	ALSTMA	1		PTERMA	3	
			MICHCH	1				MELIAZ	1	
			TAMAIN	4				CAREAR	5	
			NEOLCA	1				TAMAIN	2	
			PTERMA	2				THESPO	1	
			PONGPI	3				MANGIN	2	
			DICHCI	1						
			MUSASA	1						
			ARTOHE	1						

Source: Field Information

(*) see appendix for name of the species.

Table 16. (Continued)

Uses sources location	Foder		Fuelwood		Fruit & Food		Timber		Construction	
	Species (*)	No. of Hh used	Species (*)	No. of Hh used	Species (*)	No. of Hh used	Species (*)	No. of Hh used	Species (*)	No. of Hh used
Homestead	EXACIR	1	ARTOHE	11	COCONU	2			PHYLEM	1
			COCONU	18	PTERMA	1				
			MANGIN	6	ARTOHE	6				
			PSIDGU	5	TAMAIN	1				
					PSIDGU	1				
					EUGEMA	1				
					COCONU	1				
					PTERMA	1				
					EUCACA	1				
					MUSAAC	1				
					MUSASA	3				
					PERSGR	2				
			Farmland	ARTOHE MUSASA MUSAAC EXACTR	2 6 1 2	EXACIR	1	ARTOIN		
CAREAR	1	ADUTAS				2				
PONGPI	1	MANGIN				2				
STERPE	1	ARTOHE				2				
MANGIN	1	PHYLEM				1				
COCONU	11	PSIDGU				4				
		MUSASA				2				
		TAMAIN				1				

Source: Field Information

(*) see appendix for name of the species.

Table 16. (Continued)

Uses sources location	Foder		Fuelwood		Fruit & Food		Timber		Construction	
	Species (*)	No. of Hh used								
Purchased	EXACTR	1	PERSGR	3					COCONU	5
	PSIDGU	1					MUSASA	1		
	MANGIN	4					SESBBI	1		
	MUSASA	3					MICHCH	3		
	PHYLEM	3					ALSTMA	1		
								PTERMA	3	
								MADHLO	1	
								CROTLA	1	
								ARTOHE	1	

Source: Field Information

(*) see appendix for name of the species.

Table 17. Forest and Tree Use Practices in Madugalla.

Uses sources location	Foder		Fuelwood		Fruit & Food		Timber		Construction	
	Species (*)	No. of Hh used								
Govt.	ARTCHE	2	ADINCO	1	MUSAAC	3	COCONU	2	EUGEMA	1
Forest	EXACTR	5	ZIZYNA	2	MANGIN	6			MANGIN	2
			MADHLO	7	PSIDGU	6			MUSAAC	1
			PONGPI	3	PHYLEM	3			GREWTI	1
			CARISP	1	ARTOHE	1			MADHLO	5
			CAREAR	1	PERSGR	1			ALSTMA	2
			SESEGR	1	SALARE	1			THESPO	3
			ADINCO	1	ELAESE	2			ALBIOD	1
			VITEAL	1					AEGLMA	1
			PSIDGU	1					LITSGI	1
			EXACTR	5					MICHCH	2
			CAREAR	3					EXACTR	*
			GREWTI	1						
			THESPO	1						
			MUSAAC	1						
			TAMAIN	1						
			AEGLMA	1						
			MACAPE	1						
			ARTOHE	2						
			VITEAL	1						
			COCONU	1						

Source: Field Information

(*) see appendix for name of the specie.

Table 17. (Continued)

Uses sources location	Foder		Fuelwood		Fruit & Food		Timber		Construction	
	Species (*)	No. of Hh used								
Homestead	ARTOHE	4	COCONU	6	MUSAAC	10	MADHLO	1	CAREAR	1
	EXACTR	1	ACACCA	2	MANGIN	9			COCONU	6
	MUSAAC	2	EXACTR	5	ARTOHE	5			ARTOHE	4
			ADINCO	1	ACACCA	1			ARECCA	2
			MANGIN	4	PSIDGU	3			CARISP	1
			THESPO	1	ARTOIN	1			AZADIN	1
			MADHLO	2					LITSGL	1
			PONGPI	1					THESPO	1
			CAREAR	2						
			ARTOHE	2						
			CROTAR	1						
			MUSAAC	1						
	Farmland	EXACTR	3	PONGPI	1	MUSAAC	5	MADHLO	1	ARTOHE
ARTOHE		3	EXACTR	3	SALARE	2	COCONU	1	PONGPI	1
MUSAAC		1	PTERMA	1	MANGIN	3			CAREAR	1
MICHCH		1	PIPENI	1					COCONU	2
ACACCA		1	ARTOIN	1					EXACTR	2
CLERSE		1	PSIDGU	1					ALSTMA	1
CROTAR		1	EXACTR	1					PTERMA	1
CAREAR		1							LITSGL	1
PASPSC		1								

Source: Field Information

(*) see appendix for name of the specie.

Table 17. (Continued)

Uses sources location	Foder		Fuelwood		Fruit & Food		Timber		Construction	
	Species (*)	No. of Hh used								
Purchased	MADHLO	1					COCONU	1	COCONU	12
	PONGPI	1					MADHLO	1	THESPO	1
									ALSTMA	1
									VITEPI	2
									ARTCHE	2
									MICHCH	2

Source: Field Information

(*) see appendix for name of the specie.

Table 18. Data Indicating the Position of Each Source in Meeting Community Needs, Available Distance, Collectors and Specific Seasons by Number of Households in Bambarabedda.

Source	Uses	Rank order of source			Consumption			Seasonality		Collector				Distance travel			
		1	2	3	1	2	3	1	2	1	2	3	4	1	2	3	4
Govt.	Fodder	12	3	--	15	--	--	2	13	1	4	14	4	2	4	3	6
	Fuelwood	24	--	--	22	2	--	10	14	6	2	18	19	--	5	3	18
Forest	Fruit/Food	14	1	--	14	1	--	1	11	1	3	12	12	--	4	--	10
	Industrial	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Construction	18	3	--	--	--	--	--	--	--	4	19	7	1	4	1	13
Homegarden	Fodder	2	1	--	3	--	--	1	2	1	1	1	--	1	2	--	--
	Fuelwood	--	1	2	3	--	--	--	3	--	1	1	--	--	3	--	--
	Fruit/Food	5	2	--	7	--	--	--	11	1	2	5	8	7	1	--	--
	Industrial	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Construction	--	1	1	--	--	--	--	--	--	--	2	2	3	--	--	1
Farm Plot	Fodder	2	11	--	13	--	--	1	14	2	5	11	7	1	5	4	4
	Fuelwood	--	13	1	4	--	--	--	14	4	2	9	13	2	7	2	4
	Fruit/Food	4	9	--	13	--	--	--	9	2	4	6	8	1	2	2	4
	Industrial	--	1	--	1	--	--	--	1	--	--	1	--	1	--	--	--
	Construction	1	5	--	--	--	--	--	--	--	2	5	2	--	2	--	3

Source: Field Information

- 1. Primary source
- 2. Secondary source
- 3. Minor source

- 1. Household use
- 2. Hh use & sale
- 3. Sale & trade

- 1. Whole year
- 2. Seasonally

- 1. Male child
- 2. Female child
- 3. Male adult
- 4. Female adult

- 1. Less than 1km
- 2. 1 - 02 km
- 3. 2 - 03 km
- 4. More than 3 km

Table 18. (Continued)

Source	Uses	Rank order of source			Consumption			Seasonality		Collector				Distance travel			
		1	2	3	1	2	3	1	2	1	2	3	4	1	2	3	4
Purchased	Fodder	1	--	7	8	--	--	--	8	1	1	6	--	--	--	--	8
	Fuelwood	1	--	--	1	--	--	--	1	--	1	1	--	--	--	--	2
	Fruit/Food	3	4	3	10	--	--	--	10	1	--	7	6	--	--	--	8
	Industrial	1	--	--	--	1	--	--	1	--	--	1	--	--	--	--	1
	Construction	4	5	1	--	--	--	--	--	--	--	11	5	1	2	--	9
Purchased	Fodder	--	--	4	4	--	--	--	4	--	--	2	2	--	--	--	4
	Fuelwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Fruit/Food	--	--	3	3	--	--	--	3	--	--	2	1	--	--	--	3
	Industrial	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Construction	1	9	8	1	--	--	--	--	--	4	13	1	--	2	--	16

Source: Field Information

- | | | | | |
|---------------------|------------------|---------------|-----------------|-------------------|
| 1. Primary source | 1. Household use | 1. Whole year | 1. Male child | 1. Less than 1km |
| 2. Secondary source | 2. Hh use & sale | 2. Seasonally | 2. Female child | 2. 1 - 02 km |
| 3. Minor source | 3. Sale & trade | | 3. Male adult | 3. 2 - 03 km |
| | | | 4. Female adult | 4. More than 3 km |

Table 19. Data Indicating the Position of Each Source in Meeting Community Needs, Available Distance, Collectors and Specific Seasons, by Number of Households in Madugalla.

Source	Uses	Rank order of source			Consumption			Seasonality		Collector				Distance travel			
		1	2	3	1	2	3	1	2	1	2	3	4	1	2	3	4
Govt.	Fodder	2	4	--	6	--	--	1	6	6	1	2	--	3	3	--	--
	Fuelwood	7	6	--	13	--	--	4	15	12	16	--	5	6	11	--	1
Forest	Fruit/Food	6	3	3	12	--	--	1	12	8	4	5	4	2	7	--	--
	Industrial	1	--	--	--	1	--	--	1	1	1	--	--	--	1	--	--
	Construction	8	1	1	--	--	--	--	--	10	5	--	--	3	3	1	--
Homegarden	Fodder	6	2	--	8	--	--	--	8	3	5	3	1	8	--	--	--
	Fuelwood	8	9	1	18	--	--	--	16	5	16	1	3	19	2	--	--
	Fruit/Food	9	8	1	18	--	--	--	19	8	14	4	6	8	--	--	--
	Industrial	--	2	--	--	1	--	--	1	1	1	--	--	--	1	--	--
	Construction	3	6	--	--	--	--	--	--	12	1	2	--	13	--	--	1
Farm Plot	Fodder	4	4	--	8	--	--	--	8	1	1	3	1	6	2	--	--
	Fuelwood	2	4	2	8	--	--	--	12	4	7	4	4	8	--	--	--
	Fruit/Food	4	6	2	12	--	--	--	9	7	7	--	--	7	--	--	--
	Industrial	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Construction	3	5	--	--	--	--	--	--	5	2	1	--	4	--	--	--

Source: Field Information

1. Primary source

2. Secondary source

3. Minor source

1. Household use

2. Hh use & sale

3. Sale & trade

1. Whole year

2. Seasonally

1. Male child

2. Female child

3. Male adult

4. Female adult

1. Less than 1km

2. 1 - 02 km

3. 2 - 03 km

4. More than 3 km

Table 19. (Continued)

Source	Uses	Rank order of source			Consumption			Seasonality		Collector				Distance travel			
		1	2	3	1	2	3	1	2	1	2	3	4	1	2	3	4
Purchased	Fodder	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Fuelwood	1	--	--	1	--	--	1	--	1	--	--	--	--	--	--	1
	Fruit/Food	6	4	5	15	--	--	1	13	8	10	3	2	--	--	--	10
	Industrial	--	--	1	--	1	--	--	1	1	1	--	--	--	1	--	--
	Construction	9	5	2	--	--	--	--	--	16	3	4	1	1	1	1	1
Purchased	Fodder	1	2	3	6	--	--	--	6	1	3	2	--	--	--	2	4
	Fuelwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Fruit/Food	--	--	6	6	--	--	--	6	7	4	3	--	--	--	--	6
	Industrial	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Construction	--	1	8	--	--	--	--	--	8	--	--	--	--	--	--	9

Source: Field Information

- | | | | | |
|---------------------|------------------|---------------|-----------------|-------------------|
| 1. Primary source | 1. Household use | 1. Whole year | 1. Male child | 1. Less than 1km |
| 2. Secondary source | 2. Hh use & sale | 2. Seasonally | 2. Female child | 2. 1 - 02 km |
| 3. Minor source | 3. Sale & trade | | 3. Male adult | 3. 2 - 03 km |
| | | | 4. Female adult | 4. More than 3 km |

As was noted earlier, most of the farm plots in Bambarabedda are located at quite a distance from the settlement clusters, whereas the farmlands in Madugalla are located much closer to the settlements due to its physical set-up. Accordingly, the consumption of a considerable amount of time to reach the farm plots to obtain products and to attend to production activities is very significant in Bambarabedda. In other words, the need for spending both energy and time of the farmers is a problem for the community. Under such conditions, efficiency of management also becomes low.

Another aspect taken into consideration in this study is the trend in obtaining forest/tree products for construction. In both communities, particularly during the period between 1950 - 1970, 15 households in Bambarabedda and 8 in Madugalla used government forests to get construction materials. This number decreased to 6 after 1970 in Bambarabedda and 2 in Madugalla. In both areas, as noted in Table 20, purchase of construction materials has increased substantially. This indicates the need for producing more trees by the small-scale farmers for household consumption.

Table 20. The Data Indicating the Trends in Using Forest Products for Construction.

	Period under concerned									
	Bambarabedda					Madugalla				
	Prior 1950-1959	1960-1969	1970-1979	1980-1989	1990 onward	Prior 1950-1959	1960-1969	1970-1979	1980-1989	1990 onward
Government forest	-	8	7	4	2	-	4	4	1	1
Homegarden	-	-	1	1	1	-	-	2	4	6
Farmland	-	1	-	2	1	-	-	1	2	3
Purchased	-	-	-	2	9	-	-	-	2	15
Other	-	1	4	3	10	-	1	-	2	6

However, as is revealed in this study, a considerable amount tree products are still obtained from the distantly located forest reserves. Although, wood based industries are not noted in these areas, tree products are essential in getting fuelwood, timber and, to a lesser extent fodder. In terms of environmental benefits, effectiveness of tree cover, particularly shade, is one of the advantages mentioned by the farmers.

Chapter 5

Conclusion

Traditional village communities living in similar bio-physical and climatic zones have quite a number of common features in their livelihood. Yet, due to socio-economic variations, particularly in land resources on which they largely survive and also the differing economic pressures which are experienced by the individual households, many changes have been undertaken by the households. The homogeneous nature observed in the communities at a general level becomes very complex at the level of detailed examination. These are most notable in examining both land use and forest and tree use practices.

The community, which consists mainly of small-scale farm operators is a complex unit to which a greater diversity is added by their physical and personal capacity. The most prominent features of the individual members of a household are effectively determine the socio-economic situation of a family and thereby of the communities. The level of education, employment, level of earnings, mainly of the household head, is of immense influence. In addition, the physical resources, the land area in particular, on which small-scale farm operators maintain their livelihood and families is an important fact or in determining the socio-economic situation of a family. The effect of these on their land use practices especially in determining the crop varieties that are grown and in employing labour, is noteworthy. Similarly the socio-economic conditions effectively determine dependency on other resources for both products and livelihood, particularly for the households who have limited land to meet their needs and so need to add off-farm activities or non-agricultural activities. This, however, is not always possible.

The small-scale farm operators who have either limited farmland or no farmland at all tend to have an imbalance in the productive systems. Maintaining traditional land use practices and adopting of crop varieties are both difficult for them. This is one of the common features noted in the study areas.

One of the points that need to be stressed here is that more land resources and greater access to forests and trees often makes for better living conditions. In Bambarabedda, which is poor and backward, the landlessness, the poor resource base, and the limited access to resources and services make living worse for its residents. To a great extent, the lack of land or limited land for their crop production and the non-availability of common resources makes their lives harder, because the time that they need to spend to find products is high. Production of enough tree species is also not possible, and their ability to expand the area under trees is limited. In these situations, the prospect of maintaining adequate forest and trees which are of immense importance in insuring the sustainability of the environment and the sustainability of these traditional communities seems dismal. However, even within their limited capacity, the willingness of the small-scale farmers to grow trees within their productive systems indicates their interest in maintaining environmentally balanced systems. On one hand, the local communities are less exploited, and on the other hand their experience, familiarity and knowledge of tree crops and management practices can be blended together with crop improvement technologies. Maintaining live fences and food and fruit producing trees in their homegardens are the unseen and unrecognized efforts made by the farmers to keep trees in their productive systems.

In fact, the trees in village communities are much safer than in the well-managed forests. To a great extent, the small-scale farmers are not the key persons who deplete the

forests. Collection of dry wood and other products from forest is a traditional activity. Their requirements for timber and industrial raw materials are almost insignificant. In this context, protection of forest or maintaining of trees within the traditional production systems is largely overlooked by the farmers to accommodate new crop varieties in monoculture.

In addition, the government development intervention regarding trees have no sound impact on these village communities. Such development strategies are location specific. Although national development strategies are meant to popularize tree based farming among local communities; still, maintaining trees in the productive systems remains only a traditional practice. Nothing has been channelled by the government towards the study communities. In fact their awareness of on-going government organized strategies are also nil. But the need for such government intervention regarding farm forestry is immense, because these communities largely depend on agriculture and could manage trees more efficiently and effectively with their experience.

In terms of forest laws and regulations, it seems that members of both communities are well aware of the laws dealing with forest utilization. The laws which strictly prohibit the access of the community to forest resources, especially the government forests, is a well known fact. Yet, as observed in the data on forest use practices, both communities depend on government forests for fodder, fuelwood, timber, food and construction material. This means the illicit use of forests is common in the communities.

Another fact revealed here is that although there are laws, implementing these laws is not effective or efficient. Protecting and maintaining of forest is not practical through laws alone. Maintaining the forest and trees is possible for the farmers only if they grow an adequate number of trees in their own land.

The importance of farmers' participation in maintaining tree crops or farm forestry a fact that needs to be recognized. Among the widespread land use types the homegarden is the only unit in which such an environment is widely maintained. To a great extent, the homegardens in these areas are the habitats for a large number of species. Therefore, the ability of the small-scale farmers to maintain trees and ensure the future prospects of farm forestry and thereby ensure the environmental sustainability, is to be well understood in directing national development assets. Similarly community participation in this respect is essential in reducing the high cost involved in maintaining trees and also in protecting trees within the production systems of the small-scale farmers.

Appendix

<u>Species Code</u>	<u>Species</u>
ACACCA	<i>Acacia caesia</i>
ADINCO	<i>Adina cordifolia</i>
ADUTAS	<i>Adutilon asiaticum</i>
AEGLMA	<i>Aegle marmelos</i>
ALBIOD	<i>Albizia odoratissima</i>
ALSTMA	<i>Alstonia macrophylla</i>
ARECCA	<i>Areca catechu</i>
ARTOHE	<i>Artocarpus heterophyllus</i>
ARTOIN	<i>Artocarpus incisus</i>
AZADIN	<i>Azadirachta indica</i>
CALOIN	<i>Calophyllum inophyllum</i>
CANAZE	<i>Canarium zeylanicum</i>
CAREAR	<i>Careya arborea</i>
CARISP	<i>Carissa spinaram</i>
CLERSE	<i>Clerodendrum serratum</i>
COCUNU	<i>Cocus nucifera</i>
COFFAR	<i>Coffea arabica</i>
CROTAR	<i>Croton aromaticus</i>
CROTLA	<i>Croton laccifer</i>
DICHCI	<i>Dichrotachys cinerea</i>
ELAESE	<i>Elaeocarps serratus</i>
EUCACA	<i>Eucalyptus camaldulensis</i>
EUGEFA	<i>Eugenia faranica</i>
EUGEMA	<i>Eugenia malaccensis</i>
EXACTR	<i>Exacum trinerva</i>
GREWTI	<i>Grewia tilifolia</i>
LITSGL	<i>Lisea glutinosa</i>
MACAPE	<i>Macaranga petata</i>
MACICA	<i>Mecia caesia</i>
MADHLO	<i>Madhuca longifolia</i>

<u>Species Code</u>	<u>Species</u>
MANGIN	<i>Mangifera indica</i>
MELIAZ	<i>Melia azedarach</i>
MICHCH	<i>Michelia champaca</i>
MUSAAC	<i>Musa acuminata</i>
MUSASA	<i>Musa sapientum</i>
NEOLCA	<i>Neolitsea cassia</i>
PASPSC	<i>Paspalum scrbiculatum</i>
PERSGR	<i>Persea gratissima</i>
PHYLEM	<i>Phyllanthus emblica</i>
PIPENI	<i>Piper nigrum</i>
PONGPI	<i>Pongamia pinnata</i>
PSIDGU	<i>Psidium guajava</i>
PTERMA	<i>Pterocarpus marsupium</i>
SALARE	<i>Salacia reticulata</i>
SESBBI	<i>Sesbania bispinosa</i>
SESBGR	<i>Sesbania grandiflora</i>
STERPE	<i>Stereospermum personatum</i>
TAMAIN	<i>Tamarindus indica</i>
TERMBE	<i>Terminalia belerica</i>
THESPO	<i>Thespesia populnea</i>
TREMOR	<i>Trema orientale</i>
VITEAL	<i>Vitex altissima</i>
VITEPI	<i>Vitex pinnata</i>
ZIZYNA	<i>Zizyphus napeoa</i>